

# **The Relationships between Personality Traits, Dysfunctional Schemas and Personality Disorder Features**

Submitted by

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I, Ninawa Butrus, certify that:

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Signed: \_\_\_\_\_

Ninawa Butrus

6<sup>th</sup> August, 2012

## Abstract

The overall aim of this thesis was to explore the relationships between personality traits, dysfunctional schemas and personality disorder (PD) features. Previous research has established that personality traits and dysfunctional schemas are associated with personality disorders (PDs). However, comparatively little research has examined the relationships between personality traits and dysfunctional schemas or explored whether dysfunctional schemas have incremental validity in the prediction of PD features over and above personality traits. Thus, three studies were conducted to understand PD features from an integrated perspective that incorporates some of the key elements from both trait and cognitive-behavioural theories of PDs.

Study 1 ( $N = 313$ ) and Study 2 ( $N = 269$ ) investigated the relationships between personality traits, dysfunctional schemas and PD features in non-clinical analogue samples through the use of several self-report measures. Correlational analyses in Study 1 and Study 2 revealed that general personality traits from the Five-Factor Model (FFM) and maladaptive personality traits from the Schedule for Nonadaptive and Adaptive Personality (SNAP) model, respectively, were meaningfully correlated with: (a) dysfunctional schemas conceptualised as either early maladaptive schemas (EMSs) or dysfunctional PD beliefs; and (b) theoretically-relevant PD features. Further, correlational analyses in Study 1 revealed a large number of positive zero-order correlations between EMSs, dysfunctional PD beliefs and PD features. However, partial correlations in Study 2 revealed that these zero-order correlations were substantially reduced and consequently more interpretable and theoretically-meaningful when psychological distress and general PD symptomatology were statistically controlled.

A series of hierarchical multiple regression analyses in Study 1 and Study 2 revealed that subsets of either FFM or SNAP traits, respectively, and subsequent subsets of dysfunctional schemas collectively accounted for a substantial amount of variance in PD features. Specifically, subsets of EMSs and PD-specific dysfunctional beliefs added incremental validity to the prediction of PD features over and above traits from either dimensional trait model. Of particular note, the hierarchical regression analyses in each study revealed that each PD syndrome was associated with unique a combination of both FFM or SNAP traits and dysfunctional schema predictors. It was argued that these unique combinations of dimensional

characteristics for each PD syndrome could constitute a prototypic personality “type” profile along the lines of the PD trait profiles that have been proposed for the fifth edition of the *Diagnostic and Statistical Manual of Mental Disorders*. Furthermore, an overall pattern of direct and indirect predictors of PD features emerged in the hierarchical regression models, suggesting that specific dysfunctional schemas could mediate the relationships between some personality traits and PD features. It was argued that this pattern of results is consistent with the Five-Factor Theory distinction between distal basic tendencies, that is, personality traits, and the more proximal characteristic maladaptations, such as dysfunctional schemas, in the conceptualisation of PDs.

Study 3 ( $N = 21$ ) was a small exploratory study that involved a clinical group ( $n = 7$ ) and two comparison non-clinical ( $ns = 7$ ) groups from the Study 1 and Study 2 datasets. The clinical group completed self-report measures of FFM and SNAP traits, dysfunctional schemas, PD features and psychological distress. Nonparametric tests revealed statistically and clinically significant differences between the clinical and non-clinical groups on a range of personality trait and dysfunctional schema scores. The clinical group also obtained statistically and clinically significant higher scores than the index non-clinical groups on a range of PD features and also on a measure of psychological distress. These results tentatively indicate that higher scores on a combination of personality trait and dysfunctional schema dimensions are associated with greater levels of personality pathology and psychological dysfunction. Overall, the findings of this thesis have broader theoretical and practical implications for the conceptualisation and treatment of PDs and these implications are discussed.

### Conference Presentations

- Butrus, N., Witenberg, R.T., & Hammond, S.W. (2010, April). Early maladaptive schema profiles of the personality disorders. In C. Hulbert (Chair), *Complexity of personality disorder*. Symposium conducted at the meeting of the Australian Association of Cognitive Behavioural Therapy, Melbourne, Australia.
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## Table of Contents

<b>Statement of Authorship and Sources .....</b>	<b>ii</b>
<b>Abstract .....</b>	<b>iii</b>
<b>Conference Presentations .....</b>	<b>v</b>
<b>Acknowledgements .....</b>	<b>vi</b>
<b>Table of Contents.....</b>	<b>vii</b>
<b>List of Tables.....</b>	<b>xiv</b>
<b>List of Figures .....</b>	<b>xviii</b>
<b>List of Appendices .....</b>	<b>xix</b>
<b>Chapter 1: Literature Review .....</b>	<b>1</b>
1.1 Introduction.....	1
1.2 Personality Disorders.....	4
1.2.1 DSM-IV-TR Conceptualisation of PDs .....	5
1.2.2 Strengths and Limitations of the DSM-IV-TR’s Categorical Model of PDs.....	8
1.2.3 Dimensional Models of PDs .....	10
1.3 Dimensional Trait Models of PDs .....	12
1.3.1 The FFM of General Personality Traits .....	13
1.3.2 The FFM and PDs .....	15
1.3.3 The SNAP Model of Maladaptive Personality Traits .....	22
1.3.4 The SNAP and PDs.....	25
1.3.5 Key Limitations in Conceptualising PDs Using Either FFM or SNAP Dimensional Trait Models .....	28
1.4 Cognitive-Behavioural Models of PDs.....	31
1.4.1 Cognitive Theory of PDs .....	31
1.4.2 Dysfunctional PD Beliefs and PDs .....	33
1.4.3 Schema Theory of PDs .....	36
1.4.4 EMSs and PDs .....	39
1.5 Personality Traits, Dysfunctional Schemas and PDs.....	43
1.5.1 Traits and Dysfunctional Schemas.....	43
1.5.2 Dysfunctional Schemas: Dysfunctional PD Beliefs and EMSs .....	45
1.5.3 Traits, Dysfunctional Schemas and PDs .....	46
1.5.4 Theoretical Framework .....	48

1.6 General Aims .....	51
<b>Chapter 2: The Relationships between Personality Disorder Features, Dysfunctional Schemas and Traits from the Five-Factor Model of Personality (Study 1) .....</b>	<b>53</b>
2.1 Introduction.....	53
2.2 Method.....	56
2.2.1 Participants.....	56
2.2.2 Materials.....	57
2.2.2.1 Sociodemographic questions .....	58
2.2.2.2 PD features. ....	58
2.2.2.3 FFM of personality traits. ....	59
2.2.2.4 EMSs. ....	59
2.2.2.5 Dysfunctional PD beliefs.....	60
2.2.3 Procedure .....	61
2.3 Results.....	62
2.3.1 Data Screening .....	62
2.3.2 Descriptive Statistics.....	64
2.3.3 Relationships between FFM Traits and Dysfunctional Schemas.....	69
2.3.3.1 Relationships between FFM traits and EMSs. ....	69
2.3.3.2 Relationships between FFM traits and dysfunctional PD beliefs.....	72
2.3.4 Relationships between EMSs and Dysfunctional PD Beliefs .....	74
2.3.5 Relationships between PD Features and either FFM Traits or Dysfunctional Schemas.....	76
2.3.5.1 Relationships between FFM traits and PD features. ....	76
2.3.5.2 Relationships between EMSs and PD features.....	79
2.3.5.3 Relationships between dysfunctional PD beliefs and PD features.....	81
2.3.6 Predictors of PD Features .....	83
2.3.6.1 Predictors of paranoid PD features.....	86
2.3.6.2 Predictors of schizoid PD features. ....	88
2.3.6.3 Predictors of schizotypal PD features.....	90
2.3.6.4 Predictors of histrionic PD features.....	93
2.3.6.5 Predictors of narcissistic PD features.....	95
2.3.6.6 Predictors of antisocial PD features. ....	98
2.3.6.7 Predictors of borderline PD features. ....	101



2.3.6.8 Predictors of avoidant PD features.....	106
2.3.6.9 Predictors of dependent PD features.....	109
2.3.6.10 Predictors of obsessive-compulsive PD features.....	113
2.3.6.11 Predictors of passive-aggressive PD features.....	116
2.4 Discussion.....	120
2.4.1 Are there Theoretically-Meaningful Relationships between FFM Traits and Dysfunctional Schemas? .....	120
2.4.2 Are there Theoretically-Meaningful Relationships between Dysfunctional Schemas?.....	123
2.4.3 Are there Theoretically-Meaningful Relationships between PD Features and either FFM Traits or Dysfunctional Schemas? .....	124
2.4.3.1 PD features and FFM traits.....	124
2.4.3.2 PD features and EMSs.....	128
2.4.3.3 PD features and dysfunctional PD beliefs.....	129
2.4.4 Can Dysfunctional Schemas Incrementally Add to the Prediction of PD Features Over and Above FFM Traits? What are the Most Salient Predictors?.....	130
2.4.4.1 FFM traits.....	130
2.4.4.2 EMSs.....	131
2.4.4.3 Dysfunctional PD beliefs.....	133
2.4.4.4 Total variance explained.....	133
2.4.4.5 Relative importance of predictors.....	134
2.4.5 PD “Type” Profiles .....	135
2.4.5.1 The role of Values.....	138
2.4.6 Limitations .....	140
2.4.7 Conclusion .....	141
<b>Chapter 3: The Relationships between Personality Disorder Features, Dysfunctional Schemas and SNAP Maladaptive Personality Traits (Study 2).....</b>	<b>142</b>
3.1 Introduction.....	142
3.2 Method.....	145
3.2.1 Participants.....	145
3.2.2 Materials.....	146
3.2.2.1 SNAP maladaptive personality traits.....	146

3.2.2.2 Sociodemographic questions.....	147
3.2.2.3 PD features.....	147
3.2.2.4 EMSs.....	148
3.2.2.5 Dysfunctional PD beliefs.....	148
3.2.2.6 Psychological distress.....	148
3.2.3 Procedure.....	148
3.3 Results.....	150
3.3.1 Data Screening.....	150
3.3.2 Descriptive Statistics.....	153
3.3.3 Relationships between SNAP Traits and Dysfunctional Schemas.....	156
3.3.3.1 Relationships between SNAP traits and EMSs.....	156
3.3.3.2 Relationships between SNAP traits and dysfunctional PD beliefs....	159
3.3.4 Relationships between PD Features and SNAP Traits.....	161
3.3.5 Would Controlling for the Effects of Psychological Distress and General PD Symptomology Influence Specific Relationships between: (a) EMSs and PBQ Dysfunctional PD Belief Scales; (b) EMSs and WISPI-IV PD scales; and (c) PBQ Dysfunctional PD Belief Scales and WISPI-IV PD Scales? .....	164
3.3.5.1 Relationships between psychological distress and EMSs, dysfunctional PD beliefs and PD features.....	164
3.3.5.2 Relationships between EMSs and dysfunctional PD beliefs.....	165
3.3.5.3 Relationships between EMSs and PD features.....	168
3.3.5.4 Relationships between dysfunctional PD beliefs and PD features...	170
3.3.6 Predictors of PD Features.....	172
3.3.6.1 Predictors of paranoid PD features.....	174
3.3.6.2 Predictors of schizoid PD features.....	177
3.3.6.3 Predictors of schizotypal PD features.....	179
3.3.6.4 Predictors of histrionic PD features.....	181
3.3.6.5 Predictors of narcissistic PD features.....	184
3.3.6.6 Predictors of antisocial PD features.....	187
3.3.6.7 Predictors of borderline PD features.....	191
3.3.6.8 Predictors of avoidant PD features.....	195
3.3.6.9 Predictors of dependent PD features.....	197
3.3.6.10 Predictors of obsessive-compulsive PD features.....	200
3.3.6.11 Predictors of passive-aggressive PD features.....	203

3.4 Discussion.....	207
3.4.1 Are there Theoretically-Meaningful Relationships between SNAP Traits and Dysfunctional Schemas? .....	207
3.4.2 Are there Theoretically-Meaningful Relationships between PD Features and SNAP Traits?.....	210
3.4.3 Would Controlling for Psychological Distress and General PD Symptomology Influence the Relationships between EMSs, Dysfunctional PD Beliefs and PD Features? .....	213
3.4.3.1 Relationships with psychological distress.....	213
3.4.3.2 Relationships between EMSs and dysfunctional PD beliefs.....	214
3.4.3.3 Relationships between EMSs and PD features.....	215
3.4.3.4 Relationships between dysfunctional PD beliefs and PD features... ..	216
3.4.4 Can Dysfunctional Schemas Incrementally Add to the Prediction of PD Features Over and Above SNAP Traits? What are the Most Salient Predictors?.....	218
3.4.4.1 SNAP traits.....	218
3.4.4.2 EMSs.....	220
3.4.4.3 Dysfunctional PD beliefs.....	222
3.4.4.4 Total variance explained.....	222
3.4.4.5 Relative importance of predictors.....	223
3.4.5 PD “Type” Profiles .....	225
3.4.5.1 The role of Eccentric Perceptions.....	226
3.4.6 Limitations .....	228
3.4.7 Conclusion .....	228
<b>Chapter 4: Personality Traits and Dysfunctional Schemas in Clinical and Non-Clinical Groups: An Exploratory Australian Study (Study 3).....</b>	<b>229</b>
4.1 Introduction.....	229
4.2 Method.....	231
4.2.1 Participants.....	231
4.2.1.1 Clinical group.....	232
4.2.1.2 Non-clinical groups.....	235
4.2.2 Materials.....	236
4.2.2.1 Sociodemographic questions.....	236
4.2.2.2 PD features.....	236

4.2.2.3 SNAP maladaptive personality traits.....	237
4.2.2.4 FFM personality traits. ....	237
4.2.2.5 EMSs. ....	237
4.2.2.6 Dysfunctional PD beliefs.....	237
4.2.2.7 Psychological distress.....	237
4.2.3 Procedure .....	237
4.2.3.1 Clinical participants recruited from the counselling/outreach service.....	237
4.2.3.2 Clinical participants recruited from the private psychiatric hospital.....	238
4.3 Results.....	239
4.3.1 Overview .....	239
4.3.2 Between-Groups Differences on PD Features and Psychological Distress.....	240
4.3.3 Between-Groups Differences on Personality Traits.....	242
4.3.3.1 Between-groups differences on FFM traits. ....	242
4.3.3.2 Between-groups differences on SNAP traits.....	245
4.3.4 Between-Groups Differences on Dysfunctional Schemas .....	246
4.3.4.1 Between-groups differences on EMSs. ....	246
4.3.4.2 Between-groups differences on dysfunctional PD beliefs.....	250
4.4 Discussion.....	252
4.4.1 Characteristics of the Clinical Group.....	252
4.4.2 Between-Groups Differences on Personality Traits.....	252
4.4.2.1 Between-groups differences on FFM traits. ....	253
4.4.2.2 Between-groups differences on SNAP traits.....	255
4.4.3 Between-Groups Differences on Dysfunctional Schemas .....	256
4.4.3.1 Between-groups differences on EMSs. ....	256
4.4.3.2 Between-groups differences on dysfunctional PD beliefs.....	257
4.4.4 Traits, Dysfunctional Schemas and PD Features .....	257
4.4.5 Limitations .....	259
4.4.6 Conclusion .....	260
<b>Chapter 5: General Discussion.....</b>	<b>261</b>
5.1 Introduction.....	261

5.2 Are there Theoretically-Meaningful Relationships between Personality Traits and Dysfunctional Schemas? .....	262
5.3 Are there Theoretically-Meaningful Relationships between EMSs and Dysfunctional PD Beliefs? .....	264
5.4 Can Dysfunctional Schemas Incrementally Add to the Prediction of PD Features Over and Above Personality Traits? .....	265
5.4.1 Percentage of Variance in PD Features Explained by Traits and Dysfunctional Schemas .....	266
5.4.2 Possible Mediation Effects .....	268
5.5 Are Unique Constellations of Trait and Dysfunctional Schema Predictors Differentially Related to PD Features? .....	270
5.6 Are There Differences between Clinical and Non-Clinical Groups on Trait and Dysfunctional Schema Scores? .....	278
5.7 Key Implications .....	281
5.8 Future Directions .....	283
5.9 Conclusion .....	284
<b>References .....</b>	<b>286</b>
<b>Appendices .....</b>	<b>312</b>

### List of Tables

Table 1.1	<i>DSM-IV-TR General Diagnostic Criteria for PD</i> .....	6
Table 1.2	<i>Description of the DSM-IV-TR PDs</i> .....	7
Table 1.3	<i>Description of the FFM Domain and Facet Traits</i> .....	14
Table 1.4	<i>Hypothesised Directional Relationships between DSM-IV-TR PDs and FFM Facet Traits</i> .....	17
Table 1.5	<i>Overview of Key Published Studies on the Relationships between PDs and FFM Facet Traits</i> .....	19
Table 1.6	<i>Description of the SNAP Maladaptive Personality Traits</i> .....	24
Table 1.7	<i>Hypothesised Directional Relationships between DSM-IV-TR PDs and SNAP Maladaptive Traits</i> .....	26
Table 1.8	<i>Overview of Key Published Studies on the Relationships between PDs and SNAP Traits</i> .....	27
Table 1.9	<i>Dysfunctional Beliefs Associated with Each DSM-IV-TR PD</i> .....	33
Table 1.10	<i>Overview of Key Published Studies on the Relationships between PDs and PBQ Dysfunctional PD Belief Scales</i> .....	34
Table 1.11	<i>Descriptions of Early Maladaptive Schemas</i> .....	38
Table 1.12	<i>Overview of Key Published Studies on the Relationships between PDs and EMSs</i> .....	40
Table 2.1	<i>Sample Characteristics</i> .....	57
Table 2.2	<i>Descriptive Statistics and Reliability of the WISPI-IV Scales</i> .....	65
Table 2.3	<i>Descriptive Statistics and Reliability of the NEO-PI-R Scales</i> .....	67
Table 2.4	<i>Descriptive Statistics and Reliability of the YSQ-S3 Scales</i> .....	68
Table 2.5	<i>Descriptive Statistics and Reliability of the PBQ Scales</i> .....	68
Table 2.6	<i>Correlations between FFM Traits and EMSs</i> .....	71
Table 2.7	<i>Correlations between FFM Traits and PBQ Dysfunctional PD Belief Scales</i> .....	73
Table 2.8	<i>Correlations between EMSs and PBQ Dysfunctional PD Belief Scales</i> .....	75
Table 2.9	<i>Correlations between FFM Traits and PD Features</i> .....	78
Table 2.10	<i>Correlations between EMSs and PD Features</i> .....	80
Table 2.11	<i>Correlations between PBQ Dysfunctional PD Belief Scales and PD Features</i> .....	82

Table 2.12	<i>Hierarchical Regression Results Predicting Paranoid PD</i>	
	<i>Features</i> .....	86
Table 2.13	<i>Hierarchical Regression Results Predicting Schizoid PD</i>	
	<i>Features</i> .....	89
Table 2.14	<i>Hierarchical Regression Results Predicting Schizotypal PD</i>	
	<i>Features</i> .....	91
Table 2.15	<i>Hierarchical Regression Results Predicting Histrionic PD</i>	
	<i>Features</i> .....	93
Table 2.16	<i>Hierarchical Regression Results Predicting Narcissistic PD</i>	
	<i>Features</i> .....	96
Table 2.17	<i>Hierarchical Regression Results Predicting Antisocial PD</i>	
	<i>Features</i> .....	99
Table 2.18	<i>Hierarchical Regression Results Predicting Borderline PD</i>	
	<i>Features</i> .....	102
Table 2.19	<i>Hierarchical Regression Results Predicting Avoidant PD</i>	
	<i>Features</i> .....	106
Table 2.20	<i>Hierarchical Regression Results Predicting Dependent PD</i>	
	<i>Features</i> .....	109
Table 2.21	<i>Hierarchical Regression Results Predicting Obsessive-Compulsive PD</i>	
	<i>Features</i> .....	113
Table 2.22	<i>Hierarchical Regression Results Predicting Passive-Aggressive PD</i>	
	<i>Features</i> .....	117
Table 2.23	<i>Direct and Indirect Predictors of PD Features</i> .....	136
Table 3.1	<i>Sample Characteristics</i> .....	146
Table 3.2	<i>Descriptive Statistics and Reliability of the WISPI-IV Scales</i> .....	153
Table 3.3	<i>Descriptive Statistics and Reliability of the SNAP-2 Scales</i> .....	154
Table 3.4	<i>Descriptive Statistics and Reliability of the YSQ-S3 Scales</i> .....	155
Table 3.5	<i>Descriptive Statistics and Reliability of the PBQ Scales and K10 Total Scale</i> .....	156
Table 3.6	<i>Correlations between SNAP Traits and EMSs</i> .....	158
Table 3.7	<i>Correlations between SNAP Traits and PBQ Dysfunctional PD Belief Scales</i> .....	160
Table 3.8	<i>Correlations between SNAP Traits and PD Features</i> .....	163
Table 3.9	<i>Correlations between K10, YSQ-S3, PBQ and WISPI-IV Scales</i> .....	165

Table 3.10	<i>Correlations and Partial Correlations between EMSs and PBQ Dysfunctional PD Belief Scales .....</i>	167
Table 3.11	<i>Correlations and Partial Correlations between EMSs and PD Features.....</i>	169
Table 3.12	<i>Correlations and Partial Correlations between PD Features and PBQ Dysfunctional PD Belief Scales .....</i>	171
Table 3.13	<i>Hierarchical Regression Results Predicting Paranoid PD Features.....</i>	174
Table 3.14	<i>Hierarchical Regression Results Predicting Schizoid PD Features.....</i>	177
Table 3.15	<i>Hierarchical Regression Results Predicting Schizotypal PD Features.....</i>	179
Table 3.16	<i>Hierarchical Regression Results Predicting Histrionic PD Features.....</i>	181
Table 3.17	<i>Hierarchical Regression Results Predicting Narcissistic PD Features.....</i>	185
Table 3.18	<i>Hierarchical Regression Results Predicting Antisocial PD Features.....</i>	188
Table 3.19	<i>Hierarchical Regression Results Predicting Borderline PD Features.....</i>	192
Table 3.20	<i>Hierarchical Regression Results Predicting Avoidant PD Features.....</i>	195
Table 3.21	<i>Hierarchical Regression Results Predicting Dependent PD Features.....</i>	198
Table 3.22	<i>Hierarchical Regression Results Predicting Obsessive-Compulsive PD Features.....</i>	200
Table 3.23	<i>Hierarchical Regression Results Predicting Passive-Aggressive PD Features.....</i>	203
Table 3.24	<i>Direct and Indirect Predictors of PD Features .....</i>	225
Table 4.1	<i>Sociodemographic Characteristics of the Participants in Each Group.....</i>	232
Table 4.2	<i>Self-Reported Diagnostic Characteristics of the Clinical Group .....</i>	234
Table 4.3	<i>Clinical Participants' Self-Reported Reasons for Seeking Treatment.....</i>	235



Table 4.4	<i>Between-Groups Differences on WISPI-IV PD Scales</i> .....	241
Table 4.5	<i>Between-Groups Differences on FFM Traits</i> .....	244
Table 4.6	<i>Between-Groups Differences on SNAP Traits</i> .....	246
Table 4.7	<i>Between-Groups Differences on EMSs</i> .....	248
Table 4.8	<i>Between-Groups Differences on PBQ Dysfunctional PD Belief Scales</i> .....	251
Table 4.9	<i>Personality Trait and Dysfunctional Schema Dimensions that Differentiated Clinical and Non-Clinical Groups</i> .....	258
Table 5.1	<i>Comparison of the PD Type Profiles Obtained in this Research and the Trait Profiles Proposed for DSM-5</i> .....	272

**List of Figures**

<i>Figure 4.1.</i> WISPI-IV PD scale profiles of the clinical and non-clinical groups.....	240
<i>Figure 4.2.</i> FFM trait profiles of the clinical group and the Study 1 non-clinical group.....	243
<i>Figure 4.3.</i> SNAP trait profiles of the clinical group and the Study 2 non-clinical group.....	245
<i>Figure 4.4.</i> EMS profiles of the clinical and non-clinical groups.....	247
<i>Figure 4.5.</i> Dysfunctional PD belief profiles of the clinical and non-clinical groups.....	250

## List of Appendices

<b>Appendix A</b>	Information Letter and Consent Forms for Study 1 .....	312
	A.1 Information Letter .....	312
	A.2 Consent Forms .....	314
<b>Appendix B</b>	ACU Human Research Ethics Committee Approval Notice for Study 1.....	316
<b>Appendix C</b>	Information Letter and Consent Forms for Study 2 .....	317
	C.1 Information Letter.....	317
	C.2 Consent Forms .....	319
<b>Appendix D</b>	ACU Human Research Ethics Committee Approval Notice for Study 2.....	321
<b>Appendix E</b>	Information Letter and Consent Forms for Study 3 .....	322
	E.1 Information Letter for Counselling/Outreach Service .....	322
	E.2 Consent Forms for Counselling/Outreach Service .....	324
	E.3 Information Letter for Private Psychiatric Hospital.....	326
	E.4 Consent Forms for Private Psychiatric Hospital.....	328
<b>Appendix F</b>	Research Ethics Committee and Agency Approval Notices for Study 3.....	331
	F.1 ACU Human Research Ethics Committee Approval Notice for Study 3.....	331
	F.2 Jesuit Social Services Connexions Program Approval Notice.....	332
	F.3 The Melbourne Clinical Research Ethics Committee Approval Notice.....	333

## Chapter 1: Literature Review

### 1.1 Introduction

The overall aim of this research was to examine the relationships between personality traits, dysfunctional schemas and personality disorder (PD) features in order to understand personality pathology from an integrated perspective that incorporates some of the key elements from both trait and cognitive-behavioural theories of personality disorders (PDs).

During the last two decades, critics of the fourth edition of the *Diagnostic and Statistical Manual of Mental Disorders* (DSM-IV-TR; American Psychiatric Association [APA], 2000) and the tenth edition of the *International Statistical Classification of Diseases and Related Health Problems* (ICD-10; World Health Organization [WHO], 1992) PD nosology have become increasingly vocal in their calls for a dimensional alternative to the problematic categorical system of classifying PDs. Several competing dimensional models have been proposed (Trull & Durrett, 2005), with the majority of these models focusing exclusively on empirically-derived personality traits in the conceptualisation and measurement of PD constructs (Widiger & Simonsen, 2005).

Personality traits are enduring dispositional tendencies commonly defined as “dimensions of individual differences in tendencies to show consistent patterns of thoughts, feelings, and actions” (McCrae & Costa, 2003, p. 25). Proponents of dimensional trait models assert that combinations of general and/or maladaptive personality traits underlie and cut across the DSM-IV-TR categorical PD syndromes (Widiger, Livesley, & Clark, 2009). It can be argued that a substantial overlap in variance between measures of trait and PD constructs would indicate that the particular trait model adequately captures the range of personality pathology features encoded in the DSM-IV-TR PD categories and thus may be a suitable dimensional replacement for the existing categorical model of classifying PDs (Trull, 2005). However, as will be reviewed later in this chapter, research has shown that personality traits alone typically account for only a modest proportion of the variance in measures of the DSM-IV-TR PDs. Therefore, an important research question is whether incremental predictive variance in personality pathology can be accounted for by constructs that are independent from dimensional trait models (Morey et al., 2007). Dyce (1997) suggested that other constructs such as cognitive distortions,

dysfunctional beliefs, personal evaluations and intelligence could potentially account for the remaining variance. Yet, there has been a paucity of research to date that has examined whether such constructs can explain additional variance in DSM-IV-TR PD features over and above the variance accounted for by traits.

There are some other potential problems with conceptualising and assessing PDs solely through the use of trait dimensions. The DSM-IV-TR is ostensibly an atheoretical diagnostic manual of mental disorders that was designed to be used by clinicians and researchers of all theoretical orientations (APA, 2000). Thus, as Wakefield (2008) pointed out, if PDs are conceptualised solely using an empirically-derived dimensional trait model, then “PD theory will be subsumed under personality-trait theory” (p. 379). Given that there are many theories of personality and PDs (Lezenweger & Clarkin, 2005; Millon, 2011), concern has been raised as to whether traits should be the basic units of PD diagnosis. For instance, Shedler et al. (2010) argued that: “The primary unit of [PD] diagnosis should be a personality syndrome—a configuration or pattern of functionally interrelated personality processes encompassing cognition, affectivity, interpersonal functioning, behavior, coping, and defense” (p. 1026). It must be noted, however, that the DSM-IV-TR’s definition of PD is in fact trait-based (Skodol, Clark, et al., 2011). This and other definitional issues will be discussed in further detail throughout this chapter.

Another potential difficulty with conceptualising and assessing PDs solely through the use of traits is that trait theory has generated little research on treatment strategies (Heim & Westen, 2009). In a report for the British Psychological Society, Alwin et al. (2006) pointed to the disconnect between trait-based diagnostic descriptions of PDs and the theories or approaches that clinicians commonly use to treat PDs (e.g., psychodynamic, cognitive-behavioural, etc). Specifically, Alwin et al. maintained that traits refer to typical observable or surface behaviours and hence do not explain the causes of behaviours. In contrast, the deep and unobservable structures and processes posited by other theoretical approaches (e.g., motives, schemas, defense mechanisms, coping styles, etc) are said to provide a more basic explanation of the causes of behaviour and are also targets for change in treatment (Alwin et al., 2006). Thus, Alwin et al. argued that an integration of trait description and other theoretical personality constructs is vital for the classification of PDs as “[PD] treatment is rarely chosen in relation to personality traits” (p. 15), but rather is chosen in relation these deeper personality structures and processes.

In a paper entitled “From Surface to Depth: Diagnosis and Assessment in Personality Pathology”, Bornstein (2007) advanced a similar position to that of Alwin et al. (2006). Bornstein argued that “atheoretical descriptions of PDs are inconsistent with the way clinicians think about, diagnose, and treat personality-disordered patients” (p. 99). Bornstein further argued that it is more useful to conceptualise PDs using key elements from multiple theoretical frameworks (e.g., traits from trait theory, schemas from cognitive-behavioural theory, defense mechanisms from psychoanalytic theory, etc) as each theory emphasises constructs that are presumed to play a fundamental role in the development and expression of personality pathology. Moreover, some constructs may be more useful for understanding, describing and/or treating certain aspects of personality pathology than others (Bornstein, 2007). Thus, Bornstein proposed a reformulated approach to PD diagnosis and assessment that entails: (a) formally conceptualising each DSM-IV-TR PD syndrome in terms of key elements or constructs from multiple theoretical frameworks; and (b) using psychological tests and questionnaires to gather information about the key elements or constructs from these theoretical frameworks and applying this information in the diagnosis, case conceptualisation and treatment of PDs. Bornstein’s proposal to conceptualise PDs using constructs from multiple theoretical frameworks is in line with the broader perspective whereby personality itself is conceptualised as a system of typically hierarchical, inter-related structures and dynamic processes from the extant theoretical approaches (Livesley, 2003; Luyten & Blatt, 2011; McAdams & Pals, 2006; McCrae & Costa, 2008b; Wright, 2011). One particular theory, Five-Factor Theory (McCrae & Costa, 2008b), served as the overarching theoretical framework for the current research and will be discussed in more detail later in section 1.5.4.

Just as dimensional trait models have gained recognition as possible replacements for the DSM-IV-TR’s categorical system for classifying and describing PDs, cognitive-behavioural models have received increased attention over recent years for the treatment of PDs. Central to cognitive-behavioural theories is the notion that distortions in thinking and information-processing predispose individuals towards psychological symptoms and disorders (Cottraux & Blackburn, 2001). Specifically, cognitive-behavioural theories propose that dysfunctional cognitive structures known as schemas, or maladaptive core belief systems about oneself, others and events, form the core of an individual’s self-concept and play an

important role in the development and maintenance of PDs as they influence the individual's thoughts, feelings and behaviours (Beck, Freeman, Davis, & Associates, 2004; Young, Klosko, & Weishaar, 2003).

Distorted cognition is a recognised component of DSM-IV-TR PDs (APA, 2000) and is a pivotal target for change in most PD treatments (Livesley, 2003). In fact, the Work Group tasked with reformulating the PD section for DSM-5 recently asserted that: "Personality psychopathology fundamentally emanates from disturbances in thinking about oneself and others" (Skodol, Clark, et al., 2011, p. 5). Thus, in addition to personality traits, cognitive constructs such as dysfunctional schemas may be important to include in any PD conceptualisation. Indeed, McCrae (2006) reached this very conclusion in a discussion on the contributions of cognitive distortions and dysfunctional schemas to personality pathology. Similarly, Tackett, Balsis, Oltmanns, and Krueger (2009) argued that "deficits in the ability to understand oneself and others [e.g., dysfunctional schemas] represent an important element of PDs that goes beyond variations in temperament and personality traits" (p. 691). In line with this point is the argument that the stable aspects of PD features and behaviour stem from rigid and dysfunctional core beliefs or schemas about the self, others and events (Bornstein, 2011; Weishaar & Beck, 2006). It is therefore surprising that there has been little research on the relationships between traits and dysfunctional schemas or on the inter-relationships between traits, dysfunctional schemas and PDs. The present research was designed to fill this gap in the literature.

This chapter will next present an overview of the current DSM-IV-TR conceptualisation of PDs. After discussing the strengths and limitations of the DSM-IV-TR's categorical approach to PD classification, this chapter will then review relevant literature pertaining to the use of two dimensional trait models in the conceptualisation of PDs. Next, the relevant literature pertaining to two cognitive-behavioural models of PDs will be reviewed. Subsequently, a discussion about conceptualising PDs using traits and dysfunctional schemas in accordance with an integrated theoretical framework will be presented. The chapter concludes with the presentation of the general aims and research questions of this thesis.

## **1.2 Personality Disorders**

The PDs are an intriguing, yet controversial group of mental disorders that are contained within the official psychiatric nosology. Although personality

pathology has been recognised throughout history (Millon, 2011) and in each edition of the DSM (Oldham, 2009), the publication of DSM-III (APA, 1980) saw the birth of contemporary nosological formulations of PDs. DSM-III provided explicit diagnostic criteria sets for each PD and introduced a multi-axial format that saw PDs placed on a separate axis (Axis II) from the episodic psychiatric disorders (Axis I) (Widiger, 2001). Further refinements and changes to the PD diagnostic criteria were made in DSM-III-R (APA, 1987) and DSM-IV (APA, 1994), with changes in the latter carrying over into the current version, that is, the DSM-IV-TR (APA, 2000).

### **1.2.1 DSM-IV-TR Conceptualisation of PDs**

The DSM-IV-TR continues the DSM-III's nosological tradition of classifying PDs as distinct diagnostic categories on Axis II. With its roots in Kraepelinian assumptions about mental illness, the DSM-IV-TR is based on a medical model in that it delineates boundaries between normality and abnormality and conceptualises all mental disorders as discrete medical conditions (Trull & Durrett, 2005). According to the DSM-IV-TR, PDs are "qualitatively distinct clinical syndromes" (APA, 2000, p. 689) that resemble disease states and are conceptualised as being either present or absent in an individual. In this scheme, the presence or absence of symptoms of pathology, as determined by specific sets of behavioural criteria, is the primary consideration for diagnosticians because it is assumed that any observed criterion symptoms reflect manifestations of an individual's underlying maladaptive personality (Saulsman & Page, 2004).

Table 1.1 displays the DSM-IV-TR's general diagnostic criteria for PD. As shown in this table, the DSM-IV-TR defines a PD as an enduring, pervasive and inflexible pattern of inner experience and behaviour that deviates from cultural norms and leads to distress or impairments in functioning (APA, 2000). The DSM-IV-TR definition elaborates that this enduring pattern of inner experience and behaviour must be manifested in at least two out of four areas of functioning: cognition, affectivity, interpersonal behaviour and impulse control. Distorted cognition and interpersonal problems are arguably typical features of all PDs, whereas affective and impulse control problems can be viewed along a continuum depending on the PD category in question (Skodol, 2009).



Table 1.1

*DSM-IV-TR General Diagnostic Criteria for PD*

<b>PD is defined as:</b>
<p><b>A.</b> An enduring pattern of inner experience and behaviour that deviates markedly from the expectations of the individual's culture. This pattern is manifested in two or more of the following areas:</p> <ol style="list-style-type: none"> <li>1. <b>Cognition</b> (i.e., ways of perceiving and interpreting self, other people and events)</li> <li>2. <b>Affectivity</b> (i.e., the range, intensity, lability and appropriateness of emotional response)</li> <li>3. <b>Interpersonal functioning</b></li> <li>4. <b>Impulse control</b></li> </ol> <p><b>B.</b> The enduring pattern is inflexible and pervasive across a broad range of personal and social situations.</p> <p><b>C.</b> The enduring pattern leads to clinically significant distress or impairment in social, occupational or other important areas of functioning.</p> <p><b>D.</b> The pattern is stable and of long duration, and its onset can be traced back at least to adolescence or early adulthood.</p> <p><b>E.</b> The enduring pattern is not better accounted for as a manifestation or consequence of another mental disorder.</p> <p><b>F.</b> The enduring pattern is not due to the direct physiological effects of a substance or a general medical condition.</p>

*Note.* Adapted from APA (2000, p. 689).

The DSM-IV-TR defines PDs in terms of personality traits but specifies that it is only when personality traits are “inflexible and maladaptive” and cause either “significant functional impairment” or “subjective distress” that they then constitute a PD (APA, 2000, p. 686). As Livesley (2001) pointed out, this definition implies a trait-based dimensional continuity between normal and maladaptive personality functioning. However, there is a striking disjunction between the DSM-IV-TR's trait-based definition of PDs and the diagnostic criteria used to assess PDs (Krueger, Eaton, Derringer, et al., 2011). That is, the DSM-IV-TR PD criteria are not “personality traits” per se. Rather, the PD criteria are a mixture of specific behavioural acts, psychological symptoms and other manifestations of underlying personality traits that are presumed to comprise the relevant categorical PD syndrome (Skodol, Clark, et al., 2011).

As shown in Table 1.2, the DSM-IV-TR recognises 10 PD categories and groups them into three separate clusters based on their descriptive similarities (APA, 2000). Cluster A, the odd/eccentric cluster, includes the paranoid, schizoid and schizotypal PDs. Cluster B, the dramatic/emotional/erratic cluster, includes the histrionic, narcissistic, antisocial and borderline PDs. Finally, Cluster C, the anxious/fearful cluster, includes the avoidant, dependent and obsessive-compulsive PDs. The DSM-IV-TR also contains a PD Not Otherwise Specified (PDNOS)

category and two PD categories (passive-aggressive and depressive) in an appendix for further study. The DSM-IV-TR's classification of PDs is generally comparable with that of the ICD-10 (WHO, 1992), however there are some notable differences. For example, the ICD-10 nosology does not recognise narcissistic PD and it includes schizotypal PD in the section for schizophrenia and other psychotic disorders rather than in the PD section.

Table 1.2

*Description of the DSM-IV-TR PDs*

PD Category	Description
<b>Cluster A:</b> <i>Appearance is odd or eccentric.</i>	
Paranoid PD	Pattern of distrust and suspiciousness where others' motives are interpreted as malevolent.
Schizoid PD	Pattern of detachment from social relationships and a restricted range of emotional expression.
Schizotypal PD	Pattern of acute discomfort in close relationships, cognitive or perceptual distortions and behavioural eccentricities.
<b>Cluster B:</b> <i>Appearance is dramatic, emotional or erratic.</i>	
Antisocial PD	Pattern of disregard for, and violation of, the rights of others.
Borderline PD	Pattern of instability in interpersonal relationships, self-image and affect, and marked impulsivity.
Histrionic PD	Pattern of excessive emotionality and attention seeking.
Narcissistic PD	Pattern of grandiosity, need for admiration and lack of empathy.
<b>Cluster C:</b> <i>Appearance is anxious or fearful.</i>	
Avoidant PD	Pattern of social inhibition, feelings of inadequacy and hypersensitivity to negative evaluation.
Dependent PD	Pattern of submissive and clinging behaviour related to an excessive need to be taken care of.
Obsessive-Compulsive PD	Pattern of preoccupation with orderliness, perfectionism and control.
<b>PD Not Otherwise Specified (PDNOS)</b>	Diagnosis that is given when an individual meets the general criteria for a PD and either: (a) features of several PDs are present, but the criteria for a specific PD are not met; or (b) the individual is considered to have a PD that is not included in the classification, such as those contained in the Appendix.
<b>Appendix:</b> <i>PD categories that require further study prior to official recognition.</i>	
Depressive PD	Pattern of depressive cognitions and behaviours.
Passive-Aggressive PD	Pattern of negativistic attitudes and passive resistance to demands for adequate performance in social and occupational situations.

*Note.* Adapted from APA (2000).

In order to qualify for a DSM-IV-TR PD diagnosis, an individual must meet the general diagnostic criteria for a PD (see Table 1.1) and the criteria for at least one of the 10 PD categories or PDNOS (APA, 2000). Each DSM-IV-TR PD is assessed by between seven and nine diagnostic criteria and multiple PD diagnoses are permitted. As with other mental disorders in the DSM-IV-TR, the diagnostic criteria

for the PDs are polythetic. That is, only a subset of the criteria for each PD needs to be met in order to reach the threshold for a diagnosis. For example, a diagnosis of avoidant PD requires that any four out of a possible seven diagnostic criteria are met (APA, 2000).

### **1.2.2 Strengths and Limitations of the DSM-IV-TR's Categorical Model of PDs**

As outlined by Widiger and Frances (2002), the DSM-IV-TR's categorical system of classifying PDs has three commonly cited strengths. First, diagnostic categories have a long history in the official psychiatric classification systems and, therefore, are familiar to clinicians and researchers. Indeed, the categorical classification of mental disorders is fundamental to the neo-Kraepelinian approach to psychiatric nosology (Livesley, 2001) and a departure from categorical diagnostic rubrics would be a paradigm shift for the fields of psychiatry and clinical psychology (Widiger & Frances, 2002).

Second, diagnostic categories are easy to use. It is easier for clinicians and researchers to determine that an individual either has or does not have a PD and to communicate this categorical diagnosis to others than it is to diagnose a PD based on: (a) a profile of the degrees to which various PDs are present; or (b) multiple trait dimensions (Widiger & Frances, 2002). As noted by Frances (1993), the labels associated with categorical PD diagnoses, such as paranoid, are relatively straightforward and can rapidly convey a vivid description of an individual that may otherwise be lost in a multifaceted dimensional profile.

Finally, categorical diagnoses are consistent with clinical decision-making. Widiger and Frances (2002) observed that many clinical decisions are made in a categorical way and hence are facilitated by a categorical model of classification. For instance, clinicians must decide whether a PD is present or not, whether medication is indicated or not, whether hospitalisation is required or not, and so on.

In spite of its strengths, there are numerous well-documented problems with the DSM-IV-TR's categorical system of classifying PDs (Clark, Watson, & Reynolds, 1995; Jablensky, 2002; Trull & Durrett, 2005; Widiger, 2007; Widiger & Samuel, 2005; Widiger & Trull, 2007). Five key limitations have been repeatedly highlighted in the literature and are particularly noteworthy. The first limitation is excessive diagnostic co-occurrence amongst the PD categories. Research has shown that individuals who met the diagnostic criteria for one PD are also highly likely to

meet the diagnostic criteria for other PDs (Coid, Yang, Tyrer, Roberts, & Ullrich, 2006; Fossati et al., 2000; Zimmerman, Rothschild, & Chelminski, 2005). Excessive diagnostic co-occurrence suggests a problematic level of overlap in the PD diagnostic criteria sets and calls into question the specificity and discriminant validity of the PD categories (Bornstein, 1998; Samuel & Widiger, 2010a; Widiger & Samuel, 2005).

The second limitation is inadequate coverage of personality pathology. Studies have consistently shown that PDNOS is one of the most prevalent PD diagnoses (Chanen et al., 2004; Verheul, Bartak, & Widiger, 2007; Verheul & Widiger, 2004) and that individuals with PDNOS diagnoses experience similar dysfunctional outcomes to those with any of the recognised Cluster A, B or C PDs (Johnson, First, Cohen, & Skodol, 2005). The high prevalence of dysfunctional PDNOS diagnoses accordingly suggests that the DSM-IV-TR's existing PD classification fails to adequately capture or describe the possible range of personality pathology (Widiger & Trull, 2007). As Widiger (2007) noted, increased coverage of personality pathology in the DSM-IV-TR could be achieved by adding more PD categories; however, this would then have the drawback of exacerbating the aforementioned problem with excessive diagnostic co-occurrence.

The third limitation is the arbitrary and unstable boundary between normal and abnormal personality functioning. The DSM-IV-TR provides no justification for the different thresholds that are required to be met in order to derive each PD diagnosis (Widiger & Trull, 2007). Furthermore, the diagnostic criteria for each PD are not equally weighted in terms of their severity or maladaptivity, thus simply counting the number of criteria that an individual meets appears to be an imperfect method for deriving a PD diagnosis (Bornstein, 2011). To illustrate this drawback, it is unclear how an individual who meets five out of the nine criteria for a diagnosis of narcissistic PD would differ in important clinical respects from an individual who meets four (subthreshold) or six (diagnosis present) of the diagnostic criteria. What is clear is that the DSM-IV-TR's categorical model wherein PDs must be diagnosed as either present or absent leads to a loss of information regarding subthreshold cases (Zimmerman, in press). Interestingly, the few taxometric analyses of PDs that have been conducted with adult samples have generally failed to find clear evidence of distinct PD taxons, with the exception of a possible schizotypy taxon that encompasses a broad range of schizophrenia-spectrum psychopathology (Haslam,

Holland, & Kuppens, 2012; Haslam & Williams, 2006). Such findings further call into question the validity of the DSM-IV-TR's categorical model of PDs.

The fourth limitation is excessive heterogeneity within PD categories. As discussed in section 1.2.1, the criteria sets for the DSM-IV-TR PD categories are polythetic in that only a subset of the diagnostic criteria is required to be met in order to receive a PD diagnosis. However, polythetic criteria sets produce a great deal of heterogeneity within PD categories that critics have questioned whether the existing PD categories do actually represent qualitatively distinct disorders as purported by the DSM-IV-TR (Trull & Durrett, 2005; Widiger & Trull, 2007). For instance, there are 256 ways that an individual can meet the diagnostic criteria for borderline PD as the DSM-IV-TR requires that any combination of five out of nine criteria be met to reach the threshold for a diagnosis. Clearly, not all individuals who meet the criteria for this diagnosis would be alike with respect to their symptomology and this consequently could have implications for the treatment that is provided. Perhaps more remarkable is the fact that any two individuals with a diagnosis of obsessive-compulsive PD need not share any diagnostic criteria since only four out of eight criteria are required to be met in order to receive the diagnosis (APA, 2000).

The fifth limitation is poor reliability of PD diagnoses. Research has shown that the DSM-IV-TR PDs are not reliably diagnosed in clinical practice (Widiger, 2007). Furthermore, existing PD measures, especially self-report measures, are limited by serious deficits in test-retest, inter-rater and inter-measure reliability (Clark & Harrison, 2001). This is in contrast to measures of personality dimensions, such as traits, which typically are more reliable (Clark & Harrison, 2001).

### **1.2.3 Dimensional Models of PDs**

An alternative to the DSM-IV-TR's categorical approach to conceptualising PDs is a dimensional model of classification. Whereas categorical models classify personality pathology in terms of discrete diagnostic categories, dimensional models conceptualise personality pathology as varying along multiple continuous dimensions (Livesley, 2001). A dimensional approach to PD classification has many advantages over the existing categorical approach. Some commonly cited advantages of dimensional models include increased coverage of the range of personality pathology, resolution of the categorical classification problems of excessive diagnostic co-occurrence and within-category heterogeneity, and improved

diagnostic reliability (Trull & Durrett, 2005; Widiger, 2007; Widiger & Frances, 2002; Widiger & Trull, 2007). Other advantages include the increased retention of information regarding subthreshold cases and greater diagnostic flexibility (Widiger & Frances, 2002). Whilst many clinicians and researchers support the use of a dimensional model for PD classification, there is a lack of agreement as to its precise format (Bernstein, Iscan, & Maser, 2007; Frances, 1993; Spitzer, First, Shedler, West, & Skodol, 2008). For instance, Widiger and Simonsen (2005) conducted a review of the literature and found no less than 18 proposals of alternative dimensional models of PD classification for DSM-5.

In 2011 the DSM-5 PD Work Group published a revised version of their initial proposed reformulation of the PD classification (Skodol, Bender, et al., 2011; Skodol, Clark, et al., 2011). The Work Group's current proposal is a hybrid categorical-dimensional model of PD classification that focuses on impairments in personality functioning and the presence of pathological personality traits in a revised definition of PD (APA, 2012c). This proposed PD model has three main components (APA, 2012d). The first component is a 5-point Levels of Personality Functioning Scale which diagnosticians must use to rate the severity of personality dysfunction based on the degree of impairment in self (identity and self-direction) and interpersonal (empathy and intimacy) domains (APA, 2012b). The second component is recognition of six specific PD types (antisocial, avoidant, borderline, narcissistic, obsessive-compulsive and schizotypal) and a PD Trait Specified (PDTs) type that replaces the DSM-IV-TR's PDNOS category and excluded PDs (paranoid, schizoid, histrionic and dependent). Each proposed DSM-5 PD type has its own set of diagnostic criteria, all of which consist of core impairments in personality functioning and unique combinations of pathological personality traits that define the disorder (APA, 2012a). The third component is a hierarchical dimensional trait model that consists of five higher-order trait domains (Negative Affectivity, Detachment, Antagonism, Disinhibition and Psychoticism), each of which subsume between three and nine lower-order pathological facet traits of which there are 25 in total (APA, 2012d; Krueger, Derringer, Markon, Watson, & Skodol, in press). It is proposed that diagnosticians rate the five domains and 25 facet traits on a 4-point scale of descriptiveness (APA, 2012d). As mentioned above, each PD type is comprised of a designated combination of pathological traits which must be rated as part of the diagnostic criteria for that PD. However, if an individual does not meet

the criteria for one of the six PD types but does meet the revised general criteria for a PD (APA, 2012a), then a diagnosis of PDTS is given whereby a profile of the individual's elevated pathological traits is recorded (APA, 2012c). In order to facilitate the transition from the DSM-IV-TR's categorical PD model to the DSM-5's hybrid categorical-dimensional model of PD classification, the Work Group has assigned the combinations of pathological traits that are said to define each DSM-IV-TR PD category (APA, 2011).

Arguably, the most significant aspect of the DSM-5's proposed revision to the PD classification is the use of a dimensional trait model that links constellations of traits to specific PD types (APA, 2011). Unlike the DSM-IV-TR's PD classification, the dimensional trait component of the DSM-5's proposed model grounds both the definition and diagnosis of PD in a trait-based system, which is in line with dimensional trait models of PDs (Skodol, Clark, et al., 2011). As Tackett et al. (2009) pointed out, rather than using a cumbersome set of overlapping diagnostic criteria for each PD category as is the case in DSM-IV-TR, a smaller set of universal personality trait dimensions could be used to identify and define PD prototypes that have clinical, research or theoretical importance. In a dimensional trait system of PDs, many multidimensional profile configurations are possible because each individual will obtain his or her own profile of prominent traits (Skodol, 2011). Therefore, trait dimensions could be useful for differentiating variants of broad-based personality pathology constructs, such as the grandiose and vulnerable expressions of narcissism (J. D. Miller, Widiger, & Campbell, 2010; Pincus & Lukowitsky, 2010) or the primary and secondary characteristics of psychopathy (Ross, Lutz, & Bailley, 2004). The DSM-5 PD Work Group have emphasised that their proposed model is undergoing empirical validation and could be further revised (APA, 2012d; Skodol, Clark, et al., 2011). The current research focused on two alternative dimensional trait models of PDs, which will be discussed next.

### **1.3 Dimensional Trait Models of PDs**

In dimensional trait models PDs are not conceptualised as discrete diagnostic categories, rather they are viewed as representing extreme and maladaptive variants of continuous personality traits that "merge imperceptibly into normality and into one another" (APA, 2000, p. 689). The goal of dimensional trait models of PDs is to identify the constellations of general and/or maladaptive personality traits that

underlie the features, symptoms or behavioural manifestations of personality pathology and to reconceptualise PDs using these trait dimensions (Widiger et al., 2009). A particular combination of salient traits in an individual's multidimensional profile can then be summarised through the use of a label or matched to an existing diagnostic prototype, such as the DSM-IV-TR PD categories, if desired, so as to simplify communication (Tackett et al., 2009; Widiger, Costa, & McCrae, 2002; Widiger & Mullins-Sweatt, 2009).

Two promising dimensional trait models of PDs that have received increased research attention are the Five-Factor Model (FFM) and the trait and temperament model operationalised in the Schedule for Nonadaptive and Adaptive Personality (SNAP). Both models were the focus of studies in this thesis.

### **1.3.1 The FFM of General Personality Traits**

As McCrae, Lockenhoff, and Costa (2005) cogently pointed out, “If Axis II psychopathology is supposed to be a reflection of personality, then it would seem logical to base its classification on the structure of personality itself” (p. 270). Within the personality literature, the broad consensus is that normal or general personality traits can be organised around five higher-order orthogonal dimensions (Digman, 1990). These five dimensions are Neuroticism, Extraversion, Openness to Experience (Openness), Agreeableness and Conscientiousness and they collectively constitute the FFM of personality structure. A large body of research confirms the comprehensiveness, reliability, validity and utility of the FFM in describing general personality traits (Costa & McCrae, 2008; McCrae, 2009; McCrae & Costa, 2008a; McCrae & John, 1992).

With its origins in the lexical approach, which hypothesises that the most important individual differences become encoded in language (Goldberg, 1993), the FFM is the end-product of many factor-analytic studies of English language trait adjectives and personality questionnaire scales (John, Naumann, & Soto, 2008). The FFM is an empirically-derived hierarchical model of general personality trait structure that encompasses higher- and lower-order bipolar trait dimensions (Costa & McCrae, 1995). For instance, within the most widely-used measure of the FFM, the NEO Personality Inventory—Revised (NEO-PI-R; Costa & McCrae, 1992), the hierarchical structure of the FFM is operationalised in terms of the five higher-order dimensions, known as domains, each of which subsume six lower-order traits,



known as facets. Table 1.3 contains a description of the bipolar domain and facet traits of the FFM as operationalised in the NEO-PI-R, which was used in the present research.

Table 1.3

*Description of the FFM Domain and Facet Traits*

FFM Trait	Bipolar Descriptors	
	High	Low
<b>Neuroticism</b>	<i>Contrasts emotional maladjustment with emotional stability.</i>	
Anxiety	Anxious, fearful, prone to worry	Calm, relaxed
Angry Hostility	Angry, frustrated, bitter, resentful	Easygoing, slow to anger
Depression	Sad, guilty, discouraged, pessimistic	Rarely experiences depressive affect
Self-Consciousness	Self-conscious, embarrassed, ashamed, sensitive to ridicule	Less disturbed by awkward social situations
Impulsiveness	Unable to control cravings, impulses	Restrained, self-controlled
Vulnerability	Unable to cope with stress, easily overwhelmed	Capable, resilient
<b>Extraversion</b>	<i>Contrasts the level and intensity of interpersonal interaction, activity, need for stimulation and capacity for joy.</i>	
Warmth	Affectionate, friendly	Formal, reserved, distant
Gregariousness	Sociable, outgoing	Independent, socially isolated
Assertiveness	Assertive, dominant, forceful	Passive, resigned
Activity	Energetic, fast-paced, frantic	Leisurely, relaxed, slow-paced
Excitement-Seeking	Craves excitement, adventurous	Cautious, dull
Positive Emotions	Exuberant, joyful, cheerful	Serious, sombre, grim
<b>Openness</b>	<i>Contrasts open-mindedness and appreciation of divergent ideas and experiences with closed-mindedness.</i>	
Fantasy	Imaginative, unrealistic	Realistic, concrete
Aesthetics	Appreciative of aesthetics	Uninterested in aesthetics
Feelings	Receptive to inner feelings, deeper affect	Emotionally constricted, blunted affect
Actions	Unconventional, prefers novelty	Conventional, prefers routine
Ideas	Curious, willing to consider unconventional ideas	Limited intellectual curiosity
Values	Flexible, willing to question existing belief systems	Traditional, dogmatic
<b>Agreeableness</b>	<i>Contrasts a prosocial disposition with antagonism.</i>	
Trust	Trusting, gullible	Cynical, sceptical, suspicious
Straightforwardness	Sincere, forthright	Crafty, manipulative, deceptive
Altruism	Generous, giving, selfless	Self-centred, withholding, greedy
Compliance	Cooperative, docile, yielding	Critical, combative, argumentative
Modesty	Humble, meek, self-deprecating	Confident, arrogant, conceited
Tender-Mindedness	Empathic, sympathetic	Hard-headed, tough-minded
<b>Conscientiousness</b>	<i>Contrasts the level of organisation, control and motivation in goal-directed behaviour.</i>	
Competence	Capable, efficient, skilled, perfectionistic	Inept, incapable, lax, unprepared
Order	Organised, tidy, methodical	Disorganised, sloppy
Dutifulness	Scrupulous, principled, reliable	Casual, undependable, unreliable
Achievement Striving	Diligent, ambitious, a workaholic	Lackadaisical, lazy, aimless
Self-Discipline	Self-disciplined, motivated	Easily discouraged, unmotivated

Deliberation

Cautious, deliberative, ruminative

Spontaneous, hasty, rash

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*Note.* Adapted from Costa and McCrae (1992), Costa and Widiger (2002a), and Widiger, Costa, et al. (2002).

Research has shown that the FFM of personality is robust. Various factor-analytic studies have demonstrated that most, if not all, of the five domains can be extracted from several major personality questionnaires (see Piedmont, 1998). Other studies have shown that FFM traits are heritable (Jang, Livesley, & Vernon, 1996; Yamagata et al., 2006) and found in different cultures and languages (McCrae & Allik, 2002). Moreover, studies have found that FFM traits generally have high rank-order consistency (Terracciano, Costa, & McCrae, 2006) and can predict a myriad of outcomes, such as happiness, psychopathology, physical health and occupational performance (Ozer & Benet-Martinez, 2006). Importantly, FFM traits have been associated with various psychological disorders (Kotov, Gamez, Schmidt, & Watson, 2010; Malouff, Thorsteinsson, & Schutte, 2005) and may be predisposing factors in the development of psychological dysfunction (Craske, 2003; Watson, Kotov, & Gamez, 2006). Given that the FFM is a comprehensive model of the basic dimensions of personality and was developed independently of the psychiatric nosology, researchers turned their attention to investigating whether the FFM may also be useful for understanding personality pathology (Widiger & Costa, 1994).

### 1.3.2 The FFM and PDs

A large body of research using clinical and non-clinical samples has provided support for the idea that DSM-IV-TR PDs can be understood as maladaptive and extreme variants of the FFM domains (e.g., Aboaja, Duggan, & Park, 2011; Aluja, Cuevas, Garcia, & Garcia, 2007; Bagby, Marshall, & Georgiades, 2005; Bagby, Sellbom, Costa, & Widiger, 2008; Madsen, Parsons, & Grubin, 2006; McMurrin, Oaksford, & Christopher, 2010; Moran, Coffey, Mann, Carlin, & Patton, 2006; Morey, Gunderson, Quigley, & Lyons, 2000; O'Connor & Dyce, 2001; see Widiger & Costa, 2002, for an overview). Saulsman and Page (2004) performed a meta-analysis of data from 12 studies and found meaningful, though modest, effect size estimates regarding the relationships between PDs and FFM domains. Specifically, they found that all PDs were characterised by a positive relationship with Neuroticism and a negative relationship with Agreeableness, with the exception of dependent PD which was positively correlated with Agreeableness. They also found that Extraversion and to a lesser extent Conscientiousness played a discriminatory

role across the PD categories. For instance, whereas most PDs were negatively related with Extraversion, the histrionic and narcissistic PD categories were positively related with Extraversion. Likewise, whereas most PDs were negatively related with Conscientiousness, the obsessive-compulsive PD category was positively related with Conscientiousness. Openness evidenced little relationship with PDs, leading Saulsman and Page to conclude that Openness “serves no prominent role” in PD-FFM trait relationships (p. 1076). Overall, these findings suggest that most PDs can generally be described as enduring patterns of emotional maladjustment (high Neuroticism), interpersonal antagonism (low Agreeableness) and either detachment or gregariousness (low or high Extraversion) and behavioural under-control or over-control (low or high Conscientiousness), depending on the specific PD category involved (Saulsman & Page, 2004).

Given that most PDs shared a similar FFM domain-level profile, researchers suggested that a richer description and better differentiation of PDs may be achieved by conducting studies at the lower-order level of FFM facet traits (Clark, 1993b; Dyce & O'Connor, 1998). To facilitate research at this level, Widiger, Trull, Clarkin, Sanderson, and Costa (1994, 2002) hypothesised a set of directional relationships between specific PDs and FFM facet traits. The 1994 set of hypothesised PD-FFM facet trait relationships were based on the clinical literature and DSM-III-R PD criteria and associated features, while the updated 2002 set of hypothesised PD-FFM facet trait relationships are based on DSM-IV-TR PD criteria. The articulated trait constellations in these PD-FFM facet trait profiles are hypothesised to underlie the relevant PD category and the profiles are descriptive of the prototypic case (Widiger, Trull, et al., 2002). Alternative sets of hypothesised PD-FFM facet trait relationships have also been proposed, such as those based on a combination of DSM-III-R/DSM-IV-TR criteria (Trull & Widiger, 1997) or on the opinions of academic experts (Lynam & Widiger, 2001) or clinicians (Samuel & Widiger, 2004). The present research focused on the set of hypothesised PD-FFM facet trait directional relationships for DSM-IV-TR PDs that were proposed by Widiger, Trull, et al. (2002), which are displayed in Table 1.4.

Table 1.4

*Hypothesised Directional Relationships between DSM-IV-TR PDs and FFM Facet Traits*

<b>FFM Traits</b>	<b>PAR</b>	<b>SZD</b>	<b>SZT</b>	<b>ATS</b>	<b>BDL</b>	<b>HST</b>	<b>NAR</b>	<b>AVD</b>	<b>DEP</b>	<b>OBC</b>
<b>Neuroticism</b>										
Anxiety			+		+			+	+	
Angry Hostility	+			+	+		+			
Depression					+	+		+		
Self-Consciousness			+			+	+	+	+	
Impulsiveness					+					
Vulnerability					+			+	+	
<b>Extraversion</b>										
Warmth		-	-			+			+	
Gregariousness		-	-			+		-		
Assertiveness								-	-	+
Activity										
Excitement-Seeking				+		+		-		
Positive Emotions		-	-			+				
<b>Openness</b>										
Fantasy			+			+	+			
Aesthetics										
Feelings		-				+				
Actions			+							
Ideas			+							
Values										-
<b>Agreeableness</b>										
Trust	-		-		-	+			+	
Straightforwardness	-			-						
Altruism				-			-		+	
Compliance	-			-	-				+	-
Modesty							-		+	
Tender-Mindedness				-			-			
<b>Conscientiousness</b>										
Competence					-					+
Order										+
Dutifulness				-						+
Achievement Striving							+			+
Self-Discipline				-						
Deliberation				-						

*Note.* PAR = paranoid PD; SZD = schizoid PD; SZT = schizotypal PD; ATS = antisocial PD; BDL = borderline PD; HST = histrionic PD; NAR = narcissistic PD; AVD = avoidant PD; DEP = dependent PD; OBC = obsessive-compulsive PD. + indicates a hypothesised positive relationship; while - indicates a hypothesised negative relationship. Hypothesised directional relationships are based on the PD-FFM facet trait profiles proposed by Widiger, Trull, et al. (2002).

In comparison to the vast number of studies that have investigated the relationships between PDs and FFM domains, there have been fewer studies that have explored the relationships between PDs and FFM facets. While some of these studies have investigated PD-FFM facet trait relationships for all DSM-IV-TR PDs, most studies however have examined such relationships for only specific PDs (e.g., Morey et al., 2002; Quirk, Christiansen, Wagner, & McNulty, 2003) or have used only a subset of the 30 FFM facets (e.g., J. D. Miller, Pilkonis, & Clifton, 2005). Table 1.5 contains a brief overview of the key published studies that have examined PD-FFM facet trait relationships for the DSM-IV-TR PD categories using all 30 FFM facets. Two main points emerge from the information contained in this table. First, 12 out of the 14 studies listed in Table 1.5 utilised correlation analyses and their findings generally confirmed most of the hypothesised PD-FFM facet trait relationships that were explored, irrespective of the type of sample that was employed (i.e., clinical vs. non-clinical/student). Second, nine out of the 14 studies listed in the table utilised regression analyses and their findings revealed that selected subsets FFM facet traits explained generally a moderate amount of the variance in all PD categories. However, as indicated in the table, seven of these nine studies entered a priori selected subsets of FFM facet traits as predictor variables in their regression equations. Thus, a legitimate question that can be asked is whether the possible range of PD-FFM facet trait predictive relationships has been adequately explored in previous research.

Table 1.5  
*Overview of Key Published Studies on the Relationships between PDs and FFM Facet Traits*

Study	Sample	FFM Measure	PD Measure	Key Findings
Dyce & O'Connor (1998) <sup>a</sup>	614 students	NEO-PI-R	MCMII-III	<ul style="list-style-type: none"> <li>• <i>Correlations</i>: 63% of the hypothesised PD-FFM facet trait relationships made by Widiger et al. (1994) were confirmed.</li> <li>• <i>Stepwise regressions</i>: All 30 FFM facets explained between 52% (narcissistic PD) and 72% (avoidant PD) of the variance in PDs.</li> </ul>
Reynolds & Clark (2001)	94 outpatients & inpatients	NEO-PI-R	SIDP-IV	<ul style="list-style-type: none"> <li>• <i>Regressions</i>: FFM domains explained 7% (schizotypal PD) to 47% (avoidant PD) of the variance in PDs.</li> <li>• <i>Regressions</i>: Facets hypothesised by Widiger et al. (1994) to be related to each PD explained between 18% (schizotypal PD) and 58% (avoidant PD) of the variance in PDs.</li> </ul>
Trull, Widiger, & Burr (2001) <sup>a</sup>	187 students & 46 outpatients (combined sample)	SIFFM	PDQ-R (DSM-III-R PDs)	<ul style="list-style-type: none"> <li>• <i>Correlations</i>: Most hypothesised PD-FFM facet trait relationships made by Trull and Widiger (1997) were confirmed; weak support for predictions involving obsessive-compulsive, histrionic and narcissistic PDs.</li> <li>• <i>Regressions</i>: Facets predicted to be related to each PD accounted for 16% (obsessive-compulsive PD) to 57% (avoidant PD) of the variance in PDs.</li> </ul>
Yang et al. (2002)	1, 909 outpatients	NEO-PI-R	PDQ-4+	<ul style="list-style-type: none"> <li>• <i>Correlations</i>: 73% of the hypothesised PD-FFM facet trait relationships put forth by Widiger et al. (1994) were confirmed; weak support for predictions involving dependent and obsessive-compulsive PDs.</li> </ul>
De Clercq & De Fruyt (2003)	419 adolescents	NEO-PI-R	ADP-IV	<ul style="list-style-type: none"> <li>• <i>Correlations</i>: 66% of the predicted PD-FFM facet trait relationships made by Widiger, Trull, et al. (2002) were confirmed.</li> <li>• <i>Regressions</i>: Facets predicted to be related to each PD explained between 9% (obsessive-compulsive PD) and 44% (borderline PD) of the variance in PDs.</li> </ul>
Huprich (2003) <sup>a</sup>	51 outpatients	NEO-PI-R	SCID-II	<ul style="list-style-type: none"> <li>• <i>Correlations</i>: 31% of the hypothesised PD-FFM facet trait relationships made by Trull and Widiger (1997) were confirmed; weak support for predictions involving antisocial, histrionic, narcissistic, dependent and obsessive-compulsive PDs.</li> <li>• <i>Regressions</i>: Facets predicted to be related to each PD explained between 0% (obsessive-compulsive PD) to 50% (histrionic PD) of the variance in PDs.</li> </ul>

Bagby, Costa, Widiger, Ryder, & Marshall (2005) <sup>a</sup>	115 outpatients & inpatients	NEO-PI-R, SIFFM	SCID-II-PQ	<ul style="list-style-type: none"> <li>• <i>Correlations</i>: Most of the hypothesised PD-FFM facet trait relationships put forth by Widiger, Trull, et al. (2002) were confirmed; weak support for predictions involving dependent and obsessive-compulsive PDs.</li> <li>• <i>Regressions</i>: NEO-PI-R facets predicted to be related to each PD explained 11% (obsessive-compulsive PD) to 50% (avoidant PD) of the variance in PDs; SIFFM facets predicted to be related to each PD explained 5% (obsessive-compulsive PD) to 55% (avoidant PD) of the variance in PDs.</li> </ul>
O'Connor (2005)	614 students & 86 patients (combined sample)	NEO-PI-R	MCMII-III	<ul style="list-style-type: none"> <li>• <i>Correlations</i>: Modest support for the PD-FFM facet trait relationships hypothesised by Widiger, Trull, et al. (2002).</li> </ul>
De Fruyt, De Clercq, Van De Wiele, & Van Heeringen (2006) <sup>a</sup>	130 inpatients	NEO-PI-R	ADP-IV	<ul style="list-style-type: none"> <li>• <i>Correlations</i>: 47% of the predicted PD-FFM facet trait relationships proposed by Widiger, Trull, et al. (2002) were confirmed; weak support for predictions involving histrionic, narcissistic, dependent and obsessive-compulsive PDs.</li> <li>• <i>Regressions</i>: Facets predicted to be related to each PD explained between 8% (obsessive-compulsive PD) and 44% (avoidant PD) of the variance across PDs.</li> </ul>
Mullins-Sweatt, Jamerson, Samuel, Olson, & Widiger (2006) <sup>a</sup>	543 students	FEMRF	Composite PD scores from OMNI, SNAP & PDQ-4	<ul style="list-style-type: none"> <li>• <i>Correlations</i>: Modest support for the hypothesised PD-FFM facet trait relationships proposed by Samuel and Widiger (2004).</li> </ul>
Aluja, Cuevas, Garcia, & Garcia (2007)	674 students	NEO-PI-R	MCMII-III	<ul style="list-style-type: none"> <li>• <i>Correlations</i>: 61% of the hypothesised PD-FFM facet trait relationships proposed by Widiger et al. (1994) were confirmed.</li> <li>• <i>Stepwise regressions</i>: All 30 FFM facets explained 23% (schizotypal PD) to 52% (avoidant PD) of the variance across PDs.</li> </ul>
Mullins-Sweatt & Widiger (2007a) <sup>a</sup>	204 students	NEO-PI-R	MCMII-III	<ul style="list-style-type: none"> <li>• <i>Correlations</i>: 69% of the predicted PD-FFM facet trait relationships proposed by Lynam and Widiger (2001) were confirmed; weak support for predictions involving paranoid and antisocial PDs.</li> </ul>
Mullins-Sweatt & Widiger (2007b) <sup>a</sup>	94 outpatients	NEO-PI-R	SWAP-200	<ul style="list-style-type: none"> <li>• <i>Correlations</i>: Moderate support for the predicted PD-FFM facet trait relationships put forth by Lynam and Widiger (2001).</li> </ul>

Thimm (2011)	145 outpatients	NEO-PI-R	DIP-Q (All DSM-IV-TR PDs except for histrionic PD)	• <i>Hierarchical regressions:</i> After controlling for gender, facets hypothesised by Lynam and Widiger (2001) to be related to each PD explained 19% (obsessive-compulsive PD) to 62% (avoidant PD) of the variance across PDs.
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*Note.* NEO-PI-R = NEO Personality Inventory-Revised (Costa & McCrae, 1992); SIFFM = Structured Interview for the Five-Factor Model of Personality (Trull & Widiger, 1997); FFMRF = Five-Factor Model Rating Form (Mullins-Sweatt et al., 2006); MCMI-III = Millon Clinical Multiaxial Inventory-III (Millon, Davis, & Millon, 1997); SIDP-IV = Structured Interview for DSM-IV Personality (Pfohl, Blum, & Zimmerman, 1997); PDQ-R = Personality Diagnostic Questionnaire-Revised (Hyler & Rieder, 1987); PDQ4+ = Personality Diagnostic Questionnaire-4+ (Hyler, 1994); ADP-IV = Assessment of DSM-IV Personality Disorders Questionnaire (Schotte & De Doncker, 1994); SCID-II = Structured Clinical Interview for DSM-IV Axis II Disorders (First, Gibbon, Spitzer, Williams, & Benjamin, 1997a); SCID-II-PQ = Structured Clinical Interview for DSM-IV Axis II Personality Disorders-Self Report (First, Gibbon, Spitzer, Williams, & Benjamin, 1997b); OMNI = OMNI Personality Inventory (Loranger, 2001); SNAP = Schedule for Nonadaptive and Adaptive Personality (Clark, 1993a); SWAP-200 = Shedler-Westen Assessment Procedure (Westen & Shedler, 2000); DIP-Q = DSM-IV and ICD-10 Personality Questionnaire (Otto et al., 1995).

<sup>a</sup>Included in the meta-analysis of Samuel and Widiger (2008).



To clarify the relationships between PDs and FFM facets, Samuel and Widiger (2008) performed a meta-analysis using data from 16 published and unpublished studies. Results largely corresponded with the hypothesised PD-FFM facet trait profiles proposed by Widiger, Trull, et al. (2002), however there were several exceptions. The most notable exceptions pertained to specific hypothesised PD-FFM facet trait directional relationships for schizotypal, histrionic, dependent and obsessive-compulsive PDs which were not confirmed. For example, contrary to the Widiger, Trull, et al. hypothesised PD-FFM facet trait profiles for these PDs (see Table 1.4 above), schizotypal PD did not correlate with Actions, histrionic PD did not correlate with Depression, dependent PD did not correlate with Altruism, and obsessive-compulsive PD did not correlate with Assertiveness. Moreover, Openness facets had little relationship with any PD. Notwithstanding the unconfirmed relationships, all PDs displayed unique and meaningful relationships with FFM facets. The weighted mean effect size correlations for all PD-FFM facet trait relationships were mostly below  $r = .35$ , hence in the small to medium effect size range (Cohen, 1988), and were moderated by the PD or FFM instrument that was used. Thus, Samuel and Widiger recommended that future research examine PD-FFM facet trait relations using alternative instruments so as to provide further evidence of the validity in describing and conceptualising PDs as constellations of specific FFM traits.

### **1.3.3 The SNAP Model of Maladaptive Personality Traits**

In contrast to the FFM, the trait and temperament model operationalised in the SNAP is an empirically-derived model of maladaptive personality traits that was developed by linking Big Three models of general personality traits (see Clark & Watson, 2008) with psychopathology through the set of dimensions that emerged from an analysis of DSM-III/III-R criteria (L.A. Clark, personal communication, November 13, 2008).

Developed by Clark (1993a), the SNAP is the end-product of a series of studies that aimed to identify the specific trait and temperament dimensions relevant to personality dysfunction. As outlined in Clark, Simms, Wu, and Casillas (in press), raters sorted the diagnostic criteria for DSM-III/III-R PDs and other PD-like constructs (e.g., dysthymia) into synonym categories and scores from the resultant co-occurrence matrix were subjected to factor-analysis. A 22-factor solution of

criterion clusters was retained whereby: (a) each cluster contained criterion symptoms from at least two diagnostic categories; and (b) the full criteria for each diagnostic category did not aggregate into a single cluster (Clark et al., in press). These findings indicated that the personality pathology dimensions that comprised the criterion clusters were common to the various PD and PD-like categories, thus confirming the problem of diagnostic criteria overlap in categorical models of PD (Clark, McEwen, Collard, & Hickok, 1993; Clark, Vorhies, & McEwan, 2002). Items were subsequently developed to assess the criterion clusters and were administered to clinical and non-clinical samples. Item scores were factor-analysed and 12 primary traits emerged (Clark, 1993a). Clark also incorporated the Big Three temperament dimensions of Negative Temperament, Positive Temperament and Disinhibition from the General Temperament Survey (Clark & Watson, 1990) into the SNAP so as to measure aspects of normal-range personality (Clark et al., in press). Subsequent factor-analytic research suggested a hierarchical structure for the SNAP, whereby all of the primary trait scales loaded with one of the temperament scales (Clark et al., in press; Clark et al., 2002; Simms & Clark, 2006). However, it is important to note that, in contrast to the FFM as operationalised in the NEO-PI-R, the SNAP higher-order temperament scales are independent dimensions and are not composites of the lower-order primary trait scales. The SNAP instrument is now in its second edition and the SNAP-2 (Clark et al., in press) was used in the present research. Clark et al. (in press) reported that the items that comprise the SNAP and SNAP-2 trait and temperament scales remain the same across both versions of the instrument. For clarity, the term “SNAP” will be used in this thesis to refer to the trait and temperament scales common to both versions of the instrument and when discussing previous research; whereas the term “SNAP-2” will be used when discussing aspects pertaining only to the new SNAP-2 instrument. Table 1.6 contains a description of the SNAP maladaptive personality traits.

Table 1.6

*Description of the SNAP Maladaptive Personality Traits*

<b>SNAP Trait</b>	<b>Description</b>
<b>Negative Temperament</b>	<i>The tendency to experience a wide range of negative emotions and to overreact to minor stress.</i>
Mistrust	A pervasive suspicious and cynical attitude towards others.
Manipulativeness	The egocentric willingness to exploit others and manipulate systems for personal gain without regard for the rights or feelings of others.
Aggression	Reflects individual differences in the frequency and intensity of the experience of anger and its behavioural expression of aggression.
Self-Harm	The tendency to self-harm in the context of self-loathing.
Low Self-Esteem	Reflects negative beliefs about one's self-worth.
Suicide Proneness	The tendency to experience self-destructive thoughts and behaviours.
Eccentric Perceptions	The tendency to experience unusual somatosensory perceptions, cognitions and beliefs.
Dependency	Reflects individual differences in self-reliance, locus of control and self-confidence in decision-making.
<b>Positive Temperament</b>	<i>The tendency to experience a wide range of positive emotions and to be pleasurable, actively and effectively involved in one's life.</i>
Exhibitionism	The tendency to engage in overt attention-seeking versus the withdrawal from attention.
Entitlement	The tendency to have unrealistically positive self-regard and the feeling that one should receive special treatment versus a humble, self-effacing attitude.
Detachment	The tendency towards emotional and interpersonal distance.
<b>Disinhibition</b>	<i>The tendency to behave in an under-controlled versus an over-controlled manner.</i>
Impulsivity	The tendency to act on a momentary basis without an overall plan versus the tendency to stop and think before acting.
Propriety	Reflects one's preference for traditional, conservative morality versus the rejection of social rules and convention.
Workaholism	Reflects individual differences in attitudes towards work and leisure, a tendency to perfectionism, and self-imposed demands for excellence.

*Note.* Adapted from Clark et al. (in press).

The SNAP has links with other personality trait models. Research has shown that the SNAP's Big Three higher-order temperament dimensions of Negative Temperament, Positive Temperament and Disinhibition correlate with corresponding higher-order dimensions from the FFM, that is, the Neuroticism, Extraversion and low Conscientiousness/Agreeableness domains, respectively, indicating convergent validity (Clark et al., in press; Clark et al., 2002; Simms & Clark, 2006). Research has also shown that the temperament dimensions assessed by the SNAP and other Big Three models relate to psychological disorders in similar ways to their counterpart FFM domains (Clark, 2005; Kotov et al., 2010; Watson, Clark, & Carey, 1988; Watson et al., 2006). Furthermore, Clark and Livesley (2002) discovered strong convergence between the SNAP and a similar measure of maladaptive

personality traits known as the Dimensional Assessment of Personality Pathology (DAPP; Livesley, 2006). In fact, when the SNAP and DAPP were factor-analysed together a variation of the FFM structure emerged, but without the Openness domain (Clark, Livesley, Schroeder, & Irish, 1996). Recent work has suggested that trait dimensions from various Big Trait models, such as the FFM, SNAP and DAPP, can be integrated within a common hierarchical trait structure to maximally assess normal and abnormal personality characteristics (Markon, Krueger, & Watson, 2005; Samuel, Simms, Clark, Livesley, & Widiger, 2010; Widiger et al., 2009; Widiger & Simonsen, 2005).

#### **1.3.4 The SNAP and PDs**

Whereas using the FFM to conceptualise PDs is a top-down approach because it applies an existing model of personality traits to understanding PDs, the SNAP approach to conceptualising PDs is a bottom-up strategy (Clark & Livesley, 2002). That is, the SNAP was developed by first examining the inter-relationships amongst the criterion symptoms of existing PDs and PD-like constructs and then formulating a dimensional trait model that represented each criterion cluster of personality pathology that emerged (Clark & Livesley, 2002). Clark (1993a) hypothesised specific conceptual relationships between PD categories and SNAP maladaptive personality traits. These hypothesised directional relationships are listed in Table 1.7.

Table 1.7

*Hypothesised Directional Relationships between DSM-IV-TR PDs and SNAP  
Maladaptive Traits*

SNAP Traits	PAR	SZD	SZT	ATS	BDL	HST	NAR	AVD	DEP	OBC
<b>Negative Temperament</b>					+			+	+	+
Mistrust	+	+	+					+		
Manipulativeness				+			+			
Aggression	+			+	+					
Self-Harm					+				+	
Eccentric Perceptions			+							
Dependency									+	
<b>Positive Temperament</b>						+		-		
Exhibitionism						+	+			
Entitlement				+		+	+			
Detachment		+	+					+		
<b>Disinhibition</b>				+						
Impulsivity				+	+	+				
Propriety										+
Workaholism										+

*Note.* PAR = paranoid PD; SZD = schizoid PD; SZT = schizotypal PD; ATS = antisocial PD; BDL = borderline PD; HST = histrionic PD; NAR = narcissistic PD; AVD = avoidant PD; DEP = dependent PD; OBC = obsessive-compulsive PD. + indicates a hypothesised positive relationship; while - indicates a hypothesised negative relationship. Hypothesised directional relationships are based on the PD-SNAP trait conceptual profiles put forth by Clark (1993a).

Given that the SNAP is embedded in and is a measure of personality pathology, it is surprising that there are so few published studies that have examined the relationships between PDs and SNAP maladaptive personality traits. Table 1.8 contains a brief overview of the key published studies that have examined relationships between all 10 PDs and SNAP traits. As summarised in the table, moderate to strong support was obtained in all studies for the conceptually matched PD-SNAP trait relationships hypothesised by Clark (1993a). However, the PD-SNAP trait correlations in the studies that reported them were predominantly below  $r = .45$ , thus generally in the small to medium effect size range (Cohen, 1988). Moreover, the three studies that used regression analyses (Morey et al., 2003; Reynolds & Clark, 2001; Wolf, Harrington, & Miller, 2011) revealed that SNAP traits explained generally a moderate amount of variance in PDs, irrespective of whether all or only a subset of SNAP traits were entered as predictor variables. Overall, these results support the idea that PDs can be conceptualised using dimensions of personality pathology as operationalised in the SNAP model.

Table 1.8  
*Overview of Key Published Studies on the Relationships between PDs and SNAP Traits*

Study	Sample	PD Measure	Key Findings
Clark (1993a)	89 outpatients & inpatients	SIDP-R (DSM-III-R PDs)	<ul style="list-style-type: none"> <li>• <i>Correlations:</i> Strong support for most PD-SNAP trait relationships hypothesised by Clark (1993a); weak support for predictions involving obsessive-compulsive PD.</li> </ul>
Reynolds & Clark (2001) <sup>a</sup>	94 outpatients & inpatients	SIDP-IV	<ul style="list-style-type: none"> <li>• <i>Regressions:</i> All 15 SNAP traits explained between 28% (schizotypal PD) and 57% (borderline and avoidant PDs) of the variance across PDs.</li> <li>• <i>Regressions:</i> SNAP traits hypothesised by Clark (1993a) to be related to each PD explained between 21% (schizotypal and histrionic PDs) and 52% (borderline PD) of the variance across PDs.</li> </ul>
Hurt & Oltmanns (2002)	157 incarcerated women	SNAP (DSM-III-R PDs)	<ul style="list-style-type: none"> <li>• <i>Correlations:</i> Most PD-SNAP trait relationships proposed by Clark (1993a) were confirmed; weak support for predictions involving histrionic PD.</li> </ul>
Morey et al. (2003)	529 outpatients	DIPD-IV	<ul style="list-style-type: none"> <li>• <i>Correlations:</i> Most PD-SNAP trait relationships proposed by Clark (1993a) were confirmed.</li> <li>• <i>Regressions:</i> All 15 SNAP traits significantly explained the following amounts of variance in four PDs: 43.6% for borderline PD, 27.8% for schizotypal PD, 38.97% for avoidant PD and 26.7% for obsessive-compulsive PD.</li> </ul>
Miller, Reynolds, & Pilkonis (2004) <sup>a</sup>	94 outpatients & inpatients	SIDP-IV	<ul style="list-style-type: none"> <li>• <i>Correlations:</i> Strong support for the PD-SNAP trait relationships predicted by Clark (1993a).</li> </ul>
J. D. Miller, Maples, et al. (2010)	130 outpatients	Ratings of DSM-IV-TR PD criteria	<ul style="list-style-type: none"> <li>• <i>Correlations:</i> Modest support for the PD-SNAP trait relationships predicted by Clark (1993a); weak support for predictions involving schizoid, schizotypal, histrionic, avoidant and obsessive-compulsive PDs.</li> </ul>
Clark et al. (in press) <sup>a</sup>	94 outpatients & inpatients	SIDP-IV	<ul style="list-style-type: none"> <li>• <i>Correlations:</i> Strong support for the PD-SNAP trait relationships hypothesised by Clark (1993a).</li> </ul>
Wolf, Harrington, & Miller (2011)	86 military veterans with PTSD	IPDE	<ul style="list-style-type: none"> <li>• <i>Correlations:</i> Modest support for the predicted PD-SNAP trait relationships proposed by Clark (1993a); all PDs except dependent PD had at least one predicted relationship that was not confirmed.</li> <li>• <i>Regressions:</i> All 15 SNAP traits explained between 24% (obsessive-compulsive PD) to 46% (schizoid PD) of the variance in PDs.</li> </ul>

*Note.* PTSD = Post-Traumatic Stress Disorder. SIDP-R = Structured Interview for DSM-III-R Personality (Pfohl, Blum, Zimmerman, & Stangl, 1989); SIDP-IV = Structured Interview for DSM-IV Personality (Pfohl et al., 1997); SNAP = Schedule for Nonadaptive and Adaptive Personality (Clark, 1993a); DIPD-IV = Diagnostic Interview for DSM-IV Personality Disorders (Zanarini, Frankenberg, Sichel, & Yong, 1996); IPDE = International Personality Disorder Examination (Loranger, 1999).

<sup>a</sup> Appears to be the same dataset.

### **1.3.5 Key Limitations in Conceptualising PDs Using Either FFM or SNAP Dimensional Trait Models**

The literature that has been reviewed thus far has demonstrated that PDs can be understood as constellations of extreme and maladaptive variants of traits from either the FFM or SNAP. However, conceptualising PDs using these dimensional trait models is not without its limitations.

Given that the FFM was developed to assess normal-range general personality traits, the main limitation in using it to conceptualise PDs is that existing measures of the FFM do not adequately index maladaptive personality functioning (Krueger, Eaton, Clark, et al., 2011). This limitation is perhaps best demonstrated by studies that have found weak support for theoretically-based PD-FFM trait relationships, such as between obsessive-compulsive PD and Conscientiousness facets (Bagby, Costa, et al., 2005; Trull et al., 2001), schizotypal PD and Openness facets (Aluja et al., 2007), dependent PD and Agreeableness facets (Dyce & O'Connor, 1998) or histrionic PD and Extraversion facets (De Fruyt et al., 2006). Haigler and Widiger (2001) observed that the most widely-used measure of the FFM, the NEO-PI-R, has a disproportionate number of items that assess adaptive or desirable expressions of Extraversion, Openness, Agreeableness and Conscientiousness at their positive or high end poles as opposed to their negative or low end poles. These researchers found that correlations between obsessive-compulsive PD and Conscientiousness, dependent PD and Agreeableness, and schizotypal PD and Openness were strengthened when NEO-PI-R items that assessed the high end poles of these FFM domains were slightly altered to reflect more maladaptive, undesirable or problematic behaviours. Likewise, Gore, Tomiatti, and Widiger (2011) found that correlations between various measures of histrionic PD and Extraversion increased substantially when Haigler and Widiger's measure of maladaptive Extraversion was used.

In contrast to the FFM, the key limitation in using the SNAP to conceptualise PDs is that, given its method of development, the SNAP trait dimensions may correspond too closely to existing DSM PD categories and, therefore, fail to identify variants of personality pathology that are not covered by the DSM classification (Trull & Durrett, 2005). For instance, critics could argue that the SNAP maladaptive traits of Dependency and Exhibitionism are simply "dimensionalised" variants of the

DSM dependent and histrionic PD categories, respectively. However, at least one study has found SNAP traits to be useful for conceptualising non-DSM variants of personality pathology, that is, psychopathy (Pryor, Miller, & Gaughan, 2009).

Perhaps the foremost limitation in conceptualising PDs using either the FFM or SNAP is that traits from either dimensional trait model account for only a modest proportion of variance in measures of PDs, even when examined together, thus limiting the ability of either model to explain personality pathology as currently defined by the DSM-IV-TR (Clark, 2007; Wright, 2011). To date, two key published studies have examined the incremental validity of both higher- and lower-order FFM and SNAP traits in predicting variance in DSM-IV-TR PD features.

The first study, by Reynolds and Clark (2001), involved a mixed clinical sample of 94 outpatients and inpatients. Hierarchical regression analyses revealed that the FFM domains on an average explained 27% of variance in PDs, while all 15 SNAP traits incrementally explained an average of 22% of additional variance. In the reverse entry, all 15 SNAP traits on an average explained 45% of variance across PDs, while the FFM domains incrementally explained an average of 4% of additional variance. Altogether, the FFM domains and SNAP traits on an average explained 49% of total variance in PDs, which ranged from 30% (schizotypal PD) to 63% (avoidant PD). Reynolds and Clark also examined the incremental validity of specific lower-order traits from the hypothesised PD-FFM facet trait profiles proposed by Widiger et al. (1994) and the hypothesised PD-SNAP trait relationships put forth by Clark (1993a), respectively, to predict variance in their corresponding PDs. The selected FFM facets from the Widiger et al. profiles explained an average of 35% of variance in PDs, while the selected SNAP traits from the Clark profiles incrementally added an average 8% of additional variance. In the reverse entry, the selected SNAP traits from the Clark profiles on an average explained 32% of variance in PDs, whereas the selected FFM facets from the Widiger et al. profiles on an average explained an additional 10% of incremental variance. Altogether, the selected FFM and SNAP lower-order traits from both the Widiger et al. and Clark profiles on an average explained 42% of the total variance in PDs, which ranged from 25% (schizotypal PD) to 64% (avoidant PD).

The second study, by Stepp, Trull, Burr, Wolfenstein, and Vieth (2005), examined only borderline, antisocial and histrionic PDs and involved a combined sample of 200 clinical and non-clinical participants. Hierarchical regression analyses



revealed that the FFM domains on an average explained about 22% of the variance across the three PDs, while the three SNAP temperaments incrementally explained on average less than one per cent of additional variance. In the reverse entry, the SNAP temperaments on an average explained 20% of the variance in PDs, while the FFM domains on an average explained 9% of incremental variance. Altogether, the FFM domains and SNAP temperaments on an average explained approximately 29% of total variance in measures of the three PDs, ranging from 22% (histrionic PD) to 33% (borderline PD). Stepp and colleagues also examined the incremental validity of lower-order traits from the hypothesised PD-FFM facet trait profiles proposed by Trull and Widiger (1997) and the PD-SNAP trait profiles put forth by Clark (1993a), respectively, to predict variance in the three PDs. Selected FFM facets from the Trull and Widiger PD-FFM facet trait profiles on an average explained 31% of the variance in PDs, while selected SNAP traits from Clark's PD-SNAP trait profiles explained an average 4% of additional variance. In the reverse entry, SNAP traits from the Clark profiles on an average explained 23% of the variance in PDs, whereas FFM facets from the Trull and Widiger profiles on an average explained 13% of incremental variance. Together, the selected FFM and SNAP lower-order traits from both Trull and Widiger's and Clark's hypothesised profiles on an average explained 36% of total variance in these three PDs, ranging from 26% (histrionic PD) to 46% (borderline PD).

It has been argued that a dimensional trait model of PDs should in the first instance be empirically and conceptually linked to the current DSM-IV-TR PD classification in order to replace it (Gunderson, 2010; Samuel & Widiger, 2011; J. A. Schmidt, Wagner, & Kiesler, 1993). It is clear from the research reviewed thus far that the sizeable amounts of unexplained variance in measures of the PD categories indicate that FFM and SNAP traits do not provide a comprehensive account of the personality pathology features and symptomology that is currently encoded in the DSM-IV-TR PD categories. As such, reconceptualising PDs solely using traits from these dimensional trait models may provide inadequate coverage of maladaptive personality functioning. Thus, the question remains as to what else besides personality traits can account for the variance in PD features. The potential role of dysfunctional schemas will be discussed next.

## **1.4 Cognitive-Behavioural Models of PDs**

In their review of the alternative dimensional models of PDs, Widiger and Simonsen (2005) did not include dimensional models from cognitive-behavioural theories of PDs. Cognitive theory (Beck et al., 2004) and schema theory (Young & Gluhoski, 1996; Young et al., 2003) are two cognitive-behavioural theories that use dimensional cognitive constructs in the conceptualisation of PDs and both theories are central to the present research.

### **1.4.1 Cognitive Theory of PDs**

Beck and colleagues (2004) propose that innate tendencies interact with environmental influences to produce individual differences in characteristic cognitive, affective and behavioural patterns that comprise personality. The functioning and expression of these patterns are dependent on cognitive schemas, which are the basic units of personality (Beck et al., 2004). Schemas are defined as “deep, unconscious cognitive structures seated in long-term memory that give meaning to events” (Cottraux & Blackburn, 2001, p. 378). Schemas contain an individual’s core beliefs and assumptions about the self, others and the world, which have been derived from past experiences. These basic beliefs and assumptions affect the individual’s perceptions and interpretations of events and his or her subsequent responses to them (Pretzer & Beck, 2005). Once activated, schemas work by selectively filtering and synthesising information that an individual attends to and they can be adaptive or dysfunctional (Weishaar & Beck, 2006).

Cognitive theory conceptualises personality as a relatively stable system of schemas (Beck et al., 2004). Pervasive errors, biases, and distortions in perceiving and interpreting events through the selective filtering of dysfunctional schemas is said to create cognitive vulnerabilities to specific forms of psychopathology, such as PDs (Cottraux & Blackburn, 2001; Pretzer & Beck, 2005). Accordingly, cognitive theory holds that individuals with a PD possess longstanding, pervasive, rigid and dysfunctional schemas that are more easily activated by a range of events and are more resistant to change, than the adaptive schemas of individuals with no PD (Weishaar & Beck, 2006). The dysfunctional schemas that are associated with PDs have a low threshold for activation and operate more or less on a continuous basis (Beck et al., 2004). As such, they obstruct the functioning of more adaptive schemas, which in turn results in a systematic information-processing bias that only reinforces

and maintains the dysfunctional schema (Leahy, Beck, & Beck, 2005). Therefore, the goal of cognitive therapy is to identify and subsequently modify an individual's dysfunctional schemas (Beck et al., 2004).

Beck et al. (2004) theorised that, with the exception of borderline and schizotypal PDs, each DSM-IV-TR PD is associated with a characteristic set of dysfunctional schemas and core beliefs, which are reflected in PD symptoms and behaviour. Thus, PDs can be differentiated according to their characteristic underlying core beliefs and assumptions and resultant behavioural responses. Further, PD comorbidity is likely to occur because an individual holds core dysfunctional beliefs that are characteristic of multiple PDs (Beck et al., 2004; Pretzer & Beck, 2005). Beck et al. argued that, unlike other PDs, borderline PD is associated with a myriad of dysfunctional beliefs that are characteristic of most other PDs, but that schizotypal PD is characterised by peculiar thinking processes rather than specific dysfunctional beliefs.

In order to assess the prototypical dysfunctional PD beliefs that are embedded within the characteristic dysfunctional schemas of the DSM-IV-TR PDs, Beck and Beck (1995) developed the Personality Belief Questionnaire (PBQ), which is a self-report inventory of dysfunctional PD belief scales that map directly onto the PD categories. The dysfunctional beliefs and composite PD-specific dysfunctional belief scales are dimensional constructs and their assessment provides a cognitive profile of an individual's dysfunctional PD beliefs, in accordance with cognitive theory of PDs (Beck et al., 2004). Table 1.9 displays some examples of dysfunctional PD beliefs contained in the PBQ. In the literature the terms "dysfunctional schema" and "dysfunctional belief" are used interchangeably by cognitive theorists as schemas are theorised to primarily consist of core beliefs (Weishaar & Beck, 2006). For clarity, the current research will refer to "dysfunctional PD beliefs" when discussing the characteristic dysfunctional schemas pertaining to each PD as formulated in Beck and colleagues' (2004) cognitive theory and operationalised in the PBQ instrument.

Table 1.9

*Dysfunctional Beliefs Associated with Each DSM-IV-TR PD*

<b>PBQ Dysfunctional PD Beliefs Scale</b>	<b>Example Dysfunctional PD Belief</b>
Paranoid	“If people act friendly, they may be trying to use or exploit me”
Schizoid	“What other people think doesn’t matter to me”
Histrionic	“In order to be happy, I need other people to pay attention to me”
Narcissistic	“No one’s needs should interfere with my own”
Antisocial	“Lying and cheating are OK as long as you don’t get caught”
Avoidant	“If people get close to me, they will discover the ‘real’ me and reject me”
Dependent	“I can’t make decisions on my own”
Obsessive-compulsive	“It is important to do a perfect job on everything”
Passive-aggressive	“Being controlled or dominated by others is intolerable”

*Note.* PBQ = Personality Belief Questionnaire (Beck & Beck, 1995).

**1.4.2 Dysfunctional PD Beliefs and PDs**

There is a dearth of published research that has examined the relationships between PDs and the PBQ dysfunctional PD belief scales. Most of this research has focused only on a handful of PBQ scales and/or PDs. Table 1.10 presents a brief overview of the key published studies that have explored the relationships between PDs and any PBQ dysfunctional PD beliefs scale. The table reveals that the little existing research in this area has largely explored group differences on PBQ scales. Such studies found that specific PD groups obtained significantly higher scores on their corresponding PBQ dysfunctional PD beliefs scale in comparison to groups of individuals with a different PD (Beck et al., 2001; Butler, Brown, Beck, & Grisham, 2002) or no PD (Butler, Beck, & Cohen, 2007; McMurrin & Christopher, 2008). These findings support the discriminant validity of the PBQ scales. The table also shows that there has been relatively less correlational research using the PBQ. Specifically, two studies that examined relationships between subsets of PBQ scales and PDs (Beck et al., 2001; Trull, Goodwin, Schopp, Hillenbrand, & Schuster, 1993) found convergent correlations between each PD and its corresponding PBQ dysfunctional PD beliefs scale and these correlations were generally medium in effect size. Further, Jones, Burrell-Hodgson, and Tate (2007) found that the presence or absence of a specific PD diagnosis was predicted by corresponding rather than non-corresponding PBQ dysfunctional PD belief scales, thus supporting the criterion-related validity of the PBQ.

Table 1.10  
*Overview of Key Published Studies on the Relationships between PDs and PBQ Dysfunctional PD Belief Scales*

Study	Sample	PD Measure	Key Findings
Trull, Goodwin, Schopp, Hillenbrand, & Schuster (1993)	188 students	PDQ-R (DSM-III-R PDs), MMPI-PD (DSM-III PDs)	<ul style="list-style-type: none"> <li>• <i>Correlations:</i> Correlations between PBQ dysfunctional PD belief scales and index PD scales ranged from <math>r = .31</math> (obsessive-compulsive PD) to <math>r = .61</math> (paranoid PD) for the PDQ-R scales; and from <math>r = .09</math> (histrionic PD) to <math>r = .66</math> (paranoid PD) for the MMPI-PD scales.</li> <li>• <i>Factor analysis:</i> Principal axis factoring with Varimax rotation on all PBQ, PDQ-R and MMPI-PD scales revealed six factors that accounted for 60.7% of the variance. PBQ scales tended to load together rather than with the PD scales, indicating that the PBQ scales assessed separate constructs (i.e., dysfunctional cognitions) as opposed to PD symptoms/behaviours.</li> </ul>
Beck et al. (2001)	<ul style="list-style-type: none"> <li>• 299 outpatients with a PD diagnosis</li> <li>• 128 outpatients with an Axis I diagnosis but without a PD diagnosis</li> </ul>	SCID-II (Only assessed avoidant, dependent, obsessive-compulsive, narcissistic and paranoid PDs)	<ul style="list-style-type: none"> <li>• <i>Within-groups ANOVAs:</i> Outpatients in each PD group obtained significantly higher scores on corresponding PBQ dysfunctional PD belief scales than on other PBQ scales.</li> <li>• <i>Between-groups ANOVAs:</i> Outpatients in each PD group obtained significantly higher scores on corresponding PBQ dysfunctional PD belief scales than did outpatient groups with non-corresponding PDs or no PD.</li> <li>• <i>Correlations:</i> Correlations between PBQ dysfunctional PD belief scales and corresponding PD diagnoses (coded dichotomously as present/absent) for the five PDs ranged from <math>r = .10</math> (paranoid PD) to <math>r = .42</math> (avoidant PD).</li> </ul>
Butler, Brown, Beck, & Grisham (2002)	<ul style="list-style-type: none"> <li>• 84 outpatients with borderline PD diagnosis</li> <li>• 204 outpatients with other PD diagnoses</li> </ul>	SCID-II	<ul style="list-style-type: none"> <li>• <i>t-tests:</i> The borderline PD group obtained significantly higher scores than the other-PD group on 14 PBQ items; these items were then used to derive a composite borderline PD dysfunctional beliefs subscale.</li> <li>• <i>t-tests:</i> The borderline PD group obtained a significantly higher score than the other-PD group on the composite borderline PD dysfunctional beliefs subscale.</li> <li>• <i>Paired t-tests:</i> The borderline PD group obtained a significantly higher score on the composite borderline PD dysfunctional beliefs subscale than on any other PBQ dysfunctional PD beliefs scale.</li> </ul>
Butler, Beck, & Cohen (2007)	<i>Study 1</i> <ul style="list-style-type: none"> <li>• 216 outpatients with a PD diagnosis</li> <li>• Unknown number of outpatients without a PD</li> </ul>	SCID-II (Only assessed avoidant, dependent, obsessive-compulsive, narcissistic and paranoid PDs)	<ul style="list-style-type: none"> <li>• <i>t-tests:</i> Each PD group obtained significantly higher scores than the no-PD group on its corresponding (shortened) PBQ dysfunctional PD beliefs scale; generally large effect sizes.</li> <li>• <i>Paired t-tests:</i> Each PD group obtained significantly higher scores on its corresponding (shortened) PBQ dysfunctional PD beliefs scale than on non-corresponding PBQ scales.</li> </ul>

Jones, Burrell-Hodgson, & Tate (2007)	164 outpatients	MCMII-III (Only assessed avoidant, dependent, passive-aggressive, schizoid and borderline PDs)	<ul style="list-style-type: none"> <li>• <i>Logistic regressions</i>: The avoidant, dependent, passive-aggressive, schizoid and borderline PBQ dysfunctional PD belief scales were simultaneously entered as predictors of each PD category; only the PBQ scale that corresponded with each PD was a significant predictor of that PD category.</li> </ul>
McMurran & Christopher (2008)	Male prisoners <ul style="list-style-type: none"> <li>• 17 with antisocial PD diagnosis</li> <li>• 14 with antisocial and other PD diagnosis</li> <li>• 18 with no PD diagnosis</li> </ul>	IPDE	<ul style="list-style-type: none"> <li>• <i>ANOVAs</i>: The antisocial PD group obtained significantly higher scores than the no-PD group on all PBQ dysfunctional PD belief scales except for the schizoid, dependent and obsessive-compulsive dysfunctional PD belief PBQ scales.</li> </ul>

*Note.* PDQ-R = Personality Diagnostic Questionnaire-Revised (Hyler & Rieder, 1987); MMPI-PD = Minnesota Multiphasic Personality Inventory–Personality Disorder Scales (Morey, Waugh, & Blashfield, 1985); SCID-II = Structured Clinical Interview for DSM-IV Axis I Disorders (First et al., 1997a); MCMII-III = Millon Clinical Multiaxial Inventory-III (Millon et al., 1997); IPDE = International Personality Disorder Examination (Loranger, 1999); ANOVA = analysis of variance.

### 1.4.3 Schema Theory of PDs

Similar to Beck and colleagues' (2004) cognitive theory, schema theory as formulated by Young and colleagues (2003) proposes that adaptive and dysfunctional schemas develop as a result of interactions between an individual's innate temperament and early environmental experiences. However, schema theory conceptualises schemas in a broader sense than cognitive theory and focuses on a particular type of dysfunctional schema, known as the early maladaptive schema (EMS). Young et al. defined early maladaptive schemas (EMSs) as extremely broad, pervasive and enduring cognitive and emotional themes or patterns about the self, others, events and relationships that develop during childhood or adolescence and are elaborated throughout one's lifetime and dysfunctional and self-defeating to a significant degree. EMSs consist of memories, cognitions, emotions, bodily sensations and images; all of which are said to influence information-processing and subsequent behavioural responses (Young et al., 2003).

According to Young et al. (2003), EMSs comprise the core of an individual's self-concept and underlie personality pathology and characterological or chronic Axis I disorders. Once activated, EMSs give rise to schema-driven behaviours, such as those outlined in the DSM-IV-TR PD criteria, and cause significant psychological, emotional and interpersonal distress (Young et al., 2003). In order to cope with their EMSs, individuals are said to unconsciously use three types of coping strategies in any given situation. These coping strategies are: *surrender* or thinking, feeling and behaving in accordance with the EMS; *avoidance* or blocking any thoughts, feelings or situations that could activate the EMS; and *overcompensation* or thinking, feeling and behaving in ways that are opposite to the EMS (Young et al., 2003).

EMSs are explicitly dimensional constructs and they can have different levels of severity and pervasiveness (Young et al., 2003). That is, EMSs can be present in all individuals to varying degrees and the stronger or more dysfunctional the EMS is, the more likely it is to become activated by most situations, which subsequently leads to greater emotional distress and impairments in functioning. Further, unlike the dysfunctional PD beliefs in cognitive theory which map directly onto DSM-IV-TR PD categories (Beck et al., 2004), the EMSs in schema theory cut across diagnostic categories and are independent from DSM conceptualisations of

psychopathology (Young, 1999; Young & Gluhoski, 1996). That is, the dysfunctional content contained within EMSs is theorised to be common in varying degrees amongst individuals with a broad range of chronic Axis I or Axis II disorders (Weishaar & Beck, 2006). The goal of schema therapy is to modify an individual's EMSs and coping strategies, which in turn is hypothesised to improve psychological functioning (Young et al., 2003; Young & Lindemann, 1992).

On the basis of his clinical work, Young identified 18 EMSs and grouped them into five domains according to unmet emotional needs which he hypothesised were common to specific EMSs (Young, 1999; Young et al., 2003). Table 1.11 contains a description of Young's 18 EMSs which are grouped by domain. In order to measure the EMSs, Young developed the Young Schema Questionnaire (YSQ), which is available in long (YSQ-LF; Young & Brown, 2003a) and short (YSQ-SF; Young & Brown, 2003b) forms. The current version of the YSQ, the long-form YSQ-3 (Young, 2005a) and its short-form YSQ-S3 (Young, 2005b), measures all 18 EMSs, whereas previous versions of the YSQ measured up to 15 EMSs. Whilst previous research has predominantly used earlier versions of the YSQ, the current research utilised the YSQ-S3.



Table 1.11

*Descriptions of Early Maladaptive Schemas*

<b>EMSs</b>	<b>Description of Main Theme</b>
<b>Disconnection &amp; Rejection</b> <i>(Core Need: Secure attachment)</i>	<i>Individuals with EMSs from this domain believe that their needs for safety, nurturance, love and belonging will not be met and, thus, are unable to form secure attachments.</i>
Abandonment/Instability	Interpersonal relationships are unstable and unreliable.
Mistrust/Abuse	Others will intentionally hurt, abuse, humiliate or manipulate me.
Emotional Deprivation	My emotional needs will not be adequately met.
Defectiveness/Shame	I am flawed, bad or inferior and unlovable if my defects are exposed.
Social Isolation/Alienation	I am different and do not fit in with others.
<b>Impaired Autonomy &amp; Performance</b> <i>(Core Needs: Autonomy, competence &amp; sense of identity)</i>	<i>Individuals with EMSs from this domain have expectations about themselves and the world that interfere with their ability to differentiate themselves from others and function autonomously.</i>
Dependence/Incompetence	I am unable to competently handle daily responsibilities without others' help/advice.
Vulnerability to Harm/Illness	Exaggerated fear of an imminent, unavoidable catastrophe.
Enmeshment/Undeveloped Self	Excessive emotional involvement with significant others at the expense of individuation.
Failure	I am inept, untalented and have failed or will fail.
<b>Impaired Limits</b> <i>(Core Needs: Realistic limits &amp; self-control)</i>	<i>Individuals with EMSs from this domain have not adequately developed internal limits regarding responsibilities or self-discipline and, thus, have difficulty respecting others' rights, making commitments or meeting goals.</i>
Entitlement/Grandiosity	I am superior to others, entitled to special treatment and not bound by conventional rules of social reciprocity.
Insufficient Self-Control/Self-Discipline	Inability to exercise self-control or frustration tolerance to achieve goals and/or regulate the excessive expression of emotions.
<b>Other-Directedness</b> <i>(Core Need: Freedom to express valid needs &amp; emotions)</i>	<i>Individuals with EMSs from this domain place an excessive emphasis on meeting others' needs at the expense of their own.</i>
Subjugation	Excessive submissiveness, suppression of needs/emotions and surrendering of control to others, usually to avoid others' retaliation, anger or abandonment.
Self-Sacrifice	Excessive focus on voluntarily meeting others' needs at the expense of one's own.
Approval/Recognition-Seeking	Excessive emphasis on gaining approval, recognition or attention from others at the expense of developing a secure sense of self.
<b>Overvigilance &amp; Inhibition</b> <i>(Core Needs: Spontaneity &amp; play)</i>	<i>Individuals with EMSs from this domain place an excessive emphasis on suppressing spontaneous feelings and impulses.</i>
Negativity/Pessimism	Pervasive focus on the negative aspects of life while minimising and/or neglecting the positive or optimistic aspects.
Emotional Inhibition	Excessive inhibition of spontaneous emotions, actions or communication, usually to avoid shame or to ensure a sense of predictability.
Unrelenting Standards	Excessive strive to meet very high internalised standards of behaviour/performance, usually to avoid disapproval or shame.
Punitiveness	I and others should be harshly punished for making mistakes.

*Note.* EMSs = Early Maladaptive Schemas. Adapted from Young et al. (2003).

#### 1.4.4 EMSs and PDs

Table 1.12 presents a brief overview of the key published studies that have explored the relationships between PDs and EMSs. As summarised in this table, several studies found that PD groups obtained higher scores on most EMSs than did no-PD groups (e.g., Lawrence, Allen, & Chanen, 2011; Lee, Taylor, & Dunn, 1999; Nilsson, Jorgensen, Straarup, & Licht, 2010; Nordahl, Holthe, & Haugum, 2005). Other studies found that specific EMSs could discriminate between PD groups (Jovev & Jackson, 2004) and PD clusters (Petrocelli, Glaser, Calhoun, & Campbell, 2001). Further, correlational studies revealed generally moderate-sized positive correlations between most EMSs and PDs (Ball & Cecero, 2001; Nordahl et al., 2005). The three studies that used regression analyses (Carr & Francis, 2010; Reeves & Taylor, 2007; Thimm, 2011) found predictive relationships between theoretically-related EMSs and PDs and demonstrated that EMSs could account for small to moderate amounts of variance in the PD features that were studied. For instance, all three studies found statistically significant predictive relationships between Mistrust/Abuse and paranoid PD, Emotional Inhibition and schizoid PD, Entitlement/Grandiosity and narcissistic PD, and Unrelenting Standards and obsessive-compulsive PD. However, the findings of these studies concerning other PD-EMS relationships were not entirely consistent. For instance, whereas Reeves and Taylor (2007) found a significant predictive relationship between Abandonment/Instability and borderline PD, this relationship was not found in the studies by Carr and Francis (2010) or Thimm (2011). Likewise, whereas Thimm found a significant predictive relationship between Subjugation and dependent PD, this relationship was not observed in the other two studies. Moreover, whilst Carr and Francis observed a significant predictive relationship between Vulnerability to Harm/Illness and schizotypal PD, this relationship was not found in the other studies. Despite some mixed findings, this line of research suggests that, similar to personality traits, EMSs have important associations with personality pathology features and may be important for the conceptualisation of PDs.

Table 1.12  
 Overview of Key Published Studies on the Relationships between PDs and EMSs

Study	Sample	YSQ Version	PD Measure	Key Findings
N.B. Schmidt, Joiner, Young, & Telch (1995)	Study 3 163 students	SQ	PDQ-R (Only used composite score of DSM-III-R PDs)	<ul style="list-style-type: none"> <li>• <i>Correlation</i>: Correlation between the SQ Total score and a composite score of all PDQ-R scales was <math>r = .71</math>.</li> <li>• <i>t-tests</i>: Sample split into two groups via median split of composite PDQ-R score. The high PDQ-R group (<math>n = 79</math>) obtained significantly higher scores than the low PDQ-R group (<math>n = 84</math>) on most EMSs.</li> </ul>
Lee, Taylor, & Dunn (1999)	<ul style="list-style-type: none"> <li>• 221 outpatients with any PD diagnosis</li> <li>• 135 outpatients with Axis I disorders and no PD diagnosis</li> </ul>	SQ	Clinical assessment	<ul style="list-style-type: none"> <li>• <i>t-tests</i>: The PD group obtained significantly higher scores than the group of outpatients with only Axis I disorders on most EMSs except for Vulnerability to Harm/Illness and Subjugation.</li> </ul>
Ball & Cecero (2001)	41 opioid-dependent outpatients	YSQ	SCID-II (Only examined 3 DSM-IV-TR PDs: antisocial, borderline and avoidant PDs)	<ul style="list-style-type: none"> <li>• <i>Correlations</i>: Each PD obtained significant positive correlations with 1 to 3 EMSs; the magnitude of these correlations ranged from <math>r = .34</math> to <math>r = .48</math>.</li> </ul>
Petrocelli, Glaser, Calhoun, & Campbell (2001)	129 outpatients	YSQ-SF	MCMII-II (DSM-III-R PDs)	<ul style="list-style-type: none"> <li>• <i>Cluster analysis</i>: A 5-cluster solution emerged from an analysis of MCMII-II PD scale scores.</li> <li>• <i>Discriminant function analysis</i>: Two discriminant functions of EMSs discriminated between PD clusters and explained 76.8% of cluster group differences, supporting the idea that PD types can be differentiated via information about EMSs.</li> <li>• <i>Classification analysis</i>: 61.2% of cases were correctly classified into their PD cluster on the basis of EMS scores.</li> </ul>

Gude, Hoffart, Hedley & Ro (2004)	182 inpatients	YSQ-SF	SCID-II (Only examined avoidant, paranoid, borderline, dependent and borderline PDs)	<ul style="list-style-type: none"> <li>• <i>Principal components analysis</i>: A 6-component solution explained 45% of the variance in PD criteria; the study focused on two components labelled Dependency/Incompetence and Attachment/Abandonment.</li> <li>• <i>Correlations</i>: Only the Abandonment/Instability EMS correlated with the Attachment/Abandonment component (<math>r = .43</math>); while only the Failure EMS correlated with the Dependency/Incompetence component (<math>r = .22</math>).</li> </ul>
Jovev & Jackson (2004)	<ul style="list-style-type: none"> <li>• 13 outpatients with borderline PD</li> <li>• 13 outpatients with obsessive-compulsive PD</li> <li>• 22 outpatients with avoidant PD</li> </ul>	YSQ-SF	SCID-II	<ul style="list-style-type: none"> <li>• <i>MANOVA</i>: Significant differences were observed between the three PD groups on the EMSs of Abandonment/Instability, Dependence/Incompetence, Subjugation and Unrelenting Standards.</li> <li>• <i>Discriminant function analysis</i>: Two discriminant functions of EMSs discriminated between PDs and explained 100% of the variance in group differences.</li> <li>• <i>Classification analysis</i>: 77.1% of cases were correctly classified into their PD group on the basis of their EMS scores.</li> </ul>
Nordahl, Holthe, & Haugum (2005)	82 outpatients	YSQ-LF	SCID-II	<ul style="list-style-type: none"> <li>• <i>Correlations</i>: With the exception of schizotypal, schizoid and antisocial PDs, each PD obtained statistically significant positive correlations with 1 to 9 EMSs; the magnitude of these correlations ranged from <math>r = .31</math> to <math>r = .57</math>.</li> <li>• <i>ANCOVAs</i>: Sample split into any-PD (<math>n = 38</math>) and no-PD (<math>n = 44</math>) groups. After controlling for distress, the PD group obtained significantly higher scores on 12 out of 15 EMSs than the no-PD group.</li> </ul>
Reeves & Taylor (2007)	804 students	YSQ-SF	SCID-II-PQ	<ul style="list-style-type: none"> <li>• <i>Hierarchical regressions</i>: After controlling for gender and within-cluster PDs, all EMSs explained between 4% (passive-aggressive PD) and 13% (borderline PD) of unique additional variance in PDs; 1-3 EMSs were significant predictors of each PD.</li> </ul>
Carr & Francis (2010)	178 students	YSQ-SF	PDQ-4+	<ul style="list-style-type: none"> <li>• <i>Hierarchical regressions</i>: After controlling for gender, eating disorders, depression, anxiety and comorbid PD symptoms, all EMSs explained between 14.4% (borderline PD) and 31.2% (avoidant PD) of unique additional variance in PDs. There were no significant predictors of antisocial or borderline PDs, whereas 1 to 5 EMSs were significant predictors of the remaining PDs.</li> </ul>

Nilsson, Jorgensen, Straarup, & Licht (2010)	<ul style="list-style-type: none"> <li>• 31 female outpatients with borderline PD</li> <li>• 25 female outpatients with bipolar disorder</li> <li>• 29 female student controls</li> </ul>	YSQ-S3	SCID-II (Only assessed borderline PD)	<ul style="list-style-type: none"> <li>• <i>t-tests</i>: The borderline PD group obtained significantly higher scores than the student controls on all EMSs; and it also obtained significantly higher scores than the bipolar disorder group on most EMSs except for Failure, Enmeshment/Undeveloped Self, Self-Sacrifice and Entitlement/Grandiosity.</li> </ul>
Lawrence, Allen, & Chanan (2011)	<ul style="list-style-type: none"> <li>• 29 outpatients with borderline PD</li> <li>• 28 normal controls</li> </ul>	YSQ-SF	SCID-II (Only assessed borderline PD)	<ul style="list-style-type: none"> <li>• <i>Mean comparisons</i>: The borderline PD group obtained significantly higher scores than the control group on most EMSs with the exception of Enmeshment/Undeveloped Self, Self-Sacrifice, Unrelenting Standards and Entitlement/Grandiosity.</li> </ul>
Thimm (2011)	145 outpatients	YSQ-SF	DIP-Q (All DSM-IV-TR PDs except for histrionic PD)	<ul style="list-style-type: none"> <li>• <i>Hierarchical regressions</i>: After controlling for gender, selected subsets of 1 to 7 EMSs explained between 16% (schizoid PD) and 47% (avoidant PD) of the variance in PDs.</li> </ul>

*Note.* SQ = Schema Questionnaire (N. B. Schmidt et al., 1995); PDQ-R = Personality Diagnostic Questionnaire-Revised (Hyler & Rieder, 1987); YSQ = Young Schema Questionnaire (Young & Brown, 1990); SCID-II = Structured Clinical Interview for DSM-IV Axis II Disorders (First et al., 1997a); YSQ-SF = Young Schema Questionnaire-Short Form (Young & Brown, 2003b); MCMI-II = Millon Clinical Multiaxial Inventory-II (Millon, 1987); YSQ-LF = Young Schema Questionnaire-Long Form (Young & Brown, 2003a); SCID-II-PQ = Structured Clinical Interview for DSM-IV Axis II Personality Disorders-Self Report (First et al., 1997b); PDQ4+ = Personality Diagnostic Questionnaire-4+ (Hyler, 1994); YSQ-S3 = Young Schema Questionnaire-Short Form 3 (Young, 2005b); DIP-Q = DSM-IV and ICD-10 Personality Questionnaire (Ottosson et al., 1995); MANOVA = multivariate analysis of variance; ANCOVA = analysis of covariance.

## **1.5 Personality Traits, Dysfunctional Schemas and PDs**

The research reviewed to this point shows that FFM and SNAP personality traits and dysfunctional schemas, that is, either dysfunctional PD beliefs or EMSs, are related to PDs. However, there has been scarce research into the relationships between these traits and dysfunctional schemas or between dysfunctional PD beliefs and EMSs, or whether these traits and dysfunctional schemas can together account for variance in PD features. Each of these points will be considered in turn. This will be followed by a discussion of the overarching theoretical framework for the current research.

### **1.5.1 Traits and Dysfunctional Schemas**

A literature search could only identify four published studies to date that have explored the relationships between traits and dysfunctional schemas conceptualised as either dysfunctional PD beliefs or EMSs. These studies all used FFM traits, rather than SNAP traits, and results were generally mixed.

In the first study, Muris (2006) explored the relationships between EMSs, FFM domains, perceptions of parental rearing behaviours and psychopathological symptoms in a non-clinical sample of 173 adolescents aged between 12 and 15 years. Muris used the Big Five Questionnaire for Children (BFQ-C; Barbaranelli, Caprara, Rabasca, & Pastorelli, 2003) and his age-appropriate version of the YSQ. Results indicated that Neuroticism was positively correlated with all EMSs, Extraversion and Conscientiousness were positively correlated with Unrelenting Standards, Agreeableness was positively correlated with Self-Sacrifice and Unrelenting Standards, and Intellect/Openness was positively correlated with Unrelenting Standards and Vulnerability to Harm/Illness. Muris also found that perceptions of detrimental parental rearing behaviours and various types of psychopathological symptoms were positively correlated with a range of EMSs. Lastly, Muris investigated whether Neuroticism and early rearing experiences could predict EMSs. He reported that Neuroticism and a composite score of detrimental parental rearing behaviours together explained up to 35.7% of the variance in a range of EMSs. Conversely, Neuroticism was the only significant predictor of the EMSs of Defectiveness/Shame, Failure, Dependence/Incompetence, Vulnerability to Harm/Illness, Enmeshment/Undeveloped Self, Subjugation, Self-Sacrifice and Unrelenting Standards. Muris concluded that “both nurture and nature play a role in

the formation of these distorted thinking patterns” (p. 411), which is consistent with the position of Young et al. (2003) who suggest that both temperament and toxic early life experiences together lead to the development of EMSs.

The second study, by Butler et al. (2007), investigated the relationships between Neuroticism, as measured by the NEO Five-Factor Inventory (NEO-FFI; Costa & McCrae, 1992), and shortened versions of the PBQ dysfunctional PD belief scales with a sample of 160 outpatients. Results revealed moderate to strong positive correlations between Neuroticism and all shortened PBQ scales.

In the third study, Sava (2009) investigated the relationships between FFM domains, as measured by his own DECAS Personality Inventory, and EMSs, as measured by the YSQ-LF, in a non-clinical sample of 154 Romanian university students. Sava performed a canonical correlation analysis and extracted four canonical functions. All EMSs had positive loadings on the first canonical function, whilst Agreeableness and Emotional Stability (low Neuroticism) obtained negative loadings. On the second canonical function, Emotional Stability obtained a negative loading whereas Abandonment/Instability, Failure, Dependence/ Incompetence, Vulnerability to Harm/Illness, Enmeshment/Undeveloped Self, Subjugation and Self-Sacrifice had positive loadings. On the third canonical function, Conscientiousness obtained a negative loading whereas Insufficient Self-Control/Self-Discipline and Dependence/Incompetence had positive loadings. Finally, on the last canonical function, Extraversion, Openness and Unrelenting Standards obtained negative loadings whereas Subjugation obtained a positive loading. Sava retained the first and second canonical functions due to statistical considerations and concluded that low levels of Emotional Stability and Agreeableness are associated with the presence of EMSs.

In the final study, Thimm (2010) investigated the relationships between EMSs, as measured by the YSQ-SF, and the FFM domains, as measured by a Norwegian translated version of the NEO-PI-R, in a clinical sample of 147 Norwegian adult outpatients. Correlational analyses revealed that all EMSs except for Self-Sacrifice and Entitlement were positively correlated with Neuroticism; while Extraversion was negatively correlated with Emotional Deprivation, Mistrust/Abuse, Social Isolation/Alienation, Defectiveness/Shame, Failure, Subjugation and Emotional Inhibition. Very few EMSs obtained statistically significant correlations with Openness or Conscientiousness. Specifically, Failure and Emotional Inhibition

were negatively correlated with Openness, whilst Dependence/Incompetence and Insufficient Self-Control/Self-Discipline were negatively correlated with Conscientiousness. Lastly, Agreeableness was negatively correlated with Mistrust/Abuse, Entitlement/Grandiosity and Insufficient Self-Control/Self-Discipline, yet positively correlated with Self-Sacrifice. Using squared multiple correlation coefficients, Thimm found that 9% (Enmeshment/Undeveloped Self) to 42% (Insufficient Self-Control/Self-Discipline) of the variance in EMSs could be accounted for by the collective FFM domains. Similar to Muris (2006), Thimm argued that the results supported the schema theory position that innate temperament or personality dispositions contribute to the development of EMSs (Young et al., 2003).

In addition, Thimm (2010) performed a hierarchical regression analysis to examine whether a composite score of EMSs (YSQ-SF Total) could add to the prediction of depression symptoms over and above the FFM domains. The collective FFM domains were entered as predictors in the first block and they explained 35% of the variance in depression scores. The YSQ-SF Total score was entered in the second block and it explained an additional 11% of variance in depression scores, over and above the amount of variance explained by the FFM domains alone. One clear implication from Thimm's study is that the incremental validity of personality traits and EMSs in predicting other symptoms of psychopathology, such as PD features, should be explored in future studies since both FFM traits and EMSs appeared to be significant predictors of depressive symptoms.

The reviewed studies provide preliminary evidence of the relationships between traits and dysfunctional schemas. However, these studies all had relatively low sample sizes, measured FFM domains rather than facets or SNAP traits and utilised earlier versions of the YSQ where relevant. Importantly, what these studies did not do was to explore all possible relationships between the traits and dysfunctional schemas that were assessed. Thus, one of the major aims of the present research was to address these limitations in order to better understand the relationships between personality traits and dysfunctional schemas.

### **1.5.2 Dysfunctional Schemas: Dysfunctional PD Beliefs and EMSs**

To date, a literature search failed to identify any published study that has examined the relationships between EMSs and the PBQ dysfunctional PD belief



scales. However, one study by Nelson-Gray, Huprich, Kissling, and Ketchum (2004) explored the relationships between EMSs and thoughts typically associated with PDs in a small sample involving 34 university students who were assessed for PD features. In this study, Nelson-Gray et al. used their own questionnaire to measure thoughts associated with paranoid, schizoid, narcissistic, histrionic, dependent, obsessive-compulsive, antisocial and avoidant PDs. This questionnaire is similar to the PBQ. Results revealed generally modest correlations between the PD thought scales and a range of EMSs that were measured by an early version of the YSQ. In light of these findings, and given the general conceptual similarities between EMSs and dysfunctional PD beliefs and their respective relationships with PDs, it can be hypothesised that EMSs and the PBQ dysfunctional PD belief scales would be meaningfully correlated. Thus, the current research explored these relationships.

### **1.5.3 Traits, Dysfunctional Schemas and PDs**

Just one published study to date has explored whether personality traits and dysfunctional schemas can together account for variance in PD features. Thimm (2011) recently investigated whether EMSs could add to the prediction of PD features beyond FFM facet traits. A total of 145 Norwegian outpatients completed the NEO-PI-R, YSQ-SF and the DSM-IV and ICD-10 Personality Questionnaire (DIP-Q; Ottosson et al., 1995); all DSM-IV-TR PDs except histrionic PD were examined. Thimm performed a series of hierarchical multiple regression analyses, whereby each PD was entered as the dependent variable and gender was entered as a covariate in the first step. In the second step, selected FFM facets hypothesised by Lynam and Widiger (2001) to be related to each PD were simultaneously entered as a block of predictor variables for that PD. In the final step, Thimm entered a subset of EMSs, which he hypothesised would be linked to each PD, as predictor variables. Results revealed that the selected subsets of FFM facets explained between 19% (obsessive-compulsive PD) and 62% (avoidant PD) of the variance in PD features, with a mean of 44% of explained variance across the PDs. Importantly, with the exception of schizoid and antisocial PDs, the selected subsets of EMSs contributed statistically significant incremental predictive power for most PDs and accounted for 0% (schizoid PD) to 12% (schizotypal PD) of additional unique variance across PDs, with a mean of 7% of additional explained variance. Altogether, FFM facets and EMSs explained between 27% (obsessive-compulsive PD) and 69% (avoidant PD)

of the variance in PD features, with a mean of 51% of total variance explained across the PDs. Thimm concluded that EMSs were able to capture variance in PD symptomatology that was not attributable to FFM facet traits and that, therefore, EMSs improved the understanding of PDs from beyond a trait description. Thimm also argued that a key implication from his findings was that personality traits and dysfunctional schemas should be included in any assessment of personality pathology.

Thimm's (2011) findings provide preliminary evidence of the incremental validity of EMSs over FFM traits in explaining PD features. However, several limitations of Thimm's seminal study need consideration. First, Thimm's sample consisted primarily of older adults with a mean age of 39 years. However, the onset of PD is said to occur around adolescence and early adulthood (APA, 2000) and research has demonstrated that PD symptoms tend to improve over time (Durbin & Klein, 2006). Hence, a sample of younger adults as opposed to older adults would arguably be better-suited to capture PD features. In addition, although Thimm's study involved a clinical sample, the predominant diagnoses in the sample were depressive disorders and the frequency of PD diagnoses was low. It is therefore possible that the diagnostic characteristics of Thimm's sample could have influenced the results, particularly if only a limited range of PD features was captured.

Furthermore, Thimm (2011) selected predictor variables solely based on a priori hypotheses, rather than on statistical considerations such as on the basis of their correlation coefficients. That is, for each PD, Thimm selected a subset of FFM facet traits as predictor variables based on the hypothesised PD-FFM facet profiles of Lynam and Widiger (2001). This resulted in 7 (schizoid and dependent PDs) to 17 (antisocial PD) FFM facet predictors for each PD. Moreover, Thimm hypothesised that specific EMSs would be predictors of each PD on the basis of the EMS descriptions provided by Young et al. (2003). This resulted in 1 (paranoid and antisocial PDs) to 7 (borderline PD) EMS predictors for each PD. Clearly, the different number of FFM facet and EMS predictor variables in each block of the regression analyses and for each PD category may partly account for the divergent amounts of variance in PD features explained by FFM facets and EMSs, respectively. Arguably, selecting predictor variables based on their zero-order correlation coefficients with the dependent variable, as opposed to solely on a priori hypotheses, is a better selection method because it ensures that potentially important

predictive relationships are not overlooked. A related issue is that, given his sample size, Thimm may have used too many predictor variables for some regressions, thus increasing the chance of error variance.

Another limitation of Thimm's (2011) study is that he explored only a limited number of relationships between FFM facet traits, EMSs and PD features and he specifically did not examine histrionic PD. Moreover, Thimm used the YSQ-SF, which measures only 15 out of 18 EMSs. Hence, it is plausible that Thimm may have overlooked important predictive relationships between traits, EMSs and PD features.

Unfortunately, Thimm (2011) did not list the final statistically significant predictors of each PD or their respective beta values at each step of his regression analyses. Accordingly, the nature and strength of the predictive relationships between specific traits or EMSs and PD features, particularly in the context of other traits or EMSs, remain unclear. Finally, it is unclear why Thimm controlled for gender given that his sample included a large gender imbalance with 107 women and 38 men. In fact, Thimm's results revealed that gender had a negligible relationship with PDs, which is consistent with previous studies wherein gender was not found to be a salient predictor of PD features when considered in the context of either FFM or SNAP traits (Stepp et al., 2005) or EMSs (Carr & Francis, 2010).

Given the limitations of Thimm's (2011) study, the present research aimed to extend Thimm's seminal work by: (a) exploring whether EMSs and dysfunctional PD beliefs could explain additional variance in PD features above and beyond the amount of variance attributable to either FFM or SNAP traits; and (b) identifying the specific trait and dysfunctional schema predictors of each PD syndrome.

#### **1.5.4 Theoretical Framework**

The DSM-5's PD Work Group recently acknowledged that a key challenge in the reconceptualisation of PDs "pertains to the integration and, ideally, harmonization of personality trait models with models of personality stemming from other theoretical perspectives" (Krueger, Eaton, Derringer, et al., 2011, p. 326). As pointed out by Livesley (2003), using personality traits and dysfunctional schemas to conceptualise PDs is a plausible proposal if personality is viewed as a system of interrelated structures and processes. Several disparate theoretical models that conceptualise personality as such a system have been proposed (Livesley, 2003;

Luyten & Blatt, 2011; McAdams & Pals, 2006; McCrae & Costa, 2008b; Mischel & Shoda, 1995), with some of these models distinguishing between dispositional personality traits and characteristic adaptations such as schemas. McCrae and Costa's (2003, 2008b) Five-Factor Theory (FFT) of the personality system is one such theoretical model and it served as the overarching theoretical framework for the present research.

McCrae and Costa (2003) developed FFT to help explain the differences between personality traits and the adaptations or outcomes that traits may influence. According to FFT, the core components of the personality system include basic tendencies and characteristic adaptations, whereby the self-concept is a significant subcomponent of the characteristic adaptations (McCrae & Costa, 2008b). FFM personality traits, and arguably by extension SNAP temperaments given their interrelationships and convergence with FFM traits (Clark & Livesley, 2002; Markon et al., 2005; Widiger et al., 2009), are endogenous basic tendencies or dispositions that are determined by biological factors, such as genes (McCrae & Costa, 2008b). In contrast, characteristic adaptations, such as schemas, beliefs, attitudes, roles, coping styles, habits and the self-concept, are formed over time and are influenced by the basic tendencies, environmental/situational factors and their interaction (McCrae & Costa, 2008b; McCrae et al., 2005). FFT posits that as an individual responds to the demands of the environment, he or she may develop non-optimal characteristic adaptations, or maladaptations, such as dysfunctional schemas, irrational beliefs and ineffective coping styles, which can subsequently lead to distress, maladjustment and personality-related problems (McCrae et al., 2005).

FFT proposes that having a high level of a dispositional trait renders an individual more likely to acquire the specific types of characteristic maladaptations and in turn experience the specific types of personality-related problems that are associated with extreme levels of that trait (McCrae, 2006). However, FFT also specifies that personality pathology "is found in the characteristic adaptations, not the basic tendencies" (McCrae et al., 2005, p. 273). In other words, it is the combination of basic tendencies (i.e., personality traits) and characteristic maladaptations (e.g., dysfunctional schemas) which may give rise to PD features, symptoms and behaviours outlined in the DSM-IV-TR criteria (Harkness & McNulty, 2002). This is a noteworthy point because it is in line with existing arguments that: (a) having an extreme level of a trait is necessary but not sufficient

for a PD diagnosis (Wakefield, 2008); (b) PD diagnosis and case formulation is incomplete and inadequate if only traits are assessed (Clark, 2007); and (c) the presence of cognitive distortions (i.e., dysfunctional schemas) could be a requirement in order to diagnose a PD (Costa & McCrae, 2010).

Conceptualising PDs from the FFT perspective also has important implications for their treatment (Harkness & McNulty, 2002; McCrae et al., 2005). Specifically, if personality traits are basic tendencies that have roots in biology and, hence, are relatively stable dispositions, then it may be difficult to change them through psychotherapy (McCrae et al., 2005). Accordingly, the perceived intractability of traits could be a contributing factor as to why PD treatments are rarely based on personality trait models of such disorders (Alwin et al., 2006). In contrast, characteristic maladaptations, such as dysfunctional schemas, are all developed or learned over time and are theoretically amenable to modification (McCrae et al., 2005). Indeed, Beck et al. (2004) asserted that even extremely maladaptive personality and behavioural patterns can be changed through modifying the underlying dysfunctional schemas that drive such patterns and strengthening more adaptive schemas via cognitive therapy.

Aspects of FFT are arguably compatible with cognitive-behavioural theories of PD (Beck et al., 2004; Young et al., 2003). For instance, the idea in cognitive-behavioural theories that temperament interacts with environmental factors to produce schemas is comparable with the FFT idea that basic tendencies interact with environmental factors to produce characteristic (mal)adaptations, of which schemas are one type. Accordingly, FFT has the potential to serve as the broader theoretical framework for which elements of trait and cognitive-behavioural theories of PD can be integrated. In fact, traits and disordered cognition are central to the conceptualisation of PDs according to McCrae (2006). He defined a personality-related disorder as: “a set of life problems that (a) are characteristically related to the individual’s personality traits; (b) cause the individual significant distress; and (c) are maintained by misperceptions of reality [i.e., dysfunctional schemas]” (p. 59).

Using FFT as the framework for understanding PDs is also in line with the arguments put forth by Alwin et al. (2006) and Bornstein (2007) that PDs should be conceptualised using an integrated theoretical framework. This is because some theoretical personality constructs other than traits may be more useful for understanding and treating specific types of personality pathology. In line with such

arguments, Ball (2005) proposes that personality traits, dysfunctional schemas and coping styles are the building blocks of PD. Ball argued that assessment of dysfunctional schemas could provide the “middle level” (p. 94) link between biologically-influenced personality traits and PD features, symptoms and behaviours and in turn establish important foci of treatment for personality pathology. Beck and colleagues (2004; Weishaar & Beck, 2006) described dysfunctional PD beliefs and EMSs as lower-order trait-like dimensions and this further facilitates the integration of traits and dysfunctional schemas within a broader integrated model of PDs. In this way, PDs are not conceptualised as present/absent categorical syndromes, rather a combination of dimensional traits and dysfunctional schemas are said to underlie the PD syndrome. It is argued therefore that an integrated model consisting of basic tendencies (personality traits) and characteristic maladaptations (EMSs and dysfunctional PD beliefs) would offer better understanding of PD features, which in turn could have implications for the assessment, case formulation and treatment of PDs (Costa & McCrae, 2010). This argument is perhaps best summed up by the following quote from Krueger and Eaton (2010): “Dimensional models with sufficient fidelity offer a rich set of clinically relevant constructs—both general tendencies and specific adaptations—that can be combined to represent constellations of features that correspond closely with diagnostic constructs such as borderline personality disorder” (pp. 135-136).

### **1.6 General Aims**

In summary, higher- and lower-order FFM and SNAP personality traits and dysfunctional schemas in the form of EMSs and dysfunctional PD beliefs have been associated with PDs. Yet, little research has explored the relationships between traits and dysfunctional schemas or the relationships between the two types of dysfunctional schemas central to PDs, that is, EMSs and dysfunctional PD beliefs. Moreover, personality traits, EMSs and dysfunctional PD beliefs could together account for a significant proportion of variance in PD features, compared to the amount of variance explained by traits alone. However, little research has investigated whether dysfunctional schemas can contribute incremental predictive power in the explanation of PD features beyond that attributable to traits.

Thus, the overarching purpose of the present research was to explore the relationships between personality traits, dysfunctional schemas and PD features so as

to better understand and conceptualise personality pathology from an integrated theoretical perspective. This research therefore aimed to investigate whether PDs could be understood within two different, yet equally promising dimensional trait models (FFM and SNAP) and whether dysfunctional schemas (EMSs and dysfunctional PD beliefs) could offer additional understanding of PD features over and above that provided by the traits from each model. Specifically, this research aimed to investigate whether traits and dysfunctional schemas could predict PD features and whether unique constellations of traits and dysfunctional schemas were associated with specific DSM-IV-TR PD types. Identification of the unique combinations of trait and dysfunctional schema dimensions that are salient to specific PD syndromes could have important theoretical and practical implications for the conceptualisation, assessment and treatment of PDs. It is also in line with Bornstein's (2007) proposal to conceptualise PDs using constructs from multiple theoretical frameworks and with the DSM-5's proposed move towards a hybrid categorical-dimensional reconceptualisation of the PDs (APA, 2012c).

The general aims of the current research can be summarised by five research questions. First, are there theoretically-meaningful relationships between personality traits and dysfunctional schemas? Second, are there theoretically-meaningful relationships between EMSs and dysfunctional PD beliefs? Third, can dysfunctional schemas incrementally add to the prediction of PD features over and above traits? Fourth, are unique constellations of trait and dysfunctional schema predictors differentially related to PD syndromes? Fifth, are there statistically significant differences between clinical and non-clinical groups on trait and dysfunctional schema scores?

The general aims and research questions of the current research were investigated across three separate studies. Study 1 explored the relationships between FFM traits, dysfunctional schemas and PD features in a non-clinical analogue sample. Study 2 investigated the relationships between SNAP traits, dysfunctional schemas and PD features, again using a non-clinical analogue sample. Study 3 examined whether there were statistically significant differences on trait and dysfunctional schema scores between clinical and non-clinical groups.

## **Chapter 2: The Relationships between Personality Disorder Features, Dysfunctional Schemas and Traits from the Five-Factor Model of Personality (Study 1)**

### **2.1 Introduction**

As reviewed in Chapter 1, whilst various personality traits and dysfunctional schemas have been shown to have independent relationships with specific PD syndromes in previous studies, comparatively little research has been conducted regarding the relationships these variables have with each other and the relative contribution of each in accounting for the variance in PD features. Therefore, using the FFM as the model of personality traits, the overall purpose of Study 1 was to: (a) examine the relationships between FFM traits, dysfunctional schemas and PD features; and (b) investigate whether dysfunctional schemas added incremental validity to the prediction of PD features over and above FFM traits.

The first major aim of Study 1 was to explore the relationships between FFM traits and dysfunctional schemas conceptualised as either EMSs or dysfunctional PD beliefs. As indicated in section 1.5.1, to date only three published studies that have examined the relationships between the FFM and EMSs could be located (Muris, 2006; Sava, 2009; Thimm, 2010). Despite some mixed findings, these studies revealed that the FFM domains, particularly Neuroticism and to a lesser extent Agreeableness, were correlated with a range of EMSs. However, since these studies focused only on domain-level FFM traits, the relationships between EMSs and the specific lower-order facet traits of the FFM are unknown. Moreover, all three studies utilised an earlier version of the YSQ which identifies only 15 EMSs and excludes Negativity/Pessimism, Punitiveness and Approval/Recognition-Seeking. Hence, the relationships between these three EMSs and the FFM domains and facets remain unclear. In terms of the dysfunctional PD beliefs, Butler et al. (2007) found that Neuroticism was positively correlated with short forms of the PBQ dysfunctional PD belief scales. However, it is unclear whether other FFM domains or the lower-order facets are related to the dysfunctional PD belief scales since no published study to date could be located that has examined such relationships.

The second major aim of this study was to examine the relationships between EMSs and dysfunctional PD beliefs. As discussed in section 1.5.2, no published study that has examined the relationships between EMSs and dysfunctional PD



beliefs as measured by the PBQ could be found, in spite of the general conceptual similarities between these two types of dysfunctional cognitive schemas and their relationships with PDs.

The third major aim was to examine how FFM traits and dysfunctional schemas related to PD features as measured by the Wisconsin Personality Disorders Inventory-IV (WISPI-IV; Klein & Benjamin, 1996; Klein et al., 1993). Research reviewed in section 1.3.2 highlighted that specific FFM traits are correlates of specific PD syndromes. However, of the published studies that have examined the relationships between PDs and FFM traits, to date only three have used the WISPI-IV as the measure of PD features. Gore et al. (2011) explored only the relationships between the WISPI-IV's histrionic PD scale and the FFM domains; while the remaining two studies focused solely on the WISPI-IV's obsessive-compulsive PD scale and its relationships with either Conscientiousness facets (Samuel & Widiger, 2011) or all FFM domains and facets (Samuel & Widiger, 2010b). The lack of published research using the WISPI-IV is surprising considering that this instrument has been shown to have generally superior psychometric properties in comparison to most other self-report measures of PDs (Clark & Harrison, 2001). Given that the meta-analysis by Samuel and Widiger (2008) suggested that some relationships between specific FFM traits and PD features could be instrument-specific, it is essential to clarify how FFM traits relate to this measure of PDs. Indeed, Samuel and Widiger expressed that a clear implication of their meta-analysis was the need for further research using different measures of PDs and the FFM so as to better understand hypothesised PD-FFM relationships. Hence, a minor aim of the present study was to investigate the validity of Widiger, Trull, and colleagues' (2002) hypothesised PD-FFM facet trait relationships using the WISPI-IV as the measure of PD features. Similarly, in terms of the relationships between PD syndromes and dysfunctional schemas, conceptualised as either EMSs or dysfunctional PD beliefs, no published study that has used the WISPI-IV as the measure of PD features could be located. Given the mixed findings on the relationships between specific EMSs and PDs (see section 1.4.4), instrument effects could also be at play. Moreover, explicating the relationships between PD features and the PBQ dysfunctional PD belief scales is important as the two published studies that have explored correlational relationships examined only the relationships between PDs and their

corresponding PBQ dysfunctional PD beliefs scale instead of all possible relationships (Beck et al., 2001; Trull et al., 1993).

The fourth major aim of this study was to investigate the incremental validity of dysfunctional schemas in accounting for variance in PD features, over and above FFM traits. As indicated in Chapter 1, a Norwegian study by Thimm (2011) is the sole published study to date that has explored whether dysfunctional schemas, in Thimm's case EMSs, add incremental validity to the prediction PD features over and above FFM facet traits. However, as outlined in section 1.5.3, Thimm's study had some methodological limitations. For example, Thimm selected predictor variables based solely on a priori hypotheses rather than statistical considerations and he used a limited number of EMSs as predictors in comparison to FFM traits. Thimm also excluded histrionic PD and used an earlier version of the YSQ which measured only 15 out of 18 EMSs. Thus, Thimm's study did not explore the broader possible range of predictive relationships. Further, Thimm's study used a relatively low sample size for the amount of predictors entered into the regression analyses and the sample consisted primarily of older adult outpatients with depressive disorders. These sampling issues could have influenced Thimm's results. Thus, a key objective of the present study was to expand on Thimm's work by addressing these limitations using an Australian non-clinical analogue sample.

Given the lack of prior research, the large number of variables to be examined and the exploratory nature of the study, a combination of research questions and specific hypotheses were posed.

First, are there theoretically-meaningful relationships between FFM personality traits and dysfunctional schemas conceptualised as either EMSs or dysfunctional PD beliefs? Based on previous findings (Butler et al., 2007; Muris, 2006; Sava, 2009; Thimm, 2010) it was hypothesised that most dysfunctional schemas would be positively correlated with Neuroticism and negatively correlated with Agreeableness.

Second, are there theoretically-meaningful relationships between the two types of dysfunctional schemas, that is, EMSs and dysfunctional PD beliefs?

Third, are there theoretically-meaningful relationships between PD features as measured by the WISPI-IV and either FFM traits or dysfunctional schemas conceptualised as either EMSs or dysfunctional PD beliefs? On the basis of previous research (see Table 1.5 in Chapter 1), it was predicted that greater than 50% of the

PD-FFM facet trait relationships hypothesised by Widiger, Trull, et al. (2002) would be confirmed using the WISPI-IV. Further, with the consistent findings in previous regression research about PD-EMS relationships (Carr & Francis, 2010; Reeves & Taylor, 2007; Thimm, 2011), it was expected that there would be positive correlations between paranoid PD features and Mistrust/Abuse, schizoid PD features and Emotional Inhibition, narcissistic PD features and Entitlement/Grandiosity, and obsessive-compulsive PD features and Unrelenting Standards. In addition, based on previous findings (see Table 1.10 in Chapter 1) it was anticipated that each PD syndrome would be most strongly positively correlated with its corresponding PBQ dysfunctional PD beliefs scale.

Fourth, can dysfunctional schemas, that is, EMSs and the dysfunctional PD belief scales, incrementally add to the prediction of PD features over and above FFM facet traits? On the basis of the overall pattern of findings from Thimm's (2011) study, it was expected that EMSs and PD-specific dysfunctional belief scales would contribute statistically significant amounts of incremental variance in all PD features over and above the amounts of variance accounted for by FFM facet traits.

Fifth, what are the most salient predictors of each category of PD features?

## 2.2 Method

### 2.2.1 Participants

The majority of the participants were recruited from an urban university in Melbourne through the use of campus noticeboard flyers, advertisements placed on the university's online teaching interface, email invitations that were sent to all student email accounts and word-of-mouth. Individuals who were interested in taking part in the study were advised to email the researcher to organise their participation. Depending on the provisions of their particular course, some university student participants were eligible to receive minor course credit for participating in this study. The remaining participants were recruited from the general population in Melbourne by means of word-of-mouth snowball sampling, that is, through associates and networks of existing participants and the researcher. These individuals volunteered to participate after being informed about the study.

In total, 316 individuals aged over 18 years participated in this study; however, data was missing from three individuals. Thus, the final sample consisted of 313 participants ( $M = 26.50$  years,  $SD = 10.10$ , age range = 18-72 years), with 114

men ( $M = 28.73$  years,  $SD = 11.83$ , age range = 18-72 years) and 199 women ( $M = 25.23$  years,  $SD = 8.74$ , age range = 18-58 years). Overall, the participants had completed an average of 14.91 years of formal education ( $SD = 1.94$ ). Table 2.1 contains a breakdown of other characteristics of the sample. As shown in this table, the participants were predominantly full-time university students whom identified themselves as single and from an Australian or New Zealander cultural background.

Table 2.1

*Sample Characteristics*

<b>Characteristic</b>	<b><i>n</i></b>	<b>%</b>
<i>Currently attending university</i>		
Yes	236	75.4 %
No	77	24.6 %
<i>Ethnic or cultural background</i>		
Australian or New Zealander	184	58.8 %
Asian	66	21.1 %
European	28	8.9 %
Middle Eastern	25	8.0 %
South American	6	1.9 %
African	3	1.0 %
North American	1	0.3 %
<i>Employment status</i>		
Full-time student	102	32.6 %
Full-time student & employed	98	31.3 %
Employed full-time	60	19.2 %
Part-time student & employed	28	8.9 %
Part-time student	8	2.6 %
Employed part-time	8	2.6 %
Not employed	7	2.2 %
Other	2	0.6 %
<i>Relationship status</i>		
Single	146	46.7 %
Attached	109	34.8 %
Married	56	17.9 %
Other	2	0.6 %

*Note.*  $N = 313$ .

### 2.2.2 Materials

Along with an information letter and consent forms (see Appendix A), participants were given a questionnaire pack that contained sociodemographic questions and the measures. To minimise any potential practice, order or fatigue effects, the measures were counterbalanced and each participant received one of three predetermined versions of the questionnaire pack.

**2.2.2.1 Sociodemographic questions.** In order to establish some basic information about the characteristics of the sample, participants were asked to respond to questions about their age in years, their gender, whether or not they were a university student, their ethnic or cultural background, the number of years of formal education they had completed, their employment status and their relationship status. These questions comprised the cover page of the questionnaire pack.

**2.2.2.2 PD features.** PD features were measured by the Wisconsin Personality Disorders Inventory-IV (WISPI-IV; Klein & Benjamin, 1996; Klein et al., 1993), which is a 214-item self-report inventory from which scores on 11 PD scales can be obtained, that is, the 10 DSM-IV-TR PDs and passive-aggressive PD. Except for the passive-aggressive PD scale, which is based on DSM-III-R criteria, all WISPI-IV PD scales correspond to DSM-IV-TR PD criteria and each criterion is assessed by at least two items. The WISPI-IV items have an interpersonal focus and are worded from the phenomenological perspective of the respondent in that they describe the PD-related features, behaviours, symptomology and experiences that are likely to be endorsed by an individual with a specific PD (Klein et al., 1993).

The WISPI-IV requires respondents to rate their “usual self during the past five years or more” with items rated on a 10-point Likert-type scale ranging from 1 (*never or not at all*) to 10 (*always or extremely*). Scores for each PD scale are summed and averaged to obtain mean scale scores. Higher scores on the PD scales indicate greater endorsement of features, behaviours and symptoms that are consistent with the corresponding PD syndrome (Klein et al., 1993).

The WISPI-IV is scored by a computer scoring program (Norton, 2003) which provides mean scale scores, ipsatized  $z$  scores and normative  $z$  scores that compare the respondent’s mean score for a given PD scale against the means of 889 non-patients from the U.S. normative validation sample (Klein & Benjamin, 1996; Klein et al., 1993). In order to obtain mean scale scores and normative  $z$  scores for each participant on the WISPI-IV scales in the current study, participants’ raw data from their paper WISPI-IV questionnaires was entered into the WISPI-IV scoring program.

Though shorter, the WISPI-IV contains similar items to its predecessor DSM-III-R version, the WISPI-III-R (Klein et al., 1993). Both versions of the inventory have been shown to have good psychometric properties (Barber & Morse, 1994; Klein et al., 1993; Smith, Klein, & Benjamin, 2003). Specifically, using data

from the initial validation sample of 1,230 patients and non-patients, Klein et al. (1993) reported that internal consistency alpha coefficients for the WISPI-III-R PD scales averaged  $\alpha = .90$  and ranged between  $\alpha = .84$  (obsessive-compulsive PD) and  $\alpha = .96$  (avoidant PD), indicating excellent reliability. Klein et al. also reported that two-week test-retest correlation coefficients for the WISPI-III-R PD scales averaged  $r = .88$  and ranged from  $r = .71$  (schizoid PD) to  $r = .94$  (dependent PD) in a sample of 40 patients and 40 non-patients. Regarding the WISPI-IV, M.H. Klein (personal communication, July 29, 2010) advised that internal consistency alpha coefficients for the PD scales averaged  $\alpha = .89$  and ranged from  $\alpha = .81$  (schizoid PD) to  $\alpha = .94$  (avoidant PD) in a mixed sample of university students and psychiatric patients ( $N = 1,431$ ). In published work, Smith et al. (2003) reported that alpha coefficients for the WISPI-IV PD scales averaged  $\alpha = .84$  and ranged from  $\alpha = .74$  (antisocial PD) to  $\alpha = .91$  (avoidant PD) in a sample of 75 psychiatric inpatients.

**2.2.2.3 FFM of personality traits.** The NEO Personality Inventory-Revised (NEO-PI-R; Costa & McCrae, 1992) was used to measure FFM personality traits. The NEO-PI-R is a 240-item self-report inventory that provides scores for the five major domains of personality, as well scores for the six facet traits that define each domain. Items are rated on a 5-point Likert-type scale ranging from 0 (*strongly disagree*) to 4 (*strongly agree*) and each facet scale is assessed by eight items. Facet raw scores are obtained by summing scores on the items that comprise the facet scale. Domain raw scores are obtained by summing the six facet scale scores that comprise relevant domain. Raw scores for all scales are then converted into *T* scores which have a mean of 50 and a standard deviation of 10 (Costa & McCrae, 1992). Higher *T* scores indicate higher levels of a specific personality trait.

The NEO-PI-R is the standard and most widely used measure of the FFM and reliability and validity studies have consistently demonstrated its good psychometric properties (Costa & McCrae, 1992; Piedmont, 1998). Internal consistency alpha coefficients reported by Costa and McCrae (1992) ranged from  $\alpha = .86$  (Agreeableness) to  $\alpha = .92$  (Neuroticism) for the five domains and from  $\alpha = .56$  (Tender-Mindedness) to  $\alpha = .81$  (Depression) for the 30 facets in a large ( $N = 1,539$ ) non-clinical sample. For a list of the FFM domain and facet trait scales that are measured by the NEO-PI-R see Table 1.3 in Chapter 1.

**2.2.2.4 EMSs.** EMSs were measured by the Young Schema Questionnaire-Short Form 3 (YSQ-S3; Young, 2005b), which is the shorter version of the new 232-

item Young Schema Questionnaire-Long Form 3 (YSQ-L3; Young, 2005a). The YSQ-S3 is a 90-item self-report questionnaire designed to assess the 18 EMSs conceptualised by Young (1999). Items are rated on a 6-point Likert-type scale ranging from 1 (*completely untrue of me*) to 6 (*describes me perfectly*). Each EMS is measured by five items and raw scores for each EMS scale are summed and averaged to obtain mean scores. A total score on the YSQ-S3 can also be obtained by summing the raw scores on all scales. Higher EMS scale scores or YSQ-S3 Total scores indicate that the respondent holds stronger and more dysfunctional EMSs. For a list of Young's 18 EMSs see Table 1.11 in Chapter 1.

Previous research on the earlier 75-item version of the questionnaire (Young Schema Questionnaire-Short Form [YSQ-SF]; Young, 1998; Young & Brown, 2003b) which measured only 15 EMSs demonstrated that it had comparable psychometric properties to the 205-item long version of the questionnaire (Young Schema Questionnaire-Long Form [YSQ-LF]; Young & Brown, 1990, 2003a) from which it was derived (Baranoff, Oei, Cho, & Kwon, 2006; Hoffart et al., 2006; Lachenal-Chevallet, Mauchand, Cottraux, Bouvard, & Martin, 2006; Oei & Baranoff, 2007; Rijkeboer & van den Bergh, 2006; Stopa, Thorne, Waters, & Preston, 2001; Waller, Meyer, & Ohanian, 2001; Welburn, Coristine, Dagg, Pontefract, & Jordan, 2002). Recently, Nilsson et al. (2010) reported Cronbach's alpha coefficients for the YSQ-S3 scales ranging from  $\alpha = .72$  (Unrelenting Standards) to  $\alpha = .95$  (Defectiveness/Shame) in a mixed sample ( $N = 85$ ) of clinical and non-clinical female participants, indicating good reliability.

**2.2.2.5 Dysfunctional PD beliefs.** The specific dysfunctional beliefs associated with each DSM-IV-TR PD were measured by the Personality Belief Questionnaire (PBQ; Beck & Beck, 1995), which is a 126-item self-report questionnaire that consists of nine scales, with 14 items in each scale. The nine scales assess the specific dysfunctional beliefs central to paranoid, schizoid, histrionic, antisocial, narcissistic, avoidant, dependent, obsessive-compulsive and passive-aggressive PDs, as formulated by Beck et al. (2004). Respondents are required to rate how much they believe each item on a 5-point Likert-type scale ranging from 0 (*not at all*) to 4 (*totally*). Scores on the items for each scale are summed to obtain scale scores, with higher scores indicating that the respondent is holding stronger and more dysfunctional PD-related beliefs.

According to Beck et al. (2004), schizotypal and borderline PDs are not characterised by a specific set of dysfunctional beliefs. Thus, the PBQ does not contain separate belief scales for schizotypal and borderline PDs. However, Butler et al. (2002) found that 14 PBQ items distinguished patients with a diagnosis of borderline PD from patients with other PD diagnoses. Thus, a composite borderline PD dysfunctional beliefs subscale score can be extracted from the PBQ simply by summing scores on items 4, 9, 13, 15, 16, 18, 27, 60, 97, 113, 116, 119, 125 and 126.

The PBQ scales and the composite borderline PD beliefs subscale have been shown to have good psychometric properties. Beck et al. (2001) reported that Cronbach's alpha coefficients for the nine PBQ scales ranged from  $\alpha = .81$  (schizoid and antisocial PDs) to  $\alpha = .93$  (paranoid PD) in a large ( $N = 756$ ) outpatient sample, indicating good reliability. Moreover, Butler et al. (2002) obtained an alpha coefficient of  $\alpha = .89$  for the borderline PD dysfunctional beliefs subscale in a sample of 84 patients with diagnoses of borderline PD, indicating good reliability. Table 1.9 in Chapter 1 displays some examples of PD beliefs contained in the PBQ.

### **2.2.3 Procedure**

Approval to conduct this study was obtained from the Human Research Ethics Committee of the Australian Catholic University (see Appendix B).

Each university student who contacted the researcher by email to express interest in participating in the study was sent a response email inviting him or her to attend a testing session. Most testing sessions involved small groups of participants; however, some participants attended individual testing sessions. All testing sessions were held in a quiet room at the university.

At each testing session the researcher provided participants with an information letter and consent forms to read, plus a verbal description of the general aims of the study. After providing written consent, each participant was given a questionnaire pack to complete. The researcher provided participants with instructions on how to complete the measures inside the pack. Typically, the researcher remained in the room with the participants for the duration of the testing session so as to answer any questions. Each testing session lasted approximately 60 to 120 minutes and participants were encouraged to take short breaks as required.

The participants that were recruited from the general population were provided with questionnaire packs to complete in their own time and return to the



researcher in sealed envelopes. Once received by the researcher, the consent forms were immediately removed and kept separate from the returned questionnaire packs so as to ensure anonymity of responses.

## 2.3 Results

### 2.3.1 Data Screening

Each questionnaire pack was inspected for missing items prior to the raw data being entered into the statistics software program SPSS Statistics Version 17.0. There were 13 questionnaire packs with missing items, with all of these involving one or two missing items but on different scales. Generally, missing items were replaced with the mean of the non-missing items for the participant on the relevant scale (Tabachnick & Fidell, 2007). However, in the case of missing items on the NEO-PI-R, the neutral response was entered as instructed in the test manual (Costa & McCrae, 1992). Thus, there were no missing values for any variables in the dataset.

Prior to statistical analyses, all NEO-PI-R, WISPI-IV, YSQ-S3 and PBQ variables were screened for outliers and normality. Univariate outliers were detected using a two-step process. The scores on all variables were first converted into standardised scores. Secondly, the distributions of the standardised scores were examined to identify cases with extreme scores. According to Hair, Black, Babin, and Anderson (2010), in sample sizes larger than 80, cases with standardised scores that are greater than  $\pm 4$  may be regarded as potential outliers. In this sample of 313 cases, standardised scores across all variables were predominantly within the -2 to +2 range. However, a small number of variables with standardised scores greater than the threshold value of +4 were observed. These were mostly lone outliers. Variables that had one or, in the rare case, more outliers with a standardised score greater than +4 included the paranoid, schizoid, schizotypal, borderline, narcissistic and antisocial PD scales of the WISPI-IV; the YSQ-S3 scales of Mistrust/Abuse, Defectiveness/Shame, Failure, Vulnerability to Harm/Illness, Enmeshment/Undeveloped Self and Negativity/Pessimism; and the paranoid, borderline, narcissistic and antisocial PD dysfunctional belief scales of the PBQ.

Multivariate outliers were also detected using a two-step process (Hair et al., 2010). In the first step, Mahalanobis distance ( $D^2$ ) values for all NEO-PI-R, WISPI-IV, YSQ-S3 and PBQ variables were obtained. Secondly,  $D^2$  values were divided by

the degrees of freedom for the total number of variables involved. According to Hair et al. (2010), in large samples, cases with  $D^2/df$  values greater than 3.5 or 4 may be regarded as possible multivariate outliers. In this study, no cases evidenced  $D^2/df$  values greater than 3.5 or 4; hence, no multivariate outliers were detected.

In their discussion on outliers, Hair et al. (2010) argued that outliers should not simply be labelled as either beneficial or problematic, but instead should be evaluated according to the type of information they provide about the variables of interest. Hair et al. advise that outliers “should be retained unless demonstrable proof indicates that they are truly aberrant and not representative of any observations in the population” (p. 67). It has been argued that retaining outliers that are representative of a legitimate segment of the population helps to ensure the generalisability of findings to the entire population (Hair et al., 2010; Tabachnick & Fidell, 2007). With this in mind, the outliers in this study were theoretically possible scores on the scales, representing valid observations from the broader non-clinical population of scores. Moreover, despite their statistical designation as extreme scores, several outliers nonetheless appeared to be connected with the rest of the scores in their distributions. To ascertain whether or not the outliers had any impact on mean scores and, therefore, perhaps required deletion, the mean scores were compared with the 5% trimmed mean scores for all variables that had outliers with standardised scores greater than +4. The 5% trimmed mean is a re-calculated mean with the top and bottom 5% of scores removed; hence, it is not affected by outliers (Norusis, 2008). In all instances, the negligible differences between the mean scores and the 5% trimmed mean scores of the variables indicated that the outliers did not have a strong influence on mean scores. Consequently, the outliers were not removed.

Normality was assessed through histograms, normal Q-Q plots, detrended normal Q-Q plots, and skewness and kurtosis statistics. The histograms and normality plots revealed that scores for most of the variables approximated normal distributions. Moreover, the statistics for skewness and kurtosis were predominantly well within the accepted -1 to +1 range (Hair et al., 2010; Miles & Shevlin, 2001). However, histograms and normality plots also revealed that scores for a number of variables were not normally distributed, but instead evidenced moderate to strong positive skew. The variables that had skewness and/or kurtosis statistics greater than +1 included the schizoid, schizotypal, narcissistic, antisocial, borderline and dependent PD scales of the WISPI-IV; the YSQ-S3 scales of Emotional Deprivation,

Abandonment/Instability, Mistrust/Abuse, Social Isolation/Alienation, Entitlement/Grandiosity, Defectiveness/Shame, Failure, Vulnerability to Harm/Illness, Enmeshment/Undeveloped Self and Negativity/Pessimism; and the paranoid, narcissistic, antisocial and borderline PD dysfunctional belief scales of the PBQ.

Given the low prevalence rate of PDs in the general Australian population (Jackson & Burgess, 2000), it was expected that some participants would obtain lower scores on some scales, such as the antisocial PD scale of the WISPI-IV, and, therefore, that some variables would be positively skewed. Thus, these non-normal distributions were considered to reflect characteristics of the wider non-clinical population, rather than problems in the dataset. Furthermore, from a statistical perspective, although non-normality can influence the results in samples with fewer than 50 cases, the effects of non-normality are said to be negligible in samples with 200 or more cases (Allison, 1999; Hair et al., 2010; Tabachnick & Fidell, 2007). Nonetheless, for the variables that were positively skewed, the appropriate square root, logarithmic and inverse transformations were attempted so as to maximise the power of the inferential statistical analyses. Histograms revealed that square root transformations improved the distribution of scores for the paranoid, narcissistic, antisocial and borderline PD dysfunctional belief scales of the PBQ; whereas logarithmic transformations improved the distribution of scores for the schizoid, narcissistic and borderline PD scales of the WISPI-IV and the Entitlement/Grandiosity and Negativity/Pessimism scales of the YSQ-S3. Since the distribution of scores for these transformed variables approximated normal distributions, these transformed variables were retained and used in the inferential statistical analyses. As a by-product, data transformations also reduced the impact of outliers for these variables if they were present. Data transformations did not improve the distribution of scores towards normality for the other positively skewed variables. Rather, histograms revealed that these variables remained moderately to strongly positively skewed or in some cases became moderately to strongly negatively skewed. Therefore, these variables were not transformed.

### **2.3.2 Descriptive Statistics**

Means, standard deviations, score ranges and Cronbach's alpha internal consistency coefficients for each measure are presented in Tables 2.2 to 2.5. It is important to note that whilst the nine transformed variables were used in the

inferential statistical analyses, their untransformed original scores are presented in the tables and text of this section on descriptive statistics so as to allow for comparisons to be made between scales from the same measure.

As displayed in Table 2.2, the WISPI-IV PD scales evidenced good internal consistency, with Cronbach's alpha coefficients all above  $\alpha = .80$ . Furthermore, whilst participants' mean scores on the PD scales were generally low, inspection of the normative  $z$  scores revealed that participants' scores were nonetheless similar to those of the non-patients in the WISPI-IV normative validation sample (Klein & Benjamin, 1996; Klein et al., 1993). In fact, the normative  $z$  scores indicated that, overall, participants in the current Australian non-clinical study obtained slightly higher mean scores on the paranoid, histrionic, obsessive-compulsive and passive-aggressive PD scales in comparison to the U.S. non-patients in the WISPI-IV normative sample.

Table 2.2

*Descriptive Statistics and Reliability of the WISPI-IV Scales*

WISPI-IV PD Scale	<i>M</i>	<i>SD</i>	Range	Normative <sup>a</sup> <i>z</i> score	Cronbach's $\alpha$
Paranoid PD	3.10	1.34	1 – 8.53	.01	.87
Schizoid PD	2.47	1.06	1 – 8.67	-.25	.82
Schizotypal PD	2.15	1.12	1 – 8.05	-.10	.91
Histrionic PD	3.18	1.28	1 – 8.28	.16	.89
Narcissistic PD	2.85	1.30	1 – 9.47	-.18	.90
Antisocial PD	1.53	0.66	1 – 4.81	-.33	.88
Borderline PD	2.45	1.15	1 – 7.67	-.29	.88
Avoidant PD	3.08	1.54	1 – 8.50	-.14	.92
Dependent PD	2.35	1.19	1 – 7.11	-.39	.91
Obsessive-Compulsive PD	3.48	1.21	1 – 7.47	.10	.85
Passive-Aggressive PD	2.97	1.21	1 – 6.68	.25	.88

*Note.* <sup>a</sup>Normative  $z$  scores compare the participants' mean scores with the means of the U.S. non-patients from the WISPI-IV normative validation sample (Klein & Benjamin, 1996; Klein et al., 1993).

Table 2.3 shows that participants' mean *T* scores for the majority of the NEO-PI-R scales were within the Average range of 45-55 (Costa & McCrae, 1992). The FFM domain scales evidenced excellent internal consistency, with Cronbach's alpha coefficients all above  $\alpha = .87$ . The 30 lower-order facet scales obtained lower alpha coefficients, yet the majority of these were still above  $\alpha = .60$  which some consider to be the lower limit value for acceptable internal consistency (Hair et al., 2010; Murphy & Davidshofer, 2005; Robinson, Shaver, & Wrightsman, 1991). However, applying the lower limit value of  $\alpha = .60$  meant that the facet scales of Activity ( $\alpha = .57$ ), Actions ( $\alpha = .56$ ) and Tender-Mindedness ( $\alpha = .44$ ) evidenced poor internal consistency. Costa and McCrae (1992) reported somewhat similar alpha coefficients of  $\alpha = .63$  for Activity,  $\alpha = .58$  for Actions and  $\alpha = .56$  for Tender-Mindedness and argued that such alpha coefficients were acceptable given that only eight items comprised each facet scale. Since a large body of research has demonstrated that the NEO-PI-R has good psychometric properties (Costa & McCrae, 1992), these scales were retained and used in the analyses with the caveat that any results obtained using the Tender-Mindedness scale in particular should be interpreted with caution. It should also be noted that these scales were used for research and not clinical decision-making purposes.

Table 2.3

*Descriptive Statistics and Reliability of the NEO-PI-R Scales*

NEO-PI-R Scale	<i>M</i>	<i>SD</i>	Range	Cronbach's $\alpha$
Neuroticism	55.73	11.20	25 – 80	.93
Anxiety	54.90	10.24	29 – 80	.78
Angry Hostility	52.82	10.49	27 – 80	.73
Depression	55.03	10.99	32 – 80	.84
Self-Consciousness	54.46	11.17	23 – 80	.72
Impulsiveness	53.59	10.72	25 – 80	.68
Vulnerability	54.79	11.63	23 – 80	.79
Extraversion	54.39	10.50	21 – 80	.88
Warmth	51.15	10.39	20 – 74	.73
Gregariousness	54.50	10.95	20 – 80	.75
Assertiveness	50.38	10.93	20 – 78	.77
Activity	49.96	9.37	23 – 75	.57
Excitement-Seeking	56.82	9.92	29 – 80	.64
Positive Emotions	54.55	10.65	23 – 79	.75
Openness	56.00	10.98	27 – 80	.88
Fantasy	56.85	11.18	28 – 80	.79
Aesthetics	53.40	10.70	25 – 78	.78
Feelings	54.70	11.63	20 – 80	.74
Actions	49.16	10.16	28 – 80	.56
Ideas	54.24	10.86	22 – 78	.80
Values	54.00	10.10	20 – 75	.67
Agreeableness	47.27	11.48	20 – 77	.87
Trust	47.18	11.21	20 – 76	.79
Straightforwardness	46.66	11.42	20 – 73	.73
Altruism	51.37	11.21	20 – 76	.73
Compliance	46.69	11.88	20 – 80	.68
Modesty	48.81	11.28	20 – 77	.72
Tender-Mindedness	50.96	10.01	20 – 79	.44
Conscientiousness	45.35	12.29	20 – 76	.92
Competence	46.28	11.61	20 – 76	.68
Order	46.62	11.51	20 – 76	.70
Dutifulness	46.17	11.62	20 – 71	.67
Achievement Striving	47.65	12.07	20 – 74	.75
Self-Discipline	42.35	12.67	20 – 73	.83
Deliberation	50.69	11.40	21 – 78	.73

In terms of the YSQ-S3 scales, Table 2.4 shows that overall participants' highest mean score was on the Unrelenting Standards scale and their lowest mean score was on the Defectiveness/Shame scale. The YSQ-S3 scales also evidenced acceptable internal consistency, with Cronbach's alpha coefficients ranging from  $\alpha = .63$  (Dependence/Incompetence) to  $\alpha = .88$  (Failure) for specific scales and  $\alpha = .96$  for the composite YSQ-S3 Total scale.

Table 2.4

*Descriptive Statistics and Reliability of the YSQ-S3 Scales*

<b>YSQ-S3 Scale</b>	<b><i>M</i></b>	<b><i>SD</i></b>	<b>Range</b>	<b>Cronbach's <math>\alpha</math></b>
Emotional Deprivation	1.72	0.82	1 – 4.80	.76
Abandonment/Instability	2.05	0.98	1 – 5.60	.86
Mistrust/Abuse	2.01	0.88	1 – 6.00	.84
Social Isolation/Alienation	2.02	0.93	1 – 5.60	.84
Defectiveness/Shame	1.63	0.78	1 – 5.20	.86
Failure	1.96	0.95	1 – 6.00	.88
Dependence/Incompetence	1.84	0.74	1 – 4.60	.63
Vulnerability to Harm/Illness	1.85	0.81	1 – 5.20	.72
Enmeshment/Undeveloped Self	1.87	0.83	1 – 5.40	.72
Subjugation	1.96	0.77	1 – 4.60	.73
Self-Sacrifice	3.17	0.98	1 – 6.00	.76
Emotional Inhibition	2.28	0.90	1 – 5.40	.72
Unrelenting Standards	3.32	0.95	1 – 6.00	.68
Entitlement/Grandiosity	2.55	0.83	1 – 6.00	.68
Insufficient Self-Control/Self-Discipline	2.50	0.91	1 – 5.80	.77
Approval/Recognition-Seeking	2.72	0.95	1 – 5.80	.80
Negativity/Pessimism	2.32	0.91	1 – 6.00	.80
Punitiveness	2.45	0.80	1 – 5.20	.69
YSQ-S3 Total Score	200.71	51.16	96 – 375	.96

The descriptive statistics for the PBQ scales are displayed in Table 2.5. Overall, participants' highest mean score was on the obsessive-compulsive PD dysfunctional beliefs scale and their lowest mean score was on the borderline PD dysfunctional beliefs subscale. The PBQ scales evidenced good internal consistency, with Cronbach's alpha coefficients ranging from  $\alpha = .82$  (avoidant PD beliefs scale) to  $\alpha = .92$  (paranoid PD beliefs scale).

Table 2.5

*Descriptive Statistics and Reliability of the PBQ Scales*

<b>PBQ Scale</b>	<b><i>M</i></b>	<b><i>SD</i></b>	<b>Range</b>	<b>Cronbach's <math>\alpha</math></b>
Avoidant PD beliefs	13.28	7.44	0 – 35	.82
Dependent PD beliefs	11.50	7.89	0 – 35	.85
Passive-Aggressive PD beliefs	18.94	8.76	0 – 47	.85
Obsessive-Compulsive PD beliefs	21.05	9.43	0 – 54	.89
Antisocial PD beliefs	12.19	7.79	0 – 46	.84
Narcissistic PD beliefs	10.86	7.95	0 – 54	.87
Histrionic PD beliefs	14.35	7.76	0 – 45	.84
Schizoid PD beliefs	18.52	8.33	0 – 46	.84
Paranoid PD beliefs	10.98	8.94	0 – 47	.92
Borderline PD beliefs	9.62	7.19	0 – 39	.85

### 2.3.3 Relationships between FFM Traits and Dysfunctional Schemas

Pearson's correlations were performed to examine the relationships between FFM personality traits and dysfunctional schemas conceptualised as either EMSs or dysfunctional PD beliefs. The results of these analyses are presented in Tables 2.6 to 2.7 and these tables can be read either vertically (i.e., down each column) or horizontally (i.e., along each row) to ascertain relationships between specific variables. Given the large number of separate correlations, it was necessary to protect against inflated Type I errors. Therefore, a conservative alpha level of  $p \leq .001$  was used to determine statistical significance for all correlations. Statistical power of the correlational analyses was determined using Cohen's (1988) power tables for  $r$ . Using the following criteria (a) an alpha level of  $p < .05$  (two-tailed) and (b) a minimum sample size of 300, the power tables revealed that the correlational analyses had a 41% chance of detecting  $r$ s of .10, a 94% chance of detecting  $r$ s of .20 and greater than a 99.5% chance of detecting  $r$ s of .30 or larger, that is, medium effect sizes (Cohen, 1988).

**2.3.3.1 Relationships between FFM traits and EMSs.** Table 2.6 displays the correlations between the FFM traits and EMSs. As expected, Neuroticism had a positive correlation with most EMSs, including the total score on the YSQ-S3, indicating that a higher level of Neuroticism is generally associated with the presence of a broad range of dysfunctional EMSs. Moreover, the patterns of the correlations with Neuroticism were theoretically-meaningful given the descriptions of the EMSs that were provided in Table 1.11 in Chapter 1. For example, Neuroticism had a stronger positive correlation with Abandonment/Instability than with Entitlement/Grandiosity. Neuroticism facets also evidenced positive correlations with most EMSs, however more nuanced and theoretically-meaningful correlations emerged. For instance, Anxiety was positively correlated with Defectiveness/Shame but evidenced little relationship with Entitlement/Grandiosity. Likewise, Impulsiveness was positively correlated with most EMSs, but had little correlation with Unrelenting Standards or Emotional Inhibition.

Consistent with the hypothesis, Agreeableness was negatively correlated with most EMSs. In fact, Agreeableness, Extraversion and Conscientiousness, plus their respective facets, obtained negative correlations with most EMSs and the total score on the YSQ-S3 indicating that higher levels of Extraversion, Agreeableness or Conscientiousness are generally associated with the presence of fewer and less



severe dysfunctional EMSs. However, there were a few specific exceptions to this pattern and these exceptions were theoretically-meaningful. That is, Agreeableness was positively correlated with Self-Sacrifice, while Conscientiousness was positively correlated with Unrelenting Standards. Furthermore, the Extraversion facet of Activity and most Conscientiousness facets were positively correlated with Unrelenting Standards, while the Agreeableness facets of Altruism and Modesty and the Conscientiousness facet of Dutifulness were positively correlated with Self-Sacrifice. Modesty was also positively correlated with Failure.

Openness did not obtain any statistically significant correlations with EMSs at the  $p \leq .001$  level. Conversely, some Openness facets did obtain statistically significant correlations with a few specific EMSs; however, the strength of these correlations were nonetheless small or weak in effect (i.e.,  $r < .30$ ; Cohen, 1988). For example, Fantasy was positively correlated with Abandonment/Instability and Social Isolation/Alienation; whereas Values was negatively correlated with Mistrust/Abuse, Dependence/Incompetence, Enmeshment/Undeveloped Self and Emotional Inhibition.

When Table 2.6 is read down each column, the FFM facet trait profile for each EMS can be ascertained. Inspection of the trait profiles of each EMS revealed theoretically-meaningful patterns of correlations. For example, the trait profile of Entitlement/Grandiosity consists of positive correlations with Angry Hostility and Impulsiveness, but negative correlations with all Agreeableness facets and the Conscientiousness facet of Self-Discipline. In contrast, the trait profile of Unrelenting Standards consists of positive correlations with Self-Consciousness, Activity and most Conscientiousness facets except Self-Discipline, and a negative correlation with Trust.

Table 2.6

## Correlations between FFM Traits and EMSs

FFM Traits	Emotional Deprivation	Abandonment/Instability	Mistrust/Abuse	Social Isolation/Alienation	Defectiveness/Shame	Failure	Dependence/Incompetence	Vulnerability to Harm/Illness	Emmeshment/Undeveloped Self	Subjugation	Self-Sacrifice	Emotional Inhibition	Unrelenting Standards	Entitlement/Grandiosity	Inefficient Self-Control/Discipline	Approval/Recognition-Seeking	Negativity/Pessimism	Punitiveness	YSQ-S3 Total Score
<b>Neuroticism</b>	.23***	.49***	.41***	.48***	.47***	.42***	.45***	.50***	.26***	.47***	.04	.33***	.13*	.21***	.46***	.27***	.51***	.24***	.54***
Anxiety	.17**	.37***	.28***	.31***	.34***	.27***	.33***	.46***	.24***	.34***	.08	.22***	.17**	.10	.28***	.16**	.46***	.14*	.40***
Angry Hostility	.17**	.38***	.42***	.34***	.32***	.23***	.26***	.36***	.20***	.24***	.01	.24***	.13*	.29***	.30***	.26***	.36***	.20**	.40***
Depression	.29***	.47***	.41***	.53***	.53***	.50***	.46***	.48***	.22***	.50***	.13*	.41***	.16**	.17**	.42***	.27***	.54***	.23***	.57***
Self-Consciousness	.22***	.31***	.36***	.41***	.44***	.40***	.39***	.39***	.18**	.45***	-.01	.35***	.18***	.12*	.34***	.23***	.44***	.24***	.46***
Impulsiveness	.05	.27***	.15**	.28***	.16**	.12*	.12*	.21***	.09	.18**	-.03	.07	-.01	.25***	.39***	.18***	.18***	.11	.23***
Vulnerability	.20***	.44***	.28***	.35***	.37***	.37***	.48***	.41***	.26***	.47***	-.04	.23***	-.04	.11	.41***	.17**	.42***	.16**	.42***
<b>Extraversion</b>	-.27***	-.19**	-.24***	-.40***	-.34***	-.33***	-.25***	-.25***	-.10	-.33***	.09	-.38***	.03	.07	-.19**	-.01	-.26***	-.12*	-.29***
Warmth	-.23***	-.18**	-.36***	-.36***	-.29***	-.19**	-.26***	-.24***	-.09	-.18**	.17**	-.40***	-.04	-.14*	-.11*	-.10	-.23***	-.12*	-.28***
Gregariousness	-.25***	-.20***	-.27***	-.47***	-.33***	-.25***	-.16**	-.20***	-.13*	-.26***	-.02	-.37***	-.16**	-.04	-.15**	-.03	-.25***	-.17**	-.32***
Assertiveness	-.21***	-.14*	-.10	-.23***	-.24***	-.33***	-.26***	-.14*	-.02	-.35***	.07	-.22***	.12*	.09	-.23***	-.04	-.19***	-.09	-.21***
Activity	-.16**	-.11	-.02	-.18***	-.16**	-.26***	-.14*	-.12*	-.07	-.23***	.09	-.11*	.24***	.16**	-.24***	.00	-.13*	.03	-.12*
Excitement-Seeking	-.01	.01	.01	-.08	-.09	-.04	.02	-.11	-.00	-.05	.01	-.07	.00	.20**	.09	.15**	-.02	-.02	.00
Positive Emotions	-.25***	-.18**	-.27***	-.32***	-.32***	-.27***	-.25***	-.25***	-.10	-.26***	.09	-.40***	-.02	.00	-.16**	.05	-.26***	-.11	-.29***
<b>Openness</b>	-.07	.11*	-.06	.11	-.01	-.10	-.15**	.02	-.04	-.06	.04	-.17**	.08	-.01	-.03	-.05	-.01	-.06	-.04
Fantasy	.00	.20***	.06	.18***	.07	.03	.09	.09	.10	.12*	.01	-.04	.02	.13*	.17**	.12*	.11*	-.06	.12*
Aesthetics	.04	.20***	.09	.19***	.12*	.01	-.04	.12*	.06	.06	.11	-.02	.06	.02	.02	-.02	.11	.02	.10
Feelings	-.09	.12*	-.06	.04	-.05	-.13*	-.08	.03	.00	-.03	.08	-.18**	.09	-.01	.01	-.03	.01	-.01	-.02
Actions	-.11*	-.06	-.13*	-.12*	-.16**	-.13*	-.22***	-.11	-.18***	-.18**	-.04	-.23***	-.10	-.03	-.14*	-.08	-.14*	-.04	-.18**
Ideas	-.04	.03	-.02	.10	-.03	-.14*	-.22***	-.01	-.02	-.10	.03	-.03	.17**	-.01	-.15**	-.06	-.06	-.05	-.05
Values	-.15**	-.09	-.22***	-.05	-.08	-.06	-.18***	-.07	-.18***	-.17**	-.02	-.23***	.05	-.19**	-.08	-.17**	-.14*	-.10	-.18**
<b>Agreeableness</b>	-.21***	-.28***	-.43***	-.26***	-.21***	-.04	-.18**	-.33***	-.16**	-.07	.19***	-.24***	-.09	-.42***	-.19**	-.28***	-.28**	-.09	-.30***
Trust	-.28***	-.24***	-.54***	-.33***	-.32***	-.25***	-.30***	-.39***	-.26***	-.26***	-.04	-.32***	-.19***	-.23***	-.15**	-.17**	-.44***	-.18***	-.41***
Straightforwardness	-.11	-.21***	-.34***	-.17**	-.22***	-.01	-.12*	-.25***	.00	-.06	.14*	-.14*	.06	-.30***	-.12*	-.25***	-.22***	-.04	-.22***
Altruism	-.25***	-.20***	-.27***	-.27***	-.27***	-.14*	-.23***	-.25***	-.09	-.13*	.33***	-.27***	.06	-.21***	-.16**	-.11	-.18***	-.05	-.22***
Compliance	-.06	-.15**	-.21***	-.05	-.01	.08	-.02	-.15**	-.11	.10	.04	-.08	.14*	-.29***	-.10	-.10	-.12*	-.10	-.13*
Modesty	-.02	-.08	-.06	-.02	.11	.20***	.05	-.03	-.08	.17**	.18***	.06	-.02	-.37***	-.04	-.27***	.02	.06	-.01
Tender-Mindedness	-.13*	-.21***	-.26***	-.20***	-.16**	-.06	-.13*	-.21***	-.05	-.09	.16**	-.24***	-.05	-.25***	-.18**	-.22***	-.11	-.05	-.21***
<b>Conscientiousness</b>	-.25***	-.34***	-.19***	-.30***	-.29***	-.39***	-.41***	-.23***	-.13*	-.35***	.13*	-.12*	.32***	-.15**	-.54**	-.18***	-.25**	-.04	-.31**
Competence	-.25***	-.29***	-.21***	-.27***	-.32***	-.46***	-.46***	-.25***	-.18**	-.42***	.07	-.18***	.20***	-.10	-.44***	-.19***	-.30***	-.13*	-.35***
Order	-.20***	-.19***	-.09	-.24***	-.23***	-.29***	-.31***	-.13*	-.05	-.26***	.02	-.10	.19***	-.10	-.38***	-.09	-.17**	-.01	-.22***
Dutifulness	-.18**	-.26***	-.13*	-.20***	-.21***	-.24***	-.31***	-.18**	-.09	-.17**	.24***	-.05	.31***	-.12*	-.33***	-.10	-.13*	.06	-.17**
Achievement Striving	-.16**	-.29***	-.16**	-.23***	-.18***	-.33***	-.28***	-.17**	-.05	-.29***	.13*	-.07	.39***	-.02	-.46***	-.13*	-.18**	-.04	-.21***
Self-Discipline	-.20***	-.39***	-.24***	-.33***	-.28***	-.42***	-.38***	-.29***	-.19***	-.39***	.08	-.16**	.16**	-.22***	-.62***	-.25***	-.30***	-.10	-.38***
Deliberation	-.17**	-.11*	-.03	-.10	-.11*	-.13*	-.20***	-.05	-.05	-.12*	.06	.00	.23***	-.11*	-.26***	-.07	-.08	.03	-.10

Note. \* $p \leq .05$ . \*\* $p \leq .01$ . \*\*\* $p \leq .001$ .

### 2.3.3.2 Relationships between FFM traits and dysfunctional PD beliefs.

Table 2.7 displays the correlations between the FFM traits and the PBQ dysfunctional PD belief scales. As hypothesised, Neuroticism obtained positive correlations with most PBQ scales, indicating that a higher level of Neuroticism is generally associated with holding stronger PD-related beliefs. Neuroticism facets also obtained positive correlations with most PBQ scales, but had little relationship with the schizoid, narcissistic or antisocial PD belief scales. However, two notable exceptions were positive correlations between Angry Hostility and both the antisocial and narcissistic PD belief scales.

Further, as expected, Agreeableness obtained negative correlations with most PBQ scales as did its facet traits, indicating that a higher level of Agreeableness is generally associated with holding fewer and less severe PD-related dysfunctional beliefs. However, Agreeableness and its facets had little relationship with the dependent and schizoid PD belief scales. Furthermore, Conscientiousness and its facets generally obtained negative correlations with the avoidant, dependent, histrionic and borderline PD belief scales, but positive correlations with the obsessive-compulsive PD beliefs scale.

Openness and its facets obtained little relationship with the PBQ scales. However, the Openness facet of Values was negatively, though weakly, correlated with most PBQ scales except the avoidant, passive aggressive and schizoid belief scales. Finally, Extraversion and its facets were generally negatively correlated with the avoidant, dependent, paranoid and borderline PD belief scales, indicating that a lower level of Extraversion is associated with holding stronger dysfunctional beliefs associated with these PDs. A notable exception to this pattern was a positive correlation between Excitement-Seeking and the histrionic PD beliefs scale. Furthermore, a weak positive correlation between Extraversion and the histrionic PD beliefs scale trended towards statistical significance ( $r = .10, p = .094$ ).

When Table 2.7 is read down each column, a theoretically-meaningful FFM facet trait profile of each PBQ scale is observed. For example, the trait profile for the schizoid PD beliefs scale consists of negative correlations with Gregariousness and Trust; whereas the trait profile for the antisocial PD beliefs scale consists of a positive correlation with Angry Hostility and negative correlations with Warmth, Values and all Agreeableness facets.

Table 2.7

## Correlations between FFM Traits and PBQ Dysfunctional PD Belief Scales

FFM Traits	Avoidant	Dependent	Passive- Aggressive	Obsessive- Compulsive	Antisocial	Narcissistic	Histrionic	Schizoid	Paranoid	Borderline
	PD beliefs	PD beliefs	PD beliefs	PD beliefs	PD beliefs	PD beliefs	PD beliefs	PD beliefs	PD beliefs	PD beliefs
<b>Neuroticism</b>	<b>.52***</b>	<b>.34***</b>	<b>.27***</b>	<b>.20***</b>	<b>.13*</b>	<b>.12*</b>	<b>.27***</b>	<b>-.02</b>	<b>.33***</b>	<b>.48***</b>
Anxiety	.37***	.27***	.15**	.21***	.09	.08	.17**	-.05	.23***	.35***
Angry Hostility	.37***	.18**	.28***	.25***	.23***	.21***	.26***	.08	.31***	.38***
Depression	.51***	.36***	.26***	.18***	.10	.06	.24***	.05	.34***	.48***
Self-Consciousness	.47***	.27***	.22***	.23***	.13*	.12*	.18***	.03	.29***	.41***
Impulsiveness	.26***	.12*	.25***	.06	.05	.13*	.23***	-.01	.16**	.24***
Vulnerability	.41***	.38***	.16**	.06	.07	.01	.19***	-.13*	.23***	.39***
<b>Extraversion</b>	<b>-.38***</b>	<b>-.21***</b>	<b>-.13*</b>	<b>-.05</b>	<b>-.03</b>	<b>.02</b>	<b>.10</b>	<b>-.14*</b>	<b>-.25***</b>	<b>-.30***</b>
Warmth	-.30***	-.09	-.17**	-.15**	-.20***	-.09	.00	-.17**	-.34***	-.31***
Gregariousness	-.36***	-.13*	-.17*	-.19***	-.09	-.09	.06	-.28***	-.25***	-.29***
Assertiveness	-.29***	-.22***	-.04	.09	.01	.08	.02	.00	-.06	-.14*
Activity	-.22***	-.12*	-.05	.18**	.06	.04	.06	.04	-.07	-.15**
Excitement-Seeking	-.09	-.06	.03	.02	.14*	.11	.23***	-.05	-.02	-.03
Positive Emotions	-.30***	-.21***	-.17**	-.11*	-.06	.03	.02	-.09	-.29***	-.32***
<b>Openness</b>	<b>-.11</b>	<b>-.08</b>	<b>-.05</b>	<b>-.08</b>	<b>-.13*</b>	<b>-.02</b>	<b>-.02</b>	<b>-.10</b>	<b>-.13*</b>	<b>-.08</b>
Fantasy	.10	.06	.05	-.04	.03	.10	.16**	-.09	.03	.09
Aesthetics	.01	.09	.02	-.02	-.05	.03	-.01	-.01	.00	.04
Feelings	-.01	.00	-.02	-.02	-.15**	-.01	.02	-.11	-.09	-.04
Actions	-.24***	-.16**	-.14*	-.15**	-.12*	-.12*	-.06	-.09	-.16**	-.19***
Ideas	-.17**	-.12*	-.01	.05	-.06	.05	-.07	-.02	-.08	-.09
Values	-.15**	-.23***	-.17**	-.19***	-.20***	-.21***	-.19***	-.11	-.24***	-.19***
<b>Agreeableness</b>	<b>-.21***</b>	<b>-.08</b>	<b>-.31***</b>	<b>-.26***</b>	<b>-.44***</b>	<b>-.34***</b>	<b>-.24***</b>	<b>-.16**</b>	<b>-.43***</b>	<b>-.37***</b>
Trust	-.32***	-.11*	-.29***	-.31***	-.38***	-.19***	-.17**	-.20***	-.50***	-.46***
Straightforwardness	-.12*	-.08	-.20***	-.16**	-.32***	-.20***	-.21***	-.08	-.32***	-.27***
Altruism	-.17**	-.06	-.17**	-.06	-.18***	-.10	-.04	-.05	-.27***	-.25***
Compliance	-.08	.03	-.23***	-.21***	-.27***	-.25***	-.13*	-.10	-.22***	-.17**
Modesty	.07	.01	-.22***	-.17**	-.31***	-.37***	-.18***	-.12*	-.13*	-.07
Tender-Mindedness	-.17**	-.10	-.12*	-.12*	-.24***	-.21***	-.18***	-.06	-.23***	-.22***
<b>Conscientiousness</b>	<b>-.29***</b>	<b>-.22***</b>	<b>-.14*</b>	<b>.21***</b>	<b>-.07</b>	<b>-.02</b>	<b>-.25***</b>	<b>.10</b>	<b>-.15**</b>	<b>-.26***</b>
Competence	-.27***	-.27***	-.13*	.10	-.12*	-.01	-.20***	.05	-.21**	-.29***
Order	-.23***	-.15**	-.09	.16**	.01	.02	-.19***	.06	-.08	-.17**
Dutifulness	-.11*	-.10	-.02	.23***	-.05	.02	-.16**	.15**	-.09	-.16**
Achievement Striving	-.28***	-.20***	-.08	.21***	-.01	.05	-.12*	.12*	-.06	-.19***
Self-Discipline	-.36***	-.25***	-.20***	.08	-.11	-.08	-.27***	.06	-.17**	-.30***
Deliberation	-.09	-.06	-.11	.20***	-.04	-.03	-.22***	.03	-.05	-.09

Note. \* $p \leq .05$ . \*\* $p \leq .01$ . \*\*\* $p \leq .001$ .

### 2.3.4 Relationships between EMSs and Dysfunctional PD Beliefs

Pearson's correlations were performed to examine the relationships between the two types of dysfunctional schemas, that is, the EMSs and the sets of PBQ dysfunctional PD belief scales. As mentioned in section 2.3.3, due to the large number of separate correlations, a conservative alpha level of  $p \leq .001$  was used to determine statistical significance and the correlational analyses were sufficiently powered to detect even weak *rs*.

As shown in Table 2.8, there were a large number of positive correlations between the various EMSs and dysfunctional PD belief scales, including correlations between theoretically-dissimilar dysfunctional schemas. For example, the passive-aggressive PD beliefs scale obtained a theoretically-meaningful positive correlation with the Insufficient Self-Control/Self-Discipline EMS, yet also obtained a positive correlation with the conceptually-dissimilar EMS of Unrelenting Standards. Furthermore, all PBQ scales obtained positive correlations with the YSQ-S3 Total score, with correlations ranging from medium ( $r > .30$ ) to large ( $r > .50$ ) in effect size (Cohen, 1988), indicating that holding PD-specific dysfunctional beliefs is associated with the presence of EMSs in general.

Despite the large number of positive correlations, the magnitude of the correlations between some EMSs and dysfunctional PD belief scales were theoretically-meaningful and strongest for conceptually similar dysfunctional schemas. For example, the antisocial, narcissistic and passive-aggressive PD belief scales were positively correlated with Entitlement/Grandiosity, but had little relationship with Self-Sacrifice. Further, the paranoid PD beliefs scale was most strongly positively correlated with Mistrust/Abuse and vice versa, while the obsessive-compulsive PD beliefs scale was most strongly positively correlated with Unrelenting Standards and vice versa. Likewise, the histrionic PD beliefs scale was most strongly positively correlated with Approval/Recognition-Seeking and vice versa, while the dependent PD beliefs scale was most strongly positively correlated with Subjugation.

Table 2.8  
*Correlations between EMSs and PBQ Dysfunctional PD Belief Scales*

EMSs	Avoidant PD beliefs	Dependent PD beliefs	Passive-Aggressive PD beliefs	Obsessive-Compulsive PD beliefs	Antisocial PD beliefs	Narcissistic PD beliefs	Histrionic PD beliefs	Schizoid PD beliefs	Paranoid PD beliefs	Borderline PD beliefs
Emotional Deprivation	.31***	.21***	.30***	.20***	.36***	.24***	.30***	.33***	.41***	.41***
Abandonment/Instability	.57***	.53***	.31***	.25***	.27***	.26***	.39***	.07	.41***	.56***
Mistrust/Abuse	.56***	.41***	.43***	.44***	.47***	.37***	.44***	.32***	.67***	.66***
Social Isolation/Alienation	.55***	.36***	.38***	.29***	.30***	.28***	.34***	.27***	.45***	.54***
Defectiveness/Shame	.57***	.35***	.27***	.29***	.29***	.17**	.32***	.21***	.47***	.56***
Failure	.46***	.30***	.17**	.20***	.18***	.07	.23***	.10	.28***	.39***
Dependence/Incompetence	.52***	.46***	.25***	.25***	.35***	.24***	.38***	.15**	.42***	.52***
Vulnerability to Harm/Illness	.49***	.41***	.35***	.33***	.36***	.27***	.29***	.18***	.47***	.55***
Enmeshment/Undeveloped Self	.38***	.39***	.23***	.27***	.29***	.26***	.35***	.17**	.34***	.43***
Subjugation	.58***	.56***	.29***	.29***	.25***	.20***	.39***	.10	.44***	.57***
Self-Sacrifice	.23***	.25***	.14*	.27***	.08	.09	.21***	.19***	.22***	.23***
Emotional Inhibition	.51***	.36***	.40***	.40***	.33***	.28***	.37***	.34***	.51***	.54***
Unrelenting Standards	.27***	.21***	.23***	.56***	.24***	.24***	.24***	.27***	.28***	.25***
Entitlement/Grandiosity	.33***	.30***	.50***	.37***	.48***	.53***	.49***	.29***	.35***	.35***
Insufficient Self-Control/Self-Discipline	.49***	.28***	.30***	.14*	.25***	.20***	.35***	.11	.27***	.36***
Approval/Recognition-Seeking	.51***	.43***	.41***	.45***	.50***	.51***	.61***	.25***	.45***	.50***
Negativity/Pessimism	.58***	.41***	.36***	.44***	.39***	.27***	.36***	.27***	.55***	.61***
Punitiveness	.40***	.34***	.26***	.41***	.26***	.20**	.29***	.25***	.33***	.37***
YSQ-S3 Total Score	.71***	.56***	.47***	.50***	.47***	.40***	.54***	.33***	.62***	.71***

Note. \* $p \leq .05$ . \*\* $p \leq .01$ . \*\*\* $p \leq .001$ .

### 2.3.5 Relationships between PD Features and either FFM Traits or Dysfunctional Schemas

Pearson's correlations were performed to examine the relationships between PD features as measured by the WISPI-IV PD scales and either FFM personality traits or dysfunctional schemas conceptualised as EMSs or dysfunctional PD beliefs. The results of these analyses are presented in Tables 2.9 to 2.11 and these tables can be read either vertically (i.e., down each column) or horizontally (i.e., across each row) to ascertain specific relationships. As with the previous correlational analyses, a conservative alpha level of  $p \leq .001$  was used to determine statistical significance and all analyses were sufficiently powered to detect even weak *rs*.

**2.3.5.1 Relationships between FFM traits and PD features.** Table 2.9 displays the correlations between FFM personality traits and PD features. Broadly speaking and akin to the aforementioned findings concerning EMSs and the PBQ dysfunctional PD belief scales, most WISPI-IV PD scales were positively correlated with Neuroticism and negatively correlated with Extraversion, Agreeableness and Conscientiousness. A noteworthy exception to this pattern was a positive correlation between Extraversion and the histrionic PD scale, indicating that a higher level of Extraversion is associated with histrionic PD features. The only WISPI-IV PD scales that were correlated with Openness at the  $p \leq .001$  level were the schizoid and antisocial PD scales and both relationships were negative in nature, indicating that a lower level of Openness is associated with schizoid and antisocial PD features.

When Table 2.9 is viewed across each row the specific statistically significant FFM domain-level profile for each PD scale can be ascertained. The paranoid, narcissistic and obsessive-compulsive PD scales were characterised by positive correlations with Neuroticism and negative correlations with Agreeableness. Similarly, the antisocial PD scale was positively correlated with Neuroticism and negatively correlated with Agreeableness, yet was also characterised by negative correlations with Conscientiousness and Openness. The histrionic PD scale was characterised by negative correlations with Agreeableness and Conscientiousness and a positive correlation with Extraversion. Conversely, the schizoid PD scale was characterised by negative correlations with Extraversion, Openness and Agreeableness. The borderline and avoidant PD scales evidenced a similar pattern of correlations in that both scales were positively correlated with Neuroticism and

negatively correlated with Agreeableness and Conscientiousness. However, the avoidant PD scale was also characterised by a negative correlation with Extraversion. Likewise, the dependent and passive-aggressive PD scales also showed a similar pattern of correlations in that both were positively correlated with Neuroticism and negatively correlated with Extraversion, Agreeableness and Conscientiousness. However, the passive-aggressive PD scale obtained a stronger negative correlation with Agreeableness than did the dependent PD scale. Lastly, the schizotypal PD scale was characterised by a positive correlation with Neuroticism and negative correlations with Extraversion and Agreeableness.

Statistically significant correlations were also obtained at the facet level. If Table 2.9 is viewed down each column the unique FFM facet trait profiles of each WISPI-IV PD scale can be ascertained. The table shows that the PD-FFM facet trait profiles for most WISPI-IV PD scales were generally consistent with those hypothesised by Widiger, Trull, et al. (2002). In fact, 44 out of 73 or 60% of the Widiger, Trull, et al. hypothesised PD-FFM facet trait predictions were statistically significant and a further seven predicted relationships would have been confirmed if a less stringent alpha level was used (see the last row of Table 2.9). Thus, the expectation that greater than 50% of the hypothesised PD-FFM facet trait relationships put forth by Widiger, Trull, et al. would be confirmed in this study was indeed supported. However, as indicated in the table, poor support was found for several predicted PD-FFM facet trait relationships concerning the schizotypal, histrionic, dependent and obsessive-compulsive PD scales.

Furthermore, inspection of Table 2.9 reveals several statistically significant and meaningful PD-FFM facet trait correlations that were not hypothesised by Widiger, Trull, et al. (2002). Some examples include a negative correlation between Values and the paranoid PD scale, a positive correlation between Depression and the antisocial PD scale, a negative correlation between Straightforwardness and the histrionic PD scale and a negative correlation between Self-Discipline and the dependent PD scale.



Table 2.9

## Correlations between FFM Traits and PD Features

	Paranoid PD	Schizoid PD	Schizotypal PD	Histrionic PD	Narcissistic PD	Antisocial PD	Borderline PD	Avoidant PD	Dependent PD	Obsessive- Compulsive PD	Passive- Aggressive PD
<b>FFM Traits</b>											
<b>Neuroticism</b>	<b>.29***</b>	<b>.13*</b>	<b>.29***</b>	<b>.15*</b>	<b>.25***</b>	<b>.22***</b>	<b>.55***</b>	<b>.58***</b>	<b>.46***</b>	<b>.28***</b>	<b>.39***</b>
Anxiety	.20***	.03	.19***	.06	.17**	.10	.39***	.42***	.31***	.21***	.23***
Angry Hostility	<b>.34***</b>	.14*	.24***	.15**	<b>.27***</b>	<b>.17**</b>	<b>.40***</b>	<b>.34***</b>	.26***	.23***	.33***
Depression	.29***	.22***	.32***	<b>.12*</b>	.23***	.24***	<b>.55***</b>	<b>.58***</b>	.45***	.27***	.35***
Self-Consciousness	.27***	.18**	<b>.25***</b>	<b>.07</b>	<b>.24***</b>	.18**	.40***	<b>.59***</b>	<b>.39***</b>	.28***	.33***
Impulsiveness	.14*	.04	.17**	.24***	.19***	.12*	<b>.38***</b>	.27***	.23***	.15**	.29***
Vulnerability	.17**	.09	.23***	.09	.15**	.21***	<b>.48***</b>	<b>.49***</b>	<b>.50***</b>	.21***	.30***
<b>Extraversion</b>	<b>-.13*</b>	<b>-.33***</b>	<b>-.19***</b>	<b>.23***</b>	<b>-.08</b>	<b>-.11*</b>	<b>-.18**</b>	<b>-.42***</b>	<b>-.21***</b>	<b>-.11</b>	<b>-.20***</b>
Warmth	-.26***	<b>-.35***</b>	<b>-.25***</b>	<b>.05</b>	-.19***	-.27***	-.22***	-.33***	-.20***	-.17**	-.24***
Gregariousness	-.20***	<b>-.39***</b>	<b>-.23***</b>	<b>.10</b>	-.18***	-.08	-.18***	<b>-.40***</b>	-.15**	-.22***	-.20***
Assertiveness	-.01	-.12*	-.04	.21***	.03	-.01	-.14*	<b>-.35***</b>	<b>-.22***</b>	<b>.02</b>	-.12*
Activity	.06	-.06	-.02	.16**	.01	-.02	-.10	<b>-.25***</b>	-.17**	.05	-.18***
Excitement-Seeking	.01	-.16**	-.06	<b>.27***</b>	.06	<b>.03</b>	.08	-.10	.04	.00	.06
Positive Emotions	-.17**	<b>-.26***</b>	<b>-.17**</b>	<b>.13*</b>	-.09	-.16**	-.20***	-.31***	-.20***	-.13*	-.18***
<b>Openness</b>	<b>-.12*</b>	<b>-.24***</b>	<b>-.04</b>	<b>.02</b>	<b>-.06</b>	<b>-.19***</b>	<b>.04</b>	<b>-.02</b>	<b>-.11</b>	<b>-.10</b>	<b>-.10</b>
Fantasy	.01	-.09	<b>.07</b>	<b>.17**</b>	<b>.07</b>	-.02	.17**	.17**	.13*	-.03	.09
Aesthetics	.02	-.10	.12*	.04	.03	-.04	.11	.07	.03	.00	-.00
Feelings	-.06	-.18***	-.05	<b>-.01</b>	-.05	-.18***	.04	.03	-.07	-.05	-.07
Actions	-.18**	<b>-.22***</b>	<b>-.15**</b>	-.01	-.15**	-.15**	-.08	-.24***	-.19***	-.22***	-.20***
Ideas	-.04	-.13*	<b>.01</b>	.02	.03	-.14*	-.04	-.05	-.14*	.03	-.07
Values	-.32***	-.31***	-.26***	-.17**	-.28***	-.27***	-.13*	-.15**	-.27***	-.23***	-.22***
<b>Agreeableness</b>	<b>-.41***</b>	<b>-.21***</b>	<b>-.36***</b>	<b>-.31***</b>	<b>-.41***</b>	<b>-.43***</b>	<b>-.37***</b>	<b>-.21***</b>	<b>-.20***</b>	<b>-.26***</b>	<b>-.38***</b>
Trust	-.42***	-.31***	-.32***	<b>-.14*</b>	-.31***	-.29***	-.30***	-.32***	-.22***	-.27***	-.31***
Straightforwardness	-.31***	-.13*	-.28***	-.31***	-.29***	-.35***	-.30***	-.16**	-.20***	-.18**	-.30***
Altruism	-.22***	-.21***	-.25***	-.06	-.21***	-.34***	-.26***	-.23***	-.19***	-.14*	-.32***
Compliance	-.26***	-.06	-.14*	-.17**	-.24***	-.20***	-.20***	-.04	-.01	-.13*	-.19***
Modesty	-.17**	-.03	-.20***	-.33***	-.34***	-.26***	-.10	.06	-.03	-.18**	-.19***
Tender-Mindedness	-.18***	-.12*	-.22***	-.20***	-.22***	-.30***	-.27***	-.14*	-.17**	-.15**	-.20***
<b>Conscientiousness</b>	<b>-.09</b>	<b>-.11</b>	<b>-.18**</b>	<b>-.19***</b>	<b>-.11</b>	<b>-.23***</b>	<b>-.44***</b>	<b>-.34***</b>	<b>-.39***</b>	<b>-.02</b>	<b>-.41***</b>
Competence	-.13*	-.17**	-.20***	-.12*	-.14*	-.23***	-.38***	-.34***	-.40***	-.09	-.35***
Order	-.01	-.05	-.07	-.14*	-.03	-.11	-.29***	-.20***	-.21***	.01	-.29***
Dutifulness	-.03	-.03	-.17**	-.14*	-.05	-.25***	-.29***	-.19***	-.29***	.06	-.30***
Achievement Striving	-.05	-.10	-.08	-.04	<b>-.02</b>	-.12*	-.29***	-.31***	-.27***	.06	-.26***
Self-Discipline	-.13*	-.12*	-.20***	-.21***	-.17**	-.22***	-.46***	-.40***	-.41***	-.15**	-.46***
Deliberation	-.04	-.05	-.08	-.19***	-.03	-.16**	-.28***	-.13*	-.22***	.09	-.23***
Significant predictions <sup>a</sup>	4/4	4/4	5/9	1/9	5/7	6/9	8/8	6/7	4/9	1/7	—
Significant at lower <i>p</i> <sup>b</sup>	4/4	4/4	6/9	4/9	5/7	8/9	8/8	6/7	4/9	2/7	—

Note. <sup>a</sup>PD-FFM facet trait predictions based on the hypothesised PD-FFM facet trait profiles proposed by Widiger, Trull, et al. (2002) that were statistically significant at  $p \leq .001$  level. The

correlations predicted to be positive are shaded, whereas the correlations predicted to be negative are underlined.

<sup>b</sup>PD-FFM facet trait predictions based on the hypothesised PD-FFM facet trait profiles put forth by Widiger, Trull, et al. that would have been statistically significant if a less conservative alpha level had been used.

\* $p \leq .05$ . \*\* $p \leq .01$ . \*\*\* $p \leq .001$ .

**2.3.5.2 Relationships between EMSs and PD features.** As shown in Table 2.10, there were a large number of positive correlations between EMSs and the WISPI-IV PD scales. The magnitude of the correlations varied and some specific correlations were theoretically meaningful. For example, Unrelenting Standards was most strongly positively correlated with the obsessive-compulsive PD scale, yet had little relationship with the antisocial PD scale. Similarly, Abandonment/Instability was most strongly positively correlated with the borderline PD scale, yet had a weak relationship with the schizoid PD scale. As hypothesised, there were statistically significant positive correlations between Mistrust/Abuse and paranoid PD features, Emotional Inhibition and schizoid PD features, Entitlement/Grandiosity and narcissistic PD features, and Unrelenting Standards and obsessive-compulsive PD features. All of these correlations were either medium or large in effect size (Cohen, 1988). Moreover, all PD scales were positively correlated with the total score on the YSQ-S3, indicating that the general presence of EMSs is associated with a range of PD features.

Despite some theoretically-meaningful correlations between specific EMSs and PD scales, there were also several correlations between theoretically-dissimilar constructs. For example, Dependence/Incompetence obtained a theoretically-meaningful strong positive correlation with the dependent PD scale, yet also obtained a positive correlation with the conceptually-dissimilar schizoid PD scale. Furthermore, Entitlement/Grandiosity obtained a theoretically-meaningful strong positive correlation with the narcissistic PD scale, yet also obtained a positive correlation with the conceptually-dissimilar avoidant PD scale.

Table 2.10  
*Correlations between EMSs and PD Features*

EMSs	Paranoid PD	Schizoid PD	Schizotypal PD	Histrionic PD	Narcissistic PD	Antisocial PD	Borderline PD	Avoidant PD	Dependent PD	Obsessive-Compulsive PD	Passive-Aggressive PD
Emotional Deprivation	.42***	.44***	.40***	.24***	.40***	.35***	.42***	.42***	.30***	.29***	.43***
Abandonment/Instability	.42***	.26***	.48***	.32***	.42***	.39***	.62***	.60***	.60***	.42***	.48***
Mistrust/Abuse	.71***	.48***	.59***	.37***	.53***	.49***	.58***	.60***	.48***	.48***	.51***
Social Isolation/Alienation	.46***	.46***	.55***	.31***	.46***	.36***	.56***	.68***	.47***	.46***	.53***
Defectiveness/Shame	.47***	.40***	.46***	.23***	.36***	.33***	.50***	.65***	.45***	.35***	.42***
Failure	.25***	.34***	.27***	.14*	.22***	.25***	.42***	.53***	.40***	.32***	.40***
Dependence/Incompetence	.41***	.35***	.43***	.30***	.38***	.40***	.49***	.55***	.57***	.41***	.49***
Vulnerability to Harm/Illness	.46***	.33***	.51***	.27***	.37***	.37***	.53***	.52***	.45***	.38***	.40***
Enmeshment/Undeveloped Self	.40***	.35***	.41***	.37***	.40***	.27***	.38***	.40***	.49***	.41***	.39***
Subjugation	.44***	.42***	.46***	.30***	.39***	.32***	.56***	.67***	.67***	.46***	.49***
Self-Sacrifice	.22***	.16**	.15**	.22***	.21***	-.05	.16**	.18**	.18**	.30***	.15**
Emotional Inhibition	.52***	.53***	.47***	.29***	.49***	.35***	.52***	.61***	.40***	.51***	.50***
Unrelenting Standards	.29***	.20***	.20***	.23***	.32***	.09	.18**	.26***	.11	.43***	.14*
Entitlement/Grandiosity	.48***	.35***	.49***	.58***	.62***	.51***	.52***	.31***	.36***	.47***	.56***
Insufficient Self-Control/Self-Discipline	.26***	.32***	.29***	.32***	.37***	.28***	.56***	.49***	.43***	.35***	.53***
Approval/Recognition-Seeking	.52***	.38***	.49***	.58***	.64***	.44***	.54***	.50***	.50***	.53***	.52***
Negativity/Pessimism	.53***	.40***	.48***	.34***	.46***	.35***	.57***	.57***	.49***	.46***	.50***
Punitiveness	.35***	.30***	.26***	.22***	.30***	.20***	.31***	.36***	.29***	.42***	.28***
YSQ-S3 Total Score	.64***	.55***	.63***	.48***	.62***	.48***	.71***	.75***	.64***	.63***	.65***

Note. \* $p \leq .05$ . \*\* $p \leq .01$ . \*\*\* $p \leq .001$ .

### 2.3.5.3 Relationships between dysfunctional PD beliefs and PD features.

Table 2.11 shows a large number of positive correlations between the PBQ dysfunctional PD belief scales and the WISPI-IV PD scales. However, a horizontal reading of the table (i.e., along each row) reveals that, with the exception of the WISPI-IV schizotypal PD scale, which does not have a corresponding PBQ dysfunctional beliefs scale, each WISPI-IV PD scale was most strongly positively correlated with its corresponding PBQ scale as hypothesised.

Similarly, a vertical reading of the table (i.e., down each column) reveals that the PBQ dysfunctional PD belief scales were most strongly positively correlated with their corresponding WISPI-IV PD scales, with three exceptions. First, the PBQ passive-aggressive PD beliefs scale was equally positively correlated with the WISPI-IV passive-aggressive and narcissistic PD scales ( $r_s = .60$ ,  $p_s < .001$ ). Second, the PBQ antisocial PD beliefs scale was most strongly positively correlated with the WISPI-IV narcissistic PD scale ( $r = .65$ ,  $p < .001$ ) rather than with antisocial PD scale ( $r = .53$ ,  $p < .001$ ). Finally, the PBQ borderline PD beliefs subscale was most strongly positively correlated with the WISPI-IV paranoid PD scale ( $r = .65$ ,  $p < .001$ ) rather than the borderline PD scale ( $r = .63$ ,  $p < .001$ ) as would be expected.

Table 2.11  
*Correlations between PBQ Dysfunctional PD Belief Scales and PD Features*

PDs	Avoidant PD beliefs	Dependent PD beliefs	Passive-aggressive PD beliefs	Obsessive-compulsive PD beliefs	Antisocial PD beliefs	Narcissistic PD beliefs	Histrionic PD beliefs	Schizoid PD beliefs	Paranoid PD beliefs	Borderline PD beliefs
Paranoid PD	.54***	.43***	.56***	.51***	.62***	.51***	.53***	.51***	<b>.68***</b>	<b>.65***</b>
Schizoid PD	.44***	.34***	.43***	.42***	.49***	.35***	.39***	<b>.58***</b>	.52***	.51***
Schizotypal PD	.49***	.48***	.49***	.41***	.52***	.53***	.53***	.41***	.55***	.57***
Histrionic PD	.33***	.39***	.49***	.34***	.51***	.56***	<b>.65***</b>	.34***	.40***	.43***
Narcissistic PD	.53***	.48***	<b>.60***</b>	.56***	<b>.65***</b>	<b>.69***</b>	.62***	.49***	.59***	.59***
Antisocial PD	.36***	.36***	.43***	.32***	<b>.53***</b>	.45***	.50***	.36***	.44***	.46***
Borderline PD	.60***	.52***	.48***	.34***	.42***	.44***	.56***	.24***	.53***	<b>.63***</b>
Avoidant PD	<b>.71***</b>	.54***	.40***	.36***	.31***	.33***	.45***	.22***	.50***	.63***
Dependent PD	.59***	<b>.67***</b>	.34***	.28***	.36***	.38***	.53***	.13*	.46***	.60***
Obsessive-compulsive PD	.52***	.50***	.49***	<b>.60***</b>	.51***	.49***	.51***	.43***	.55***	.56***
Passive-aggressive PD	.56***	.45***	<b>.60***</b>	.38***	.53***	.50***	.56***	.39***	.56***	.59***

Note. The strongest correlation for each row is in boldface; while the strongest correlation for each column is shaded.

\* $p < .05$ . \*\*\* $p < .001$ .

### 2.3.6 Predictors of PD Features

In order to examine whether dysfunctional schemas could incrementally add to the prediction of PD features over and above FFM traits and to determine the most salient predictors, a series of hierarchical multiple regression analyses were performed. In each analysis, a specific WISPI-IV PD scale was entered as the criterion variable and selected subsets of FFM traits, EMSs and the corresponding PBQ dysfunctional PD beliefs scale for that PD were entered as predictor variables, as will be explained next.

An important consideration in multiple regression analysis is the ratio of cases to predictor variables. Specifically, a smaller cases-to-predictors ratio can negatively influence the statistical power of the analysis and the generalisability of results (Hair et al., 2010). According to Hair and colleagues (2010), the minimum acceptable ratio is 5:1, or five cases per predictor. However, this rule of thumb does not take into account the power of the analysis. Conversely, Green's (1991) formulas allow for the determination of the minimum number of cases and predictors that are required for a multiple regression analysis to have a corresponding power value of  $\geq .80$  at an alpha level of  $p < .05$ . Calculations using these formulas revealed that, given the sample size of 313, up to 32 predictors could be entered in each regression analysis in order to test the statistical significance of both the overall model ( $R^2$ ) and the contribution of individual predictor variables. This corresponded to a minimum cases-to-predictors ratio approaching 10:1.

In each hierarchical multiple regression analysis, the FFM facet traits that were statistically significantly ( $p \leq .001$ ) correlated with the given PD scale (see Table 2.9 above) were simultaneously entered as a class of predictor variables in the first block to independently assess their relationship with that PD syndrome. In line with Thimm (2011), FFM facets as opposed to domains were entered as predictor variables because the facets are said to provide a finer description and differentiation of the PDs (Widiger, Trull, et al., 2002). Moreover, since the correlational analyses in Table 2.9 revealed statistically significant and meaningful PD-FFM facet trait relationships that Widiger, Trull, et al. (2002) did not hypothesise, all facets that were statistically significantly correlated with the given PD scale were entered as predictors, as opposed to just those hypothesised by Widiger, Trull, et al. in their PD-FFM facet trait profiles, so as to ensure that important predictive relationships

were not overlooked. This resulted in 8 (schizoid PD) to 24 (passive-aggressive PD) facet predictors in each regression analysis.

In the subsequent block, subsets of EMSs were simultaneously entered as predictor variables to examine their incremental validity in predicting PD features over and above the FFM traits. Despite the large number of statistically significant PD-EMS correlations (see Table 2.10), it was not possible nor desirable to include all EMS correlates in each regression analysis, in addition to the FFM traits that were entered in the first block, as this would result in exceeding the acceptable cases-to-predictor variables ratio. As Tabachnick and Fidell (2007) have pointed out, entering a large number of predictor variables into a regression analysis increases the risk of error variance and overfitting the regression models, thus limiting the generalisability of results. Therefore, it was necessary to select a subset of EMSs to include as predictor variables in each regression analysis.

As detailed in section 1.5.3, Thimm (2011) selected subsets of between one to seven EMSs as predictor variables for each PD category based on his own hypotheses that were derived from reading the EMS descriptions provided by Young et al. (2003). However, Thimm provided no justifications for his specific selections. Thus, in the current study EMSs were selected for inclusion as predictors on the basis of both statistical and theoretical considerations. First, EMSs that were both statistically significantly ( $p \leq .001$ ) and at least moderately correlated (i.e.,  $r \geq .30$ , representing 9% of shared variance; Cohen, 1988) with the given PD scale were shortlisted for possible inclusion as predictor variables. This process reduced the number of shortlisted EMSs and ensured that the most salient EMSs could be identified as predictors in the regression analyses. Next, the EMSs thought to be most strongly related to each PD scale, relative to other EMSs, were identified via a conceptual matching approach that was similar to that of Thimm. Specifically, Young's (1999, 2002; Young et al., 2003) writings and descriptions of the EMSs were reviewed and compared with the DSM-IV-TR criteria and associated features for each PD (APA, 2000). Furthermore, studies that examined the relationships between PDs and EMSs using the YSQ-SF (Nordahl et al., 2005; Reeves & Taylor, 2007; Thimm, 2011) were also consulted to ensure that potentially important predictive relationships were not overlooked. This procedure resulted in 4 (schizoid PD) to 11 (narcissistic and borderline PDs) EMSs being entered as predictor variables in each regression analysis.

In the final block, the PBQ scale that corresponded to the given PD was entered as a predictor variable so as to examine the incremental validity of PD-specific dysfunctional beliefs in predicting PD features over and above FFM traits and EMSs. No dysfunctional PD beliefs scale was entered in the regression analysis predicting schizotypal PD features since the PBQ does not contain a schizotypal PD beliefs scale.

The order of entry for the predictor variables in hierarchical regression analysis is usually based on theoretical considerations whereby distal or causally prior predictors are entered first and the more proximal predictors are entered later (Tabachnick & Fidell, 2007). Specifically, as discussed in section 1.5.4, a key tenet of FFT is that characteristic (mal)adaptations, such as dysfunctional schemas, stem in part from dispositional personality traits which are thought to be endogenous basic tendencies (McCrae & Costa, 2008b). Thus, FFM facets were given priority entry in the hierarchical regression analyses since FFT considers traits to be universal basic tendencies that precede, or are causally prior to, characteristic (mal)adaptations such as dysfunctional schemas. Likewise, according to Young et al. (2003), EMSs are broad cognitive and emotional themes that can consist of specific dysfunctional cognitions. Hence, EMSs were entered ahead of the PD-specific dysfunctional belief scales.

For all hierarchical regression analyses, examination of histograms, scatterplots and normal probability plots of the residuals revealed that the multiple regression assumptions of normality, linearity, homoscedasticity and independence of residuals were upheld. The number of predictor variables in the analyses ranged from 14 (schizoid PD) to 32 (borderline and passive-aggressive PDs), which corresponded to maximum and minimum ratios of cases to predictors approaching 22:1 and 10:1, respectively. The specific trait and dysfunctional schema predictors for each PD are listed in forthcoming sections. Furthermore, no bivariate correlations amongst any of the predictor variables in each analysis exceeded  $r = .70$ , tolerance values were all above .10 and variance inflation factor values were all less than 10, thereby indicating the absence of multicollinearity and singularity (Hair et al., 2010). Moreover, the values for Cook's distance were all less than 1, indicating the absence of influential outliers or cases that had any undue influence on the results of the regression models (Tabachnick & Fidell, 2007). Finally, post hoc power analyses using the G\*Power 3 statistical program (Faul, Erdfelder, Lang, & Buchner, 2007)



were performed to confirm that the regression analyses were sufficiently powered. The power analyses revealed that the regression analyses had at least a 98% chance of detecting a statistically significant medium effect size of  $R^2 = .13$  (Cohen, 1988), given the sample size, alpha level ( $p < .05$ ) and total number of predictor variables. An alpha level of  $p < .05$  was used to determine statistical significance for all analyses.

**2.3.6.1 Predictors of paranoid PD features.** In order to examine whether dysfunctional schemas could incrementally add to the prediction of paranoid PD features over and above FFM traits and to determine the most salient predictors, a hierarchical multiple regression analysis was performed with selected FFM facet traits, EMSs and the PBQ paranoid PD dysfunctional beliefs scale entered as predictor variables in successive blocks. The summary statistics of this analysis are presented in Table 2.12.

Table 2.12

*Hierarchical Regression Results Predicting Paranoid PD Features*

Predictor	<i>B</i>	<i>SE B</i>	$\beta$	Partial <i>r</i>	Part <i>r</i>	$\Delta R^2$
Step 1						.30***
(Constant)	5.26	.94				
Anxiety	-.01	.01	-.08	-.06	-.05	
Angry Hostility	.01	.01	.08	.06	.05	
Depression	.02	.01	.13	.10	.09	
Self-Consciousness	.02	.01	.14*	.12	.10	
Warmth	.00	.01	-.02	-.01	-.01	
Gregariousness	-.01	.01	-.04	-.04	-.03	
Values	-.03	.01	-.25***	-.27	-.24	
Trust	-.02	.01	-.17*	-.15	-.12	
Straightforwardness	-.02	.01	-.17**	-.16	-.14	
Altruism	.01	.01	.09	.08	.06	
Compliance	-.01	.01	-.09	-.08	-.07	
Tender-Mindedness	.00	.01	.01	.01	.00	
Step 2						.29***
(Constant)	1.51	.80				
Anxiety	.00	.01	-.02	-.03	-.02	
Angry Hostility	.00	.01	.00	.00	.00	
Depression	-.01	.01	-.05	-.04	-.03	
Self-Consciousness	.01	.01	.05	.05	.03	
Warmth	.00	.01	.03	.03	.02	
Gregariousness	.00	.01	.00	.00	.00	
Values	-.02	.01	-.15***	-.20	-.13	
Trust	.00	.01	-.02	-.02	-.01	

Straightforwardness	-.01	.01	-.05	-.06	-.04
Altruism	.00	.01	.04	.04	.02
Compliance	-.01	.01	-.10*	-.12	-.08
Tender-Mindedness	.01	.01	.08	.10	.06
Emotional Deprivation	.11	.08	.07	.08	.05
Mistrust/Abuse	.70	.10	.46***	.38	.26
Social Isolation/Alienation	.04	.08	.03	.03	.02
Vulnerability to Harm/Illness	.04	.10	.02	.02	.01
Emotional Inhibition	.13	.08	.09	.09	.06
Entitlement/Grandiosity	1.67	.43	.18***	.22	.15
Negativity/Pessimism	.35	.50	.05	.04	.03
Step 3					.05***
(Constant)	.55	.77			
Anxiety	.00	.01	-.02	-.02	-.01
Angry Hostility	.00	.01	.02	.02	.01
Depression	-.01	.01	-.05	-.05	-.03
Self-Consciousness	.01	.01	.05	.05	.03
Warmth	.01	.01	.04	.04	.02
Gregariousness	.00	.01	.01	.01	.01
Values	-.02	.01	-.13***	-.19	-.12
Trust	.00	.01	.02	.03	.02
Straightforwardness	.00	.01	-.03	-.04	-.02
Altruism	.00	.01	.03	.03	.02
Compliance	-.01	.01	-.09	-.11	-.07
Tender-Mindedness	.01	.01	.08	.10	.06
Emotional Deprivation	.08	.07	.05	.06	.04
Mistrust/Abuse	.51	.10	.34***	.29	.18
Social Isolation/Alienation	.05	.08	.04	.04	.02
Vulnerability to Harm/Illness	.03	.09	.02	.02	.01
Emotional Inhibition	.09	.08	.06	.08	.04
Entitlement/Grandiosity	1.55	.40	.16***	.22	.13
Negativity/Pessimism	.02	.47	.00	.00	.00
Paranoid PD beliefs	.30	.05	.32***	.35	.22

Note. Values for  $B$  and  $SE B$  appear low due to rounding.

\* $p \leq .05$ . \*\* $p \leq .01$ . \*\*\* $p \leq .001$ .

As shown in Table 2.12, at step one, the FFM traits significantly explained 30.4% of the variance in paranoid PD features,  $F(12, 300) = 10.91, p < .001$ . In this model, Values ( $\beta = -.25, t = -4.87, p < .001$ ), Straightforwardness ( $\beta = -.17, t = -2.86, p = .005$ ), Trust ( $\beta = -.17, t = -2.57, p = .011$ ) and Self-Consciousness ( $\beta = .14, t = 2.00, p = .046$ ) were significant predictors of paranoid PD features.

After controlling for the personality traits at step two, the EMSs significantly explained an additional 28.9% of the variance in paranoid PD features,  $\Delta F(7, 293) = 29.78, p < .001$ , and  $R$  was significantly different from zero,  $R^2 = .59$  (adjusted  $R^2 =$

.57),  $F(19, 293) = 22.49, p < .001$ . In this second model, Mistrust/Abuse ( $\beta = .46, t = 6.96, p < .001$ ), Entitlement/Grandiosity ( $\beta = .18, t = 3.90, p < .001$ ), Values ( $\beta = -.15, t = -3.58, p < .001$ ) and Compliance ( $\beta = -.10, t = -2.06, p = .040$ ) were significant predictors of paranoid PD features.

Lastly, at step three, the addition of the paranoid PD beliefs scale significantly accounted for a further 4.9% of the variance in paranoid PD features,  $\Delta F(1, 292) = 40.44, p < .001$ . Overall, the final model significantly explained 64.3% (61.8% adjusted) of the variance in paranoid PD features,  $R^2 = .64, F(20, 292) = 26.26, p < .001$ . This final model revealed that Mistrust/Abuse ( $\beta = .34, t = 5.17, p < .001$ ), the paranoid PD beliefs scale ( $\beta = .32, t = 6.36, p < .001$ ), Entitlement/Grandiosity ( $\beta = .16, t = 3.84, p < .001$ ) and Values ( $\beta = -.13, t = -3.31, p = .001$ ) were the most salient predictors of paranoid PD features.

Whilst Self-Consciousness, Trust and Straightforwardness were significant predictors of paranoid PD features at step one, they were no longer significant predictors at step two when the EMSs were entered into the analysis. This suggests that these personality traits may indirectly influence paranoid PD features through their relationships with EMSs. In contrast, when the EMSs were entered into the analysis, Compliance became a significant predictor of paranoid PD features at step two but was no longer a significant predictor at step three when the paranoid PD beliefs scale was entered. This suggests that Compliance may have a complex relationship with paranoid PD symptomology that is influenced by the presence of dysfunctional schemas.

**2.3.6.2 Predictors of schizoid PD features.** In order to examine whether dysfunctional schemas could incrementally add to the prediction of schizoid PD features over and above FFM traits and to determine the most salient predictors, a hierarchical multiple regression analysis was performed with selected FFM traits, EMSs and the PBQ schizoid PD dysfunctional beliefs scale entered as predictors in successive blocks. Table 2.13 displays the summary statistics of this analysis.

Table 2.13

*Hierarchical Regression Results Predicting Schizoid PD Features*

Predictor	<i>B</i>	<i>SE B</i>	$\beta$	Partial <i>r</i>	Part <i>r</i>	$\Delta R^2$
Step 1						.27***
(Constant)	.91	.11				
Depression	.00	.00	.10	.10	.08	
Warmth	.00	.00	-.09	-.06	-.06	
Gregariousness	-.01	.00	-.28***	-.26	-.23	
Positive Emotions	.00	.00	.08	.07	.06	
Feelings	.00	.00	-.07	-.07	-.06	
Actions	.00	.00	-.06	-.06	-.05	
Values	.00	.00	-.23***	-.23	-.20	
Trust	.00	.00	-.10	-.09	-.08	
Altruism	.00	.00	.02	.02	.01	
Step 2						.16***
(Constant)	.53	.10				
Depression	.00	.00	-.08	-.08	-.06	
Warmth	.00	.00	-.06	-.05	-.04	
Gregariousness	.00	.00	-.19***	-.19	-.14	
Positive Emotions	.00	.00	.11	.10	.08	
Feelings	.00	.00	-.06	-.06	-.05	
Actions	.00	.00	-.06	-.07	-.05	
Values	.00	.00	-.18***	-.20	-.15	
Trust	.00	.00	-.01	-.01	.00	
Altruism	.00	.00	.04	.04	.03	
Emotional Deprivation	.03	.01	.15**	.16	.12	
Mistrust/Abuse	.03	.01	.14*	.12	.09	
Social Isolation/Alienation	.03	.01	.15*	.13	.10	
Emotional Inhibition	.04	.01	.21***	.18	.14	
Step 3						.12***
(Constant)	.34	.10				
Depression	.00	.00	-.01	-.01	-.01	
Warmth	.00	.00	-.07	-.06	-.04	
Gregariousness	.00	.00	-.10	-.11	-.07	
Positive Emotions	.00	.00	.06	.07	.04	
Feelings	.00	.00	-.03	-.04	-.03	
Actions	.00	.00	-.06	-.08	-.05	
Values	.00	.00	-.17***	-.22	-.15	
Trust	.00	.00	.03	.03	.02	
Altruism	.00	.00	.00	.00	.00	
Emotional Deprivation	.02	.01	.08	.09	.06	
Mistrust/Abuse	.02	.01	.09	.08	.06	
Social Isolation/Alienation	.03	.01	.14*	.13	.09	
Emotional Inhibition	.03	.01	.14*	.14	.10	
Schizoid PD beliefs	.01	.00	.39***	.45	.34	

Note. Values for *B* and *SE B* appear low due to rounding.

\* $p \leq .05$ . \*\* $p \leq .01$ . \*\*\* $p \leq .001$ .

Table 2.13 shows that at step one the FFM traits significantly explained 26.7% of the variance in schizoid PD features,  $F(9, 303) = 12.24, p < .001$ . In this model, Gregariousness ( $\beta = -.28, t = -4.60, p < .001$ ) and Values ( $\beta = -.23, t = -4.13, p < .001$ ) were significant predictors of schizoid PD features.

After controlling for the personality traits at step two, the EMSs significantly explained an incremental 16.2% of the variance in schizoid PD features,  $\Delta F(4, 299) = 21.13, p < .001$ , and  $R$  was significantly different from zero,  $R^2 = .43$  (adjusted  $R^2 = .40$ ),  $F(12, 299) = 17.23, p < .001$ . In this second model, Emotional Inhibition ( $\beta = .21, t = 3.22, p = .001$ ), Gregariousness ( $\beta = -.19, t = -3.26, p = .001$ ), Values ( $\beta = -.18, t = -3.50, p = .001$ ), Emotional Deprivation ( $\beta = .15, t = 2.71, p = .007$ ), Social Isolation/Alienation ( $\beta = .15, t = 2.22, p = .027$ ) and Mistrust/Abuse ( $\beta = .14, t = 2.05, p = .041$ ) were significant predictors of schizoid PD features.

Lastly, at step three, the addition of the schizoid PD dysfunctional beliefs scale significantly accounted for a further 11.5% of the variance in schizoid PD features,  $\Delta F(1, 298) = 74.67, p < .001$ . Overall, this final model significantly explained 54.3% (52.1% adjusted) of the variance in schizoid PD features,  $R^2 = .54$ ,  $F(14, 298) = 25.27, p < .001$ . The most salient predictors of schizoid PD features were the schizoid PD beliefs scale ( $\beta = .39, t = 8.64, p < .001$ ), Values ( $\beta = -.17, t = -3.81, p < .001$ ), Emotional Inhibition ( $\beta = .14, t = 2.42, p = .016$ ) and Social Isolation/Alienation ( $\beta = .14, t = 2.26, p = .024$ ).

Interestingly, whilst Gregariousness was a significant predictor of schizoid PD features at step one and step two, it was no longer a significant predictor at step three when the schizoid PD beliefs scale was entered into the analysis. Likewise, the EMSs of Emotional Deprivation and Mistrust/Abuse were significant predictors of schizoid PD features at step two but not at step three. These findings suggest that the individual relationships between schizoid PD features and Gregariousness, Emotional Deprivation or Mistrust/Abuse could be mediated by the schizoid PD beliefs scale.

**2.3.6.3 Predictors of schizotypal PD features.** In order to examine whether EMSs could incrementally add to the prediction of schizotypal PD features over and above FFM traits and to determine the most salient predictors, a hierarchical multiple regression analysis was performed with the selected FFM traits and EMSs thought to be relevant to schizotypal PD entered as predictors in successive blocks. The summary statistics of this analysis are presented in Table 2.14.

Table 2.14

*Hierarchical Regression Results Predicting Schizotypal PD Features*

Predictor	<i>B</i>	<i>SE B</i>	$\beta$	Partial <i>r</i>	Part <i>r</i>	$\Delta R^2$
Step 1						.28***
(Constant)	4.96	.90				
Anxiety	.00	.01	-.03	-.02	-.02	
Angry Hostility	-.01	.01	-.07	-.06	-.05	
Depression	.03	.01	.26**	.18	.16	
Self-Consciousness	.01	.01	.09	.07	.06	
Vulnerability	.00	.01	-.01	.00	.00	
Warmth	.00	.01	-.01	-.01	-.01	
Gregariousness	-.01	.01	-.10	-.09	-.08	
Values	-.02	.01	-.21***	-.22	-.19	
Trust	-.01	.01	-.06	-.05	-.05	
Straightforwardness	-.01	.01	-.12	-.11	-.09	
Altruism	.01	.01	.05	.04	.04	
Modesty	-.02	.01	-.20***	-.20	-.18	
Tender-Mindedness	-.01	.01	-.08	-.08	-.07	
Competence	.00	.01	-.04	-.03	-.03	
Self-Discipline	.00	.01	-.04	-.03	-.02	
Step 2						.26***
(Constant)	1.29	.81				
Anxiety	.00	.01	-.03	-.03	-.02	
Angry Hostility	-.01	.01	-.12*	-.12	-.08	
Depression	.01	.01	.05	.04	.03	
Self-Consciousness	.00	.01	.02	.02	.01	
Vulnerability	.00	.01	.03	.03	.02	
Warmth	.00	.01	.04	.04	.02	
Gregariousness	.00	.01	-.03	-.04	-.02	
Values	-.02	.01	-.14**	-.18	-.13	
Trust	.00	.01	.03	.03	.02	
Straightforwardness	-.01	.01	-.06	-.06	-.04	
Altruism	.00	.01	.01	.01	.01	
Modesty	-.01	.01	-.09	-.10	-.07	
Tender-Mindedness	.00	.01	.00	.00	.00	
Competence	.00	.01	-.04	-.04	-.03	
Self-Discipline	.01	.01	.05	.06	.04	
Emotional Deprivation	.05	.07	.04	.04	.03	
Mistrust/Abuse	.28	.09	.22**	.18	.12	
Social Isolation/Alienation	.27	.08	.23***	.21	.14	
Vulnerability to Harm/Illness	.32	.09	.23***	.21	.14	
Emotional Inhibition	.03	.08	.03	.03	.02	
Entitlement/Grandiosity	1.95	.41	.25***	.27	.19	
Negativity/Pessimism	-.45	.46	-.07	-.06	-.04	

Note. Values for *B* and *SE B* appear low due to rounding.

\* $p \leq .05$ . \*\* $p \leq .01$ . \*\*\* $p \leq .001$ .

As shown in Table 2.14, at step one, the FFM traits significantly explained 27.5% of the variance in schizotypal PD features,  $F(15, 297) = 7.52, p < .001$ . In this model, Depression ( $\beta = .26, t = 3.16, p = .002$ ), Values ( $\beta = -.21, t = -3.90, p < .001$ ) and Modesty ( $\beta = -.20, t = -3.54, p < .001$ ) were significant predictors of schizotypal PD symptomology.

After controlling for the personality traits at step two, the EMSs significantly explained a further 26.0% of the variance in schizotypal PD symptomology,  $\Delta F(7, 290) = 23.20, p < .001$ . Overall, this final model significantly explained 53.5% (50.0% adjusted) of the variance in schizotypal PD features,  $R^2 = .54, F(22, 290) = 15.19, p < .001$ . The most salient predictors of schizotypal PD features were Entitlement/Grandiosity ( $\beta = .25, t = 4.75, p < .001$ ), Social Isolation/Alienation ( $\beta = .23, t = 3.58, p < .001$ ), Vulnerability to Harm/Illness ( $\beta = .23, t = 3.58, p < .001$ ), Mistrust/Abuse ( $\beta = .22, t = 3.06, p = .002$ ) and Values ( $\beta = -.14, t = -3.14, p = .002$ ).

With the inclusion of EMSs at step two, Angry Hostility was also a significant predictor of schizotypal PD features ( $\beta = -.11, t = -2.00, p = .046$ ). However, the sign and size of its beta weight was opposite to that of its zero-order correlation coefficient ( $r = .24, p < .001$ ). According to Cohen and Cohen (1975), when a predictor variable obtains a beta weight that is of opposite sign and different size to its zero-order correlation it is acting as a negative or net suppressor variable. A suppressor variable adds to the prediction of the criterion variable and thus increases  $R^2$  by virtue of its correlations with other predictor variables (Tabachnick & Fidell, 2007). A suppressor variable works by suppressing or removing the variance in other predictor variables that is irrelevant to the prediction of the criterion variable and hence acts as a cleansing agent rather than as a unique predictor (Tabachnick & Fidell, 2007). In order to determine which variables Angry Hostility was suppressing irrelevant variance from in the prediction of schizotypal PD features, a follow-up hierarchical regression analysis with the FFM traits and EMSs entered as a block of predictors at step one and Angry Hostility entered at step two was performed. Results revealed that Angry Hostility increased the beta weights of the FFM traits of Depression and Vulnerability and the EMSs of Mistrust/Abuse, Entitlement/Grandiosity and Negativity/Pessimism in the second step and consequently improved  $R^2$  in the prediction of schizotypal PD symptomology,  $\Delta R^2 = .01, \Delta F(1, 290) = 4.01, p = .046$ . Angry Hostility obtained statistically significant

correlation coefficients with these EMSs that were medium in strength (see Table 2.6) and this may explain the suppression effect.

Finally, whilst Depression and Modesty were significant predictors of schizotypal PD features at step one, they were no longer significant predictors at step two when the EMSs were entered into the analysis. This suggests that these personality traits may indirectly influence schizotypal PD features through their relationship with EMSs.

**2.3.6.4 Predictors of histrionic PD features.** In order to examine whether dysfunctional schemas could incrementally add to the prediction of histrionic PD features over and above FFM traits and to determine the most salient predictors of histrionic PD features, a hierarchical multiple regression analysis was performed with the selected FFM traits, EMSs and the histrionic PD dysfunctional beliefs scale entered as predictors in successive blocks. Table 2.15 shows the summary statistics of this analysis.

Table 2.15

*Hierarchical Regression Results Predicting Histrionic PD Features*

Predictor	<i>B</i>	<i>SE B</i>	$\beta$	Partial <i>r</i>	Part <i>r</i>	$\Delta R^2$
Step 1						.25***
(Constant)	4.16	.91				
Impulsiveness	.01	.01	.05	.05	.04	
Assertiveness	.01	.01	.12*	.11	.10	
Excitement-Seeking	.02	.01	.16**	.17	.15	
Straightforwardness	-.02	.01	-.13*	-.13	-.11	
Modesty	-.03	.01	-.23***	-.22	-.20	
Tender-Mindedness	.00	.01	-.03	-.03	-.03	
Self-Discipline	-.02	.01	-.16*	-.14	-.13	
Deliberation	-.01	.01	-.07	-.07	-.06	
Step 2						.29***
(Constant)	-.18	.84				
Impulsiveness	.00	.01	.00	.00	.00	
Assertiveness	.02	.01	.21***	.24	.17	
Excitement-Seeking	.01	.01	.11*	.14	.10	
Straightforwardness	-.01	.01	-.06	-.07	-.05	
Modesty	-.01	.01	-.07	-.08	-.06	
Tender-Mindedness	.01	.01	.05	.07	.05	
Self-Discipline	-.01	.01	-.05	-.05	-.03	
Deliberation	-.01	.01	-.12*	-.14	-.10	
Abandonment/Instability	-.05	.07	-.04	-.04	-.03	
Social Isolation/Alienation	.13	.08	.10	.10	.07	



Dependence/Incompetence	.04	.09	.02	.02	.02
Enmeshment	.16	.08	.10*	.11	.08
Subjugation	.17	.11	.10	.09	.06
Entitlement/Grandiosity	2.57	.48	.28***	.30	.21
Insufficient Self-Control	-.14	.09	-.10	-.09	-.06
Approval/Recog.-Seeking	.40	.08	.30***	.29	.21
Step 3					.06***
(Constant)	.03	.78			
Impulsiveness	.00	.01	.00	.00	.01
Assertiveness	.02	.01	.18***	.22	.15
Excitement-Seeking	.01	.01	.07	.10	.06
Straightforwardness	-.01	.01	-.06	-.08	-.05
Modesty	-.01	.01	-.07	-.09	-.05
Tender-Mindedness	.01	.01	.05	.06	.04
Self-Discipline	.00	.01	-.03	-.03	-.02
Deliberation	-.01	.01	-.07	-.10	-.06
Abandonment/Instability	-.07	.07	-.05	-.06	-.04
Social Isolation/Alienation	.11	.07	.08	.09	.06
Dependence/Incompetence	-.01	.09	.00	.00	.00
Enmeshment	.15	.07	.10	.11	.07
Subjugation	.09	.10	.06	.05	.03
Entitlement/Grandiosity	2.03	.46	.22***	.25	.17
Insufficient Self-Control	-.06	.08	-.04	-.04	-.03
Approval/Recog.-Seeking	.20	.08	.15*	.15	.09
Histrionic PD beliefs	.06	.01	.35***	.37	.25

Note. Values for  $B$  and  $SE B$  appear low due to rounding.

\* $p \leq .05$ . \*\* $p \leq .01$ . \*\*\* $p \leq .001$ .

Table 2.15 shows that at step one the FFM traits significantly explained 24.7% of the variance in histrionic PD features,  $F(8, 304) = 12.46, p < .001$ . In this model, Modesty ( $\beta = -.23, t = -3.92, p < .001$ ), Excitement-Seeking ( $\beta = .16, t = 3.01, p = .003$ ), Self-Discipline ( $\beta = -.16, t = -2.50, p = .013$ ), Straightforwardness ( $\beta = -.13, t = -2.26, p = .025$ ) and Assertiveness ( $\beta = .12, t = 2.00, p = .047$ ) were significant predictors of histrionic PD symptomology.

After controlling for the personality traits at step two, the EMSs significantly explained a further 28.6% of the variance in histrionic PD features,  $\Delta F(8, 296) = 22.70, p < .001$ , and  $R$  was significantly different from zero,  $R^2 = .53$  (adjusted  $R^2 = .51$ ),  $F(16, 296) = 21.13, p < .001$ . In this second model, Approval/Recognition-Seeking ( $\beta = .30, t = 5.15, p < .001$ ), Entitlement/Grandiosity ( $\beta = .28, t = 5.33, p < .001$ ), Assertiveness ( $\beta = .21, t = 4.20, p < .001$ ), Deliberation ( $\beta = -.12, t = -2.45, p = .015$ ), Excitement-Seeking ( $\beta = .11, t = 2.39, p = .017$ ) and Enmeshment/

Undeveloped Self ( $\beta = .10$ ,  $t = 1.97$ ,  $p = .049$ ) were significant predictors of histrionic PD features.

Lastly, at step three, the addition of the histrionic PD beliefs scale significantly accounted for an incremental 6.4% of the variance in histrionic PD,  $\Delta F(1, 295) = 46.66$ ,  $p < .001$ . Overall, this final model significantly explained 59.7% (57.4% adjusted) of the variance in histrionic PD features,  $R^2 = .60$ ,  $F(17, 295) = 25.70$ ,  $p < .001$ . The histrionic PD beliefs scale ( $\beta = .35$ ,  $t = 6.83$ ,  $p < .001$ ), Entitlement/Grandiosity ( $\beta = .22$ ,  $t = 4.47$ ,  $p < .001$ ), Assertiveness ( $\beta = .18$ ,  $t = 3.94$ ,  $p < .001$ ) and Approval/Recognition-Seeking ( $\beta = .15$ ,  $t = 2.54$ ,  $p = .012$ ) were the most salient predictors of histrionic PD features; whereas Enmeshment/Undeveloped Self approached significance ( $\beta = .10$ ,  $t = 1.96$ ,  $p = .051$ ).

Whereas Straightforwardness, Modesty and Self-Discipline were significant predictors of histrionic PD features at step one, they were no longer significant predictors at step two when the EMSs were entered into the analysis. Likewise, whilst Excitement-Seeking was a significant predictor at steps one and two, it was no longer a significant predictor at step three when the histrionic PD dysfunctional beliefs scale was entered into the analysis. This suggests that these personality traits may indirectly influence histrionic PD symptomology through their relationships with dysfunctional schemas. Furthermore, Deliberation was not a significant predictor of histrionic PD features at step one, but became a significant predictor at step two. However, while Deliberation and Enmeshment/Undeveloped Self were significant predictors of histrionic PD features at step two, they were no longer significant predictors at step three. These results suggest that Deliberation may have a complex relationship with histrionic PD features that is moderated by dysfunctional schemas and that histrionic PD beliefs may influence the relationships that Deliberation and Enmeshment/Undeveloped Self have with histrionic PD features.

**2.3.6.5 Predictors of narcissistic PD features.** In order to examine whether dysfunctional schemas could incrementally add to the prediction of narcissistic PD features over and above FFM traits and to determine the most salient predictors of narcissistic PD features, a hierarchical multiple regression analysis was performed with selected FFM traits, EMSs and the narcissistic PD beliefs scale entered as predictors in successive blocks. Table 2.16 displays the summary statistics of this analysis.

Table 2.16

*Hierarchical Regression Results Predicting Narcissistic PD Features*

Predictor	<i>B</i>	<i>SE B</i>	$\beta$	Partial <i>r</i>	Part <i>r</i>	$\Delta R^2$
Step 1						.31***
(Constant)	.84	.14				
Angry Hostility	.00	.00	-.01	-.01	-.01	
Depression	.00	.00	.12	.09	.08	
Self-Consciousness	.00	.00	.16*	.14	.11	
Impulsiveness	.00	.00	.06	.06	.05	
Warmth	.00	.00	.02	.01	.01	
Gregariousness	.00	.00	-.10	-.09	-.08	
Values	-.01	.00	-.24***	-.26	-.23	
Trust	.00	.00	-.07	-.06	-.05	
Straightforwardness	.00	.00	-.08	-.08	-.07	
Altruism	.00	.00	.09	.07	.06	
Compliance	.00	.00	-.04	-.04	-.03	
Modesty	-.01	.00	-.32***	-.32	-.28	
Tender-Mindedness	.00	.00	-.06	-.06	-.05	
Step 2						.31***
(Constant)	.31	.12				
Angry Hostility	.00	.00	-.07	-.07	-.04	
Depression	.00	.00	-.06	-.06	-.04	
Self-Consciousness	.00	.00	.08	.09	.06	
Impulsiveness	.00	.00	.03	.03	.02	
Warmth	.00	.00	.06	.06	.04	
Gregariousness	.00	.00	-.06	-.08	-.05	
Values	.00	.00	-.13**	-.18	-.11	
Trust	.00	.00	-.05	-.05	-.03	
Straightforwardness	.00	.00	-.01	-.01	-.01	
Altruism	.00	.00	.01	.01	.00	
Compliance	.00	.00	-.09	-.10	-.06	
Modesty	.00	.00	-.13**	-.16	-.10	
Tender-Mindedness	.00	.00	.03	.04	.02	
Emotional Deprivation	.03	.01	.11*	.14	.09	
Mistrust/Abuse	.01	.02	.05	.05	.03	
Social Isolation/Alienation	.04	.01	.17**	.16	.10	
Defectiveness/Shame	.00	.02	-.01	-.01	-.01	
Failure	-.01	.01	-.04	-.04	-.02	
Subjugation	.02	.01	.07	.08	.05	
Unrelenting Standards	.00	.01	.01	.01	.01	
Entitlement/Grandiosity	.37	.08	.26***	.28	.18	
Insufficient Self-Control	-.02	.01	-.08	-.08	-.05	
Approval/Recog.-Seeking	.06	.01	.31***	.31	.20	
Punitiveness	.01	.01	.05	.06	.04	
Step 3						.07***
(Constant)	.14	.11				
Angry Hostility	.00	.00	-.07	-.07	-.04	

Depression	.00	.00	-.02	-.02	-.01
Self-Consciousness	.00	.00	.04	.05	.03
Impulsiveness	.00	.00	.02	.03	.02
Warmth	.00	.00	.04	.04	.02
Gregariousness	.00	.00	-.03	-.04	-.02
Values	.00	.00	-.10**	-.15	-.09
Trust	.00	.00	-.06	-.07	-.04
Straightforwardness	.00	.00	-.03	-.04	-.02
Altruism	.00	.00	-.03	-.03	-.02
Compliance	.00	.00	-.05	-.06	-.03
Modesty	.00	.00	-.06	-.09	-.05
Tender-Mindedness	.00	.00	.05	.07	.04
Emotional Deprivation	.02	.01	.09*	.12	.07
Mistrust/Abuse	.00	.01	.02	.02	.01
Social Isolation/Alienation	.03	.01	.13*	.14	.08
Defectiveness/Shame	.00	.02	.01	.01	.00
Failure	-.01	.01	-.04	-.05	-.03
Subjugation	.02	.01	.07	.08	.04
Unrelenting Standards	.01	.01	.02	.03	.02
Entitlement/Grandiosity	.23	.07	.16***	.19	.11
Insufficient Self-Control	.00	.01	-.02	-.02	-.01
Approval/Recog.-Seeking	.04	.01	.21***	.23	.13
Punitiveness	.01	.01	.04	.06	.03
Narcissistic PD beliefs	.06	.01	.36***	.44	.27

Note. Values for  $B$  and  $SE B$  appear low due to rounding.

\* $p \leq .05$ . \*\* $p \leq .01$ . \*\*\* $p \leq .001$ .

As shown in Table 2.16, at step one, the FFM traits significantly explained 31.1% of the variance in narcissistic PD features,  $F(13, 299) = 10.40, p < .001$ . In this model, Modesty ( $\beta = -.32, t = -5.76, p < .001$ ), Values ( $\beta = -.24, t = -4.74, p < .001$ ) and Self-Consciousness ( $\beta = .16, t = 2.37, p = .019$ ) were significant predictors of narcissistic PD features.

After controlling for the personality traits at step two, the EMSs significantly explained a further 30.5% of the variance in narcissistic PD symptomology,  $\Delta F(11, 288) = 20.85, p < .001$ , and  $R$  was significantly different from zero,  $R^2 = .62$  (adjusted  $R^2 = .59$ ),  $F(24, 288) = 19.30, p < .001$ . In this second model, Approval/Recognition-Seeking ( $\beta = .31, t = 5.55, p < .001$ ), Entitlement/Grandiosity ( $\beta = .26, t = 4.88, p < .001$ ), Social Isolation/Alienation ( $\beta = .17, t = 2.66, p = .008$ ), Values ( $\beta = -.13, t = -3.13, p = .002$ ), Modesty ( $\beta = -.13, t = -2.79, p = .006$ ) and Emotional Deprivation ( $\beta = .11, t = 2.35, p = .020$ ) were significant predictors of narcissistic PD features.

Lastly, at step three, the addition of the narcissistic PD beliefs scale significantly accounted for an incremental 7.3% of the variance in narcissistic PD features,  $\Delta F(1, 287) = 67.83, p < .001$ . Overall, this final model significantly explained 69.0% (66.3% adjusted) of the variance in narcissistic PD features,  $R^2 = .69, F(25, 287) = 25.54, p < .001$ . This final model revealed that the most salient predictors of narcissistic PD features were the narcissistic PD beliefs scale ( $\beta = .36, t = 8.24, p < .001$ ), Approval/Recognition-Seeking ( $\beta = .21, t = 3.97, p < .001$ ), Entitlement/Grandiosity ( $\beta = .16, t = 3.23, p = .001$ ), Social Isolation/Alienation ( $\beta = .13, t = 2.31, p = .022$ ), Values ( $\beta = -.10, t = -2.64, p = .009$ ) and Emotional Deprivation ( $\beta = .09, t = 2.00, p = .047$ ).

Interestingly, whilst Self-Consciousness was a significant predictor of narcissistic PD features at step one, it was no longer a significant predictor at step two when the EMSs were entered into the analysis. Likewise, whilst Modesty was a significant predictor of narcissistic PD features at steps one and two, it was no longer a significant predictor at step three when the narcissistic PD beliefs scale was entered into the analysis. This pattern of results suggests that Self-Consciousness may indirectly influence narcissistic PD symptomology through its relationship with EMSs, whereas the trait of Modesty may indirectly influence narcissistic PD symptomology through its relationship with narcissistic PD beliefs.

**2.3.6.6 Predictors of antisocial PD features.** In order to examine whether dysfunctional schemas could incrementally add to the prediction of antisocial PD features over and above FFM traits and to determine the most salient predictors, a hierarchical multiple regression analysis was performed with selected FFM traits, EMSs and the antisocial PD dysfunctional beliefs scale entered as predictors in successive blocks. The summary statistics of this analysis are shown in Table 2.17.

Table 2.17

*Hierarchical Regression Results Predicting Antisocial PD Features*

Predictor	<i>B</i>	<i>SE B</i>	$\beta$	Partial <i>r</i>	Part <i>r</i>	$\Delta R^2$
Step 1						.29***
(Constant)	3.50	.44				
Depression	.01	.00	.19*	.14	.12	
Vulnerability	.00	.00	.04	.03	.02	
Warmth	.00	.00	-.05	-.04	-.04	
Feelings	-.01	.00	-.10	-.10	-.08	
Values	-.01	.00	-.16**	-.16	-.14	
Trust	.00	.00	.02	.02	.01	
Straightforwardness	-.01	.00	-.14*	-.12	-.11	
Altruism	.00	.00	-.01	-.01	-.01	
Compliance	.00	.00	-.01	-.01	-.01	
Modesty	-.01	.00	-.21***	-.21	-.18	
Tender-Mindedness	-.01	.00	-.11	-.11	-.09	
Competence	.00	.00	-.06	-.05	-.04	
Dutifulness	.00	.00	.00	.00	.00	
Self-Discipline	.00	.00	-.04	-.03	-.03	
Step 2						.17***
(Constant)	1.32	.46				
Depression	.00	.00	.04	.04	.03	
Vulnerability	.00	.00	.04	.04	.03	
Warmth	.00	.00	-.01	-.01	-.01	
Feelings	-.01	.00	-.11	-.11	-.09	
Values	.00	.00	-.07	-.08	-.06	
Trust	.01	.00	.12	.11	.08	
Straightforwardness	-.01	.00	-.09	-.09	-.06	
Altruism	.00	.00	-.04	-.04	-.03	
Compliance	.00	.00	-.01	-.01	-.01	
Modesty	-.01	.00	-.10	-.10	-.07	
Tender-Mindedness	-.01	.00	-.07	-.08	-.06	
Competence	.00	.00	.00	.00	.00	
Dutifulness	-.01	.00	-.08	-.07	-.05	
Self-Discipline	.00	.00	.07	.06	.04	
Emotional Deprivation	.08	.04	.10	.11	.08	
Mistrust/Abuse	.18	.06	.24**	.18	.14	
Social Isolation/ Alienation	.01	.05	.01	.01	.01	
Defectiveness/Shame	-.05	.07	-.06	-.05	-.03	
Dependence/Incompetence	.13	.06	.15*	.14	.11	
Entitlement/Grandiosity	1.14	.28	.24***	.23	.17	
Approval/Recog.-Seeking	.02	.04	.03	.03	.02	
Step 3						.04***
(Constant)	.75	.46				
Depression	.01	.00	.08	.07	.05	
Vulnerability	.00	.00	.04	.04	.03	
Warmth	.00	.00	-.01	-.01	-.01	

Feelings	-.01	.00	-.08	-.09	-.07
Values	-.01	.00	-.08	-.09	-.07
Trust	.01	.00	.16**	.15	.11
Straightforwardness	.00	.00	-.06	-.06	-.04
Altruism	.00	.00	-.06	-.06	-.04
Compliance	.00	.00	.01	.02	.01
Modesty	.00	.00	-.06	-.07	-.05
Tender-Mindedness	-.01	.00	-.07	-.08	-.06
Competence	.00	.00	.02	.02	.01
Dutifulness	-.01	.00	-.11	-.10	-.07
Self-Discipline	.00	.00	.06	.06	.04
Emotional Deprivation	.05	.04	.06	.07	.05
Mistrust/Abuse	.16	.06	.21**	.17	.12
Social Isolation/Alienation	.01	.05	.01	.01	.01
Defectiveness/Shame	-.05	.07	-.06	-.05	-.03
Dependence/Incompetence	.10	.05	.11	.10	.07
Entitlement/Grandiosity	.96	.28	.20***	.20	.15
Approval/Recog.- Seeking	-.01	.04	-.02	-.02	-.01
Antisocial PD beliefs	.15	.03	.26***	.25	.19

Note. Values for  $B$  and  $SE B$  appear low due to rounding.

\* $p \leq .05$ . \*\* $p \leq .01$ . \*\*\* $p \leq .001$ .

Table 2.17 shows that at step one the FFM traits significantly explained 28.7% of the variance in antisocial PD features,  $F(14, 298) = 8.58, p < .001$ . In this model, Modesty ( $\beta = -.21, t = -3.70, p < .001$ ), Depression ( $\beta = .19, t = 2.52, p = .012$ ), Values ( $\beta = -.16, t = -2.84, p = .005$ ) and Straightforwardness ( $\beta = -.14, t = -2.16, p = .032$ ) were significant predictors of antisocial PD features; whilst Tender-Mindedness approached significance ( $\beta = -.11, t = -1.91, p = .057$ ).

After controlling for the personality traits at step two, the EMSs significantly explained an incremental 16.6% of the variance in antisocial PD features,  $\Delta F(7, 291) = 12.63, p < .001$ , and  $R$  was significantly different from zero,  $R^2 = .45$  (adjusted  $R^2 = .41$ ),  $F(21, 291) = 11.50, p < .001$ . In this second model, Entitlement/Grandiosity ( $\beta = .24, t = 4.01, p < .001$ ), Mistrust/Abuse ( $\beta = .24, t = 3.15, p = .002$ ) and Dependence/Incompetence ( $\beta = .15, t = 2.42, p = .016$ ) were significant predictors of antisocial PD features; whereas Feelings approached significance ( $\beta = -.11, t = -1.96, p = .051$ ).

Lastly, at step three, the addition of the antisocial PD beliefs scale significantly accounted for a further 3.5% of the variance in antisocial PD symptomology,  $\Delta F(1, 290) = 19.87, p < .001$ . Overall, the final model significantly

explained 48.8% (45.0% adjusted) of the variance in antisocial PD features,  $R^2 = .49$ ,  $F(22, 290) = 12.59$ ,  $p < .001$ . The most salient predictors of antisocial PD features were the antisocial PD beliefs scale ( $\beta = .26$ ,  $t = 4.46$ ,  $p < .001$ ), Mistrust/Abuse ( $\beta = .21$ ,  $t = 2.92$ ,  $p = .004$ ) and Entitlement/Grandiosity ( $\beta = .20$ ,  $t = 3.46$ ,  $p = .001$ ).

Trust was also found to be a significant predictor of antisocial PD features at step three ( $\beta = .16$ ,  $t = 2.59$ ,  $p = .010$ ). However, inspection of the difference between the sign of its beta weight and zero-order correlation coefficient ( $r = -.29$ ,  $p < .001$ ) led to identifying Trust as a negative suppressor variable. A follow-up hierarchical regression analysis with the aforementioned FFM traits, EMSs and the antisocial PD beliefs scale entered as predictors at step one and Trust entered as a predictor at step two revealed that Trust increased the beta weights of Depression, Vulnerability, Feelings, Straightforwardness, Tender-Mindedness, Competence, Emotional Deprivation, Mistrust/Abuse, Dependence/Incompetence and the antisocial PD beliefs scale; and consequently improved  $R^2$  in the prediction of antisocial PD features,  $\Delta R^2 = .01$ ,  $\Delta F(1, 290) = 6.73$ ,  $p = .010$ . As displayed in Tables 2.6 and 2.7, these EMSs and the antisocial PD beliefs scale were significantly correlated with Trust and this may explain the suppression effect.

Whilst Depression, Values, Straightforwardness and Modesty were significant predictors of antisocial PD features at step one, they were no longer significant predictors at step two when the EMSs were entered into the analysis. Likewise, whilst Dependence/Incompetence was a significant predictor of antisocial PD features at step two, it was no longer a significant predictor at step three when the antisocial PD beliefs scale was entered into the analysis. This pattern of results suggests that the personality traits of Depression, Values, Straightforwardness and Modesty may indirectly influence antisocial PD symptomology through their relationships with EMSs, whereas Dependence/Incompetence may indirectly influence antisocial PD features through a relationship with antisocial PD beliefs.

**2.3.6.7 Predictors of borderline PD features.** In order to examine whether dysfunctional schemas could incrementally add to the prediction of borderline PD features over and above FFM traits and to determine the most salient predictors of borderline PD features, a hierarchical multiple regression analysis was performed with selected FFM traits, EMSs and the PBQ borderline PD dysfunctional beliefs subscale entered as predictors in successive blocks. The summary statistics of this analysis are shown in Table 2.18.



Table 2.18

*Hierarchical Regression Results Predicting Borderline PD Features*

Predictor	<i>B</i>	<i>SE B</i>	$\beta$	Partial <i>r</i>	Part <i>r</i>	$\Delta R^2$
Step 1						.45***
(Constant)	.27	.16				
Anxiety	.00	.00	-.03	-.03	-.02	
Angry Hostility	.00	.00	.01	.01	.00	
Depression	.01	.00	.35***	.26	.20	
Self-Consciousness	.00	.00	.01	.01	.01	
Impulsiveness	.00	.00	.05	.05	.04	
Vulnerability	.00	.00	.14	.11	.09	
Warmth	.00	.00	-.08	-.06	-.05	
Gregariousness	.00	.00	.01	.01	.01	
Positive Emotions	.00	.00	.04	.04	.03	
Trust	.00	.00	.03	.03	.02	
Straightforwardness	.00	.00	-.20***	-.21	-.16	
Altruism	.00	.00	.09	.07	.05	
Compliance	.00	.00	-.06	-.05	-.04	
Tender-Mindedness	.00	.00	-.15**	-.16	-.12	
Competence	.00	.00	-.08	-.07	-.05	
Order	.00	.00	-.09	-.09	-.07	
Dutifulness	.00	.00	.14*	.12	.09	
Achievement Striving	.00	.00	.01	.01	.01	
Self-Discipline	.00	.00	-.13	-.10	-.07	
Deliberation	.00	.00	-.05	-.05	-.04	
Step 2						.22***
(Constant)	-.18	.14				
Anxiety	.00	.00	.00	.00	.00	
Angry Hostility	.00	.00	-.06	-.07	-.04	
Depression	.00	.00	.18**	.17	.10	
Self-Consciousness	.00	.00	-.01	-.01	.00	
Impulsiveness	.00	.00	.05	.07	.04	
Vulnerability	.00	.00	.12*	.12	.07	
Warmth	.00	.00	-.02	-.02	-.01	
Gregariousness	.00	.00	.04	.05	.03	
Positive Emotions	.00	.00	.01	.01	.01	
Trust	.00	.00	.08	.09	.05	
Straightforwardness	.00	.00	-.11*	-.13	-.08	
Altruism	.00	.00	.05	.05	.03	
Compliance	.00	.00	-.04	-.05	-.03	
Tender-Mindedness	.00	.00	-.06	-.08	-.05	
Competence	.00	.00	-.04	-.04	-.03	
Order	.00	.00	-.05	-.07	-.04	
Dutifulness	.00	.00	.06	.06	.04	
Achievement Striving	.00	.00	.00	.00	.00	
Self-Discipline	.00	.00	-.02	-.02	-.01	
Deliberation	.00	.00	-.09*	-.12	-.07	

Emotional Deprivation	.02	.01	.06	.08	.05	
Abandonment/Instability	.04	.01	.18***	.20	.12	
Mistrust/Abuse	.03	.01	.13*	.13	.07	
Social Isolation/Alienation	.01	.01	.06	.06	.04	
Defectiveness/Shame	-.02	.02	-.06	-.06	-.03	
Dependence/Incompetence	.00	.01	.01	.01	.00	
Enmeshment	.01	.01	.05	.07	.04	
Emotional Inhibition	.03	.01	.13*	.13	.08	
Entitlement/Grandiosity	.26	.07	.18***	.22	.13	
Insufficient Self-Control	.01	.01	.03	.03	.02	
Approval/Recog.-Seeking	.01	.01	.06	.07	.04	
Step 3						.01***
(Constant)	-.22	.14				
Anxiety	.00	.00	.00	.00	.00	
Angry Hostility	.00	.00	-.06	-.06	-.04	
Depression	.00	.00	.18**	.17	.10	
Self-Consciousness	.00	.00	-.01	-.01	-.01	
Impulsiveness	.00	.00	.03	.04	.02	
Vulnerability	.00	.00	.11	.12	.07	
Warmth	.00	.00	-.02	-.02	-.01	
Gregariousness	.00	.00	.05	.07	.04	
Positive Emotions	.00	.00	.03	.03	.02	
Trust	.00	.00	.11*	.13	.07	
Straightforwardness	.00	.00	-.10*	-.12	-.07	
Altruism	.00	.00	.04	.05	.03	
Compliance	.00	.00	-.05	-.06	-.03	
Tender-Mindedness	.00	.00	-.06	-.08	-.05	
Competence	.00	.00	-.03	-.04	-.02	
Order	.00	.00	-.04	-.05	-.03	
Dutifulness	.00	.00	.04	.05	.03	
Achievement Striving	.00	.00	.00	.00	.00	
Self-Discipline	.00	.00	-.02	-.02	-.01	
Deliberation	.00	.00	-.10*	-.12	-.07	
Emotional Deprivation	.01	.01	.06	.08	.04	
Abandonment/Instability	.03	.01	.15**	.17	.09	
Mistrust/Abuse	.02	.01	.10	.09	.05	
Social Isolation/Alienation	.02	.01	.07	.07	.04	
Defectiveness/Shame	-.02	.02	-.06	-.06	-.03	
Dependence/Incompetence	-.01	.01	-.02	-.02	-.01	
Enmeshment	.01	.01	.03	.04	.03	
Emotional Inhibition	.02	.01	.11	.11	.06	
Entitlement/Grandiosity	.26	.07	.18***	.22	.13	
Insufficient Self-Control	.01	.01	.06	.06	.04	
Approval/Recog.-Seeking	.01	.01	.02	.03	.02	
Borderline PD beliefs	.03	.01	.19***	.21	.12	

Note. Values for *B* and *SE B* appear low due to rounding.

\* $p \leq .05$ . \*\* $p \leq .01$ . \*\*\* $p \leq .001$ .

As shown in Table 2.18, at step one, the FFM traits significantly explained 44.9% of the variance in borderline PD features,  $F(20, 292) = 11.88, p < .001$ . In this model, Depression ( $\beta = .35, t = 4.64, p < .001$ ), Straightforwardness ( $\beta = -.20, t = -3.60, p < .001$ ) and Tender-Mindedness ( $\beta = -.15, t = -2.85, p = .005$ ) were significant predictors of borderline PD features; while Vulnerability approached significance ( $\beta = .14, t = 1.96, p = .052$ ). Dutifulness was also a significant predictor of borderline PD features at step one ( $\beta = .14, t = 2.05, p = .041$ ). However, inspection of the difference between the sign and size of its beta value and zero-order correlation coefficient ( $r = -.29, p < .001$ ) suggested that Dutifulness was a negative suppressor variable rather than a unique predictor of borderline PD features. Indeed, a follow-up hierarchical regression analysis with the other FFM traits entered as predictors at step one and Dutifulness entered as a predictor at step two revealed that Dutifulness slightly increased the beta weights of Vulnerability, Warmth, Straightforwardness, Positive Emotions, Competence, Order, Self-Discipline and Deliberation and consequently improved  $R^2$  in the prediction of borderline PD features,  $\Delta R^2 = .01, \Delta F(1, 292) = 4.22, p = .041$ .

After controlling for the personality traits at step two, the EMSs significantly explained an additional 22.2% of incremental variance in borderline PD features,  $\Delta F(11, 281) = 17.26, p < .001$ , and  $R$  was significantly different from zero,  $R^2 = .67$  (adjusted  $R^2 = .64$ ),  $F(31, 281) = 18.48, p < .001$ . In this second model, Entitlement/Grandiosity ( $\beta = .18, t = 3.71, p < .001$ ), Abandonment/Instability ( $\beta = .18, t = 3.40, p = .001$ ), Depression ( $\beta = .18, t = 2.94, p = .004$ ), Emotional Inhibition ( $\beta = .13, t = 2.22, p = .027$ ), Mistrust/Abuse ( $\beta = .13, t = 2.12, p = .035$ ), Vulnerability ( $\beta = .12, t = 2.09, p = .037$ ), Straightforwardness ( $\beta = -.11, t = -2.25, p = .025$ ) and Deliberation ( $\beta = -.09, t = -2.00, p = .047$ ) were significant predictors of borderline PD symptomology.

Lastly, at step three, the addition of the borderline PD beliefs subscale significantly accounted for a further 1.4% of the variance in borderline PD features,  $\Delta F(1, 280) = 12.45, p < .001$ . Overall, the final model significantly explained 68.5% (64.9% adjusted) of the variance in borderline PD features,  $R^2 = .69, F(32, 280) = 19.02, p < .001$ . The borderline PD beliefs subscale ( $\beta = .19, t = 3.53, p < .001$ ), Entitlement/Grandiosity ( $\beta = .18, t = 3.77, p < .001$ ), Depression ( $\beta = .18, t = 2.89, p = .004$ ), Abandonment/Instability ( $\beta = .15, t = 2.82, p = .005$ ), Deliberation ( $\beta = -.10, t = -2.09, p = .037$ ) and Straightforwardness ( $\beta = -.09, t = -2.10, p = .037$ ) were the

most salient predictors of borderline PD features; whereas Vulnerability ( $\beta = .11, t = 1.96, p = .051$ ) and Emotional Inhibition ( $\beta = .11, t = 1.90, p = .058$ ) approached significance.

Trust was also found to be a significant predictor of borderline PD features at step three ( $\beta = .11, t = 2.13, p = .034$ ). However, inspection of the difference between the sign and size of its beta weight and zero-order correlation coefficient ( $r = -.30, p < .001$ ) led to identifying Trust as a negative suppressor variable. A follow-up hierarchical regression analysis with the traits, EMSs and the borderline PD dysfunctional beliefs scale entered as predictors at step one and Trust entered as a predictor at step two revealed that Trust slightly increased the beta weights of Depression, Straightforwardness, Compliance, Tender-Mindedness, Mistrust/Abuse and the borderline PD beliefs subscale and consequently increased  $R^2$  in the prediction of borderline PD features,  $\Delta R^2 = .01, \Delta F(1, 280) = 4.55, p = .034$ . Mistrust/Abuse and the borderline PD beliefs subscale were both significantly negatively correlated with Trust (see Tables 2.6-2.7) and this may explain the suppression effect.

Whilst Tender-Mindedness was a significant predictor of borderline PD features at step one, it was no longer a significant predictor at step two when the EMSs were entered into the analysis. Likewise, whilst Mistrust/Abuse and Emotional Inhibition were significant predictors of borderline PD features at step two, they were no longer significant predictors at step three when the borderline PD dysfunctional beliefs subscale was entered into the analysis. This pattern of results suggests that Tender-Mindedness may indirectly influence borderline PD symptomology through its relationship with EMSs, whereas the EMSs of Mistrust/Abuse and Emotional Inhibition may indirectly influence borderline PD symptomology through a relationship with borderline PD dysfunctional beliefs. Furthermore, Vulnerability and Deliberation became significant predictors of borderline PD features at step two when the EMSs were entered into the analysis. Whilst Deliberation continued to be a significant predictor at step three, Vulnerability was no longer significant once the borderline PD beliefs scale was considered. This pattern of results suggests that these personality traits may have complex relationships with borderline PD features that are influenced by dysfunctional beliefs.

**2.3.6.8 Predictors of avoidant PD features.** In order to examine whether dysfunctional schemas could incrementally add to the prediction of avoidant PD features over and above FFM traits and to determine the most salient predictors of avoidant PD features, a hierarchical multiple regression analysis was performed with selected FFM traits, EMSs and the avoidant PD dysfunctional beliefs PBQ scale entered as predictors in successive blocks. Table 2.19 displays the summary statistics of this analysis.

Table 2.19

*Hierarchical Regression Results Predicting Avoidant PD Features*

Predictor	<i>B</i>	<i>SE B</i>	$\beta$	Partial <i>r</i>	Part <i>r</i>	$\Delta R^2$
Step 1						.49***
(Constant)	1.82	1.12				
Anxiety	.00	.01	.02	.02	.01	
Angry Hostility	.00	.01	-.01	-.01	-.01	
Depression	.03	.01	.21**	.17	.12	
Self-Consciousness	.04	.01	.28***	.25	.18	
Impulsiveness	-.01	.01	-.04	-.04	-.03	
Vulnerability	.01	.01	.09	.07	.05	
Warmth	-.02	.01	-.12	-.10	-.07	
Gregariousness	-.02	.01	-.16**	-.16	-.12	
Assertiveness	.00	.01	.02	.02	.01	
Activity	.00	.01	.02	.02	.02	
Positive Emotions	.00	.01	.00	.00	.00	
Actions	-.01	.01	-.06	-.07	-.05	
Trust	.00	.01	-.02	-.02	-.02	
Altruism	.01	.01	.04	.04	.03	
Competence	.00	.01	-.01	-.01	-.01	
Order	-.01	.01	-.04	-.04	-.03	
Dutifulness	.01	.01	.10	.10	.07	
Achievement Striving	-.01	.01	-.08	-.07	-.05	
Self-Discipline	-.02	.01	-.13	-.10	-.07	
Step 2						.23***
(Constant)	-1.04	.93				
Anxiety	.01	.01	.05	.05	.03	
Angry Hostility	-.01	.01	-.04	-.06	-.03	
Depression	.00	.01	.00	.00	.00	
Self-Consciousness	.03	.01	.21***	.24	.13	
Impulsiveness	.00	.01	-.01	-.02	-.01	
Vulnerability	.01	.01	.08	.09	.05	
Warmth	-.01	.01	-.08	-.09	-.05	
Gregariousness	-.01	.01	-.07	-.10	-.05	
Assertiveness	.00	.01	.01	.02	.01	

Activity	.00	.01	-.02	-.02	-.01
Positive Emotions	.01	.01	.03	.04	.02
Actions	-.01	.01	-.04	-.07	-.04
Trust	.00	.01	.02	.03	.01
Altruism	.00	.01	.03	.04	.02
Competence	.01	.01	.04	.05	.02
Order	.00	.01	.01	.02	.01
Dutifulness	.01	.01	.05	.06	.03
Achievement Striving	-.01	.01	-.08	-.10	-.05
Self-Discipline	.00	.01	-.04	-.04	-.02
Emotional Deprivation	-.03	.08	-.01	-.02	-.01
Abandonment/Instability	.18	.08	.12*	.14	.07
Mistrust/Abuse	.04	.10	.02	.02	.01
Social Isolation/Alienation	.25	.09	.15**	.17	.09
Defectiveness/Shame	.22	.11	.11	.12	.06
Failure	.01	.08	.01	.01	.01
Subjugation	.35	.10	.17***	.20	.11
Emotional Inhibition	.24	.09	.14**	.16	.09
Approval/Recog.-Seeking	.24	.07	.15***	.21	.11
Negativity/Pessimism	-.46	.45	-.05	-.06	-.03
Step 3					.02***
(Constant)	-1.29	.90			
Anxiety	.01	.01	.04	.05	.03
Angry Hostility	-.01	.01	-.06	-.07	-.04
Depression	.00	.01	.00	.00	.00
Self-Consciousness	.03	.01	.19***	.22	.12
Impulsiveness	.00	.01	-.02	-.04	-.02
Vulnerability	.01	.01	.07	.08	.04
Warmth	-.01	.01	-.06	-.07	-.04
Gregariousness	-.01	.01	-.05	-.07	-.03
Assertiveness	.00	.01	.02	.03	.02
Activity	.00	.01	-.01	-.02	-.01
Positive Emotions	.01	.01	.04	.05	.02
Actions	.00	.01	-.02	-.04	-.02
Trust	.00	.01	.03	.04	.02
Altruism	.00	.01	.02	.02	.01
Competence	.00	.01	.02	.03	.01
Order	.01	.01	.04	.06	.03
Dutifulness	.00	.01	.02	.02	.01
Achievement Striving	-.01	.01	-.06	-.08	-.04
Self-Discipline	-.01	.01	-.04	-.04	-.02
Emotional Deprivation	.01	.08	.00	.01	.00
Abandonment/Instability	.11	.08	.07	.09	.04
Mistrust/Abuse	.03	.10	.02	.02	.01
Social Isolation/Alienation	.27	.09	.16**	.18	.09
Defectiveness/Shame	.16	.11	.08	.09	.05
Failure	.01	.08	.01	.01	.00

Subjugation	.31	.10	.16**	.19	.10
Emotional Inhibition	.23	.08	.13**	.16	.08
Approval/Recog.-Seeking	.16	.07	.10*	.14	.07
Negativity/Pessimism	-.65	.44	-.07	-.09	-.04
Avoidant PD beliefs	.05	.01	.22***	.26	.14

Note. Values for  $B$  and  $SE B$  appear low due to rounding.

\* $p \leq .05$ . \*\* $p \leq .01$ . \*\*\* $p \leq .001$ .

Table 2.19 shows that at step one the FFM traits significantly explained 49.0% of the variance in avoidant PD features,  $F(19, 293) = 14.80, p < .001$ . In this model, Self-Consciousness ( $\beta = .28, t = 4.38, p < .001$ ), Depression ( $\beta = .21, t = 2.93, p = .004$ ) and Gregariousness ( $\beta = -.16, t = -2.77, p = .006$ ) were significant predictors of avoidant PD features.

After controlling for the personality traits at step two, the EMSs significantly explained a further 23.1% of the variance in avoidant PD symptomology,  $\Delta F(10, 283) = 23.49, p < .001$ , and  $R$  was significantly different from zero,  $R^2 = .72$  (adjusted  $R^2 = .69$ ),  $F(29, 283) = 25.25, p < .001$ . In this second model, Self-Consciousness ( $\beta = .21, t = 4.11, p < .001$ ), Subjugation ( $\beta = .17, t = 3.41, p = .001$ ), Approval/Recognition-Seeking ( $\beta = .15, t = 3.60, p < .001$ ), Social Isolation/Alienation ( $\beta = .15, t = 2.84, p = .005$ ), Emotional Inhibition ( $\beta = .14, t = 2.72, p = .007$ ) and Abandonment/Instability ( $\beta = .12, t = 2.35, p = .019$ ) were significant predictors of avoidant PD features; while Defectiveness/Shame approached significance ( $\beta = .11, t = 1.96, p = .051$ ).

Lastly, at step three, the addition of the avoidant PD dysfunctional beliefs scale accounted for an incremental 1.9% of the variance in avoidant PD features,  $\Delta F(1, 282) = 20.14, p < .001$ . Overall, this final model significantly explained 74.0% (71.2% adjusted) of the variance in avoidant PD features,  $R^2 = .74, F(30, 282) = 26.73, p < .001$ . The most salient predictors of avoidant PD features were the avoidant PD beliefs scale ( $\beta = .22, t = 4.49, p < .001$ ), Self-Consciousness ( $\beta = .19, t = 3.86, p < .001$ ), Subjugation ( $\beta = .16, t = 3.16, p = .002$ ), Social Isolation/Alienation ( $\beta = .16, t = 3.10, p = .002$ ), Emotional Inhibition ( $\beta = .13, t = 2.71, p = .007$ ) and Approval/Recognition-Seeking ( $\beta = .10, t = 2.31, p = .022$ ).

Interestingly, while Depression and Gregariousness were significant predictors of avoidant PD features at step one, they were no longer significant predictors at step two when the EMSs were entered into the analysis. Similarly,

whilst Abandonment/Instability was a significant predictor of avoidant PD features at step two, it was no longer a significant predictor at step three when the avoidant PD dysfunctional beliefs scale was entered into the analysis. This pattern of results suggests that Depression and Gregariousness may indirectly influence avoidant PD symptomology through their relationships with EMSs, whereas Abandonment/Instability may indirectly influence avoidant PD symptomology through a relationship with avoidant PD beliefs.

**2.3.6.9 Predictors of dependent PD features.** In order to examine whether dysfunctional schemas could incrementally add to the prediction of dependent PD features over and above FFM traits and to determine the most salient predictors of dependent PD features, a hierarchical multiple regression analysis was performed with the selected FFM traits, EMSs and the dependent PD dysfunctional beliefs scale entered as predictors in successive blocks. The summary statistics of this analysis are shown in Table 2.20.

Table 2.20

*Hierarchical Regression Results Predicting Dependent PD Features*

Predictor	<i>B</i>	<i>SE B</i>	$\beta$	Partial <i>r</i>	Part <i>r</i>	$\Delta R^2$
Step 1						.40***
(Constant)	2.03	.96				
Anxiety	-.01	.01	-.08	-.06	-.05	
Angry Hostility	.00	.01	-.04	-.03	-.03	
Depression	.02	.01	.20**	.15	.12	
Self-Consciousness	.02	.01	.14	.11	.09	
Impulsiveness	.00	.01	-.04	-.03	-.03	
Vulnerability	.03	.01	.28***	.21	.17	
Warmth	-.02	.01	-.13	-.10	-.08	
Assertiveness	.01	.01	.05	.04	.03	
Positive Emotions	.01	.01	.07	.07	.05	
Actions	-.01	.01	-.04	-.05	-.04	
Values	-.03	.01	-.24***	-.26	-.21	
Trust	.01	.01	.09	.09	.07	
Straightforwardness	-.02	.01	-.16**	-.15	-.12	
Altruism	.01	.01	.12	.10	.08	
Competence	-.01	.01	-.12	-.10	-.08	
Order	.00	.01	.02	.02	.01	
Dutifulness	.00	.01	.04	.03	.02	
Achievement Striving	.01	.01	.07	.07	.05	
Self-Discipline	-.02	.01	-.17*	-.12	-.09	
Deliberation	-.01	.01	-.05	-.05	-.04	



Step 2						.25***
(Constant)	.42	.82				
Anxiety	-.01	.01	-.09	-.10	-.06	
Angry Hostility	-.01	.01	-.08	-.09	-.05	
Depression	.01	.01	.06	.06	.04	
Self-Consciousness	.01	.01	.12*	.12	.07	
Impulsiveness	.00	.01	-.02	-.02	-.01	
Vulnerability	.02	.01	.17**	.16	.09	
Warmth	-.01	.01	-.07	-.08	-.05	
Assertiveness	.01	.01	.05	.06	.04	
Positive Emotions	.00	.01	.02	.02	.01	
Actions	-.01	.01	-.05	-.07	-.04	
Values	-.02	.01	-.12**	-.17	-.11	
Trust	.01	.01	.10*	.12	.07	
Straightforwardness	-.01	.01	-.08	-.10	-.06	
Altruism	.01	.01	.05	.05	.03	
Competence	.00	.01	-.02	-.02	-.01	
Order	.01	.01	.04	.05	.03	
Dutifulness	-.01	.01	-.06	-.06	-.04	
Achievement Striving	.01	.01	.08	.09	.05	
Self-Discipline	.00	.01	-.03	-.03	-.02	
Deliberation	-.01	.01	-.10*	-.13	-.08	
Emotional Deprivation	-.05	.07	-.03	-.04	-.03	
Abandonment/Instability	.30	.06	.25***	.27	.17	
Defectiveness/Shame	-.11	.09	-.07	-.07	-.04	
Failure	-.09	.07	-.07	-.07	-.04	
Dependence/Incompetence	.22	.09	.14*	.15	.09	
Enmeshment	.11	.07	.08	.09	.06	
Subjugation	.52	.10	.34***	.31	.19	
Approval/Recog.-Seeking	.18	.06	.15**	.18	.11	
Negativity/Pessimism	-.09	.39	-.01	-.01	-.01	
Step 3						.05***
(Constant)	.42	.77				
Anxiety	-.01	.01	-.10	-.11	-.06	
Angry Hostility	-.01	.01	-.06	-.08	-.04	
Depression	.00	.01	.04	.04	.02	
Self-Consciousness	.01	.01	.12*	.13	.07	
Impulsiveness	.00	.01	-.01	-.02	-.01	
Vulnerability	.02	.01	.15*	.15	.08	
Warmth	-.01	.01	-.09	-.10	-.06	
Assertiveness	.01	.01	.07	.08	.05	
Positive Emotions	.01	.01	.05	.06	.04	
Actions	.00	.00	-.04	-.06	-.03	
Values	-.01	.01	-.09*	-.14	-.08	
Trust	.01	.01	.08	.10	.05	
Straightforwardness	-.01	.01	-.07	-.09	-.05	
Altruism	.00	.01	.03	.04	.02	

Competence	.00	.01	-.01	-.01	-.01
Order	.01	.01	.06	.07	.04
Dutifulness	-.01	.01	-.07	-.08	-.05
Achievement Striving	.01	.01	.08	.09	.05
Self-Discipline	.00	.01	-.05	-.04	-.02
Deliberation	-.01	.01	-.11*	-.14	-.08
Emotional Deprivation	-.01	.06	-.01	-.01	-.01
Abandonment/Instability	.19	.06	.16**	.18	.10
Defectiveness/Shame	-.08	.09	-.05	-.05	-.03
Failure	-.04	.07	-.04	-.04	-.02
Dependence/Incompetence	.16	.08	.10	.11	.06
Enmeshment	.09	.07	.06	.08	.04
Subjugation	.39	.09	.26***	.25	.14
Approval/Recog.-Seeking	.12	.06	.10*	.13	.07
Negativity/Pessimism	-.09	.36	-.01	-.02	-.01
Dependent PD beliefs	.05	.01	.30***	.37	.22

*Note.* Values for  $B$  and  $SE B$  appear low due to rounding.

\* $p \leq .05$ . \*\* $p \leq .01$ . \*\*\* $p \leq .001$ .

As shown in Table 2.20, at step one, the FFM traits significantly explained 39.6% of the variance in dependent PD features,  $F(20, 292) = 9.57, p < .001$ . In this model, Vulnerability ( $\beta = .28, t = 3.71, p < .001$ ), Values ( $\beta = -.24, t = -4.51, p < .001$ ), Depression ( $\beta = .20, t = 2.61, p = .009$ ), Self-Discipline ( $\beta = -.17, t = -2.04, p = .042$ ) and Straightforwardness ( $\beta = -.16, t = -2.60, p = .010$ ) were significant predictors of dependent PD features; whilst Self-Consciousness approached significance ( $\beta = .14, t = 1.94, p = .053$ ).

After controlling for the personality traits at step two, the EMSs significantly explained a further 25.1% of the variance in dependent PD features,  $\Delta F(9, 283) = 22.38, p < .001$ , and  $R$  was significantly different from zero,  $R^2 = .65$  (adjusted  $R^2 = .61$ ),  $F(29, 283) = 17.89, p < .001$ . In this second model, Subjugation ( $\beta = .34, t = 5.45, p < .001$ ), Abandonment/Instability ( $\beta = .25, t = 4.74, p < .001$ ), Vulnerability ( $\beta = .17, t = 2.68, p = .008$ ), Approval/Recognition-Seeking ( $\beta = .15, t = 3.12, p = .002$ ), Dependence/Incompetence ( $\beta = .14, t = 2.51, p = .013$ ), Values ( $\beta = -.12, t = -2.98, p = .003$ ), Self-Consciousness ( $\beta = .12, t = 2.04, p = .043$ ) and Deliberation ( $\beta = -.10, t = -2.16, p = .031$ ) were significant predictors of dependent PD symptomology.

Trust was also a significant predictor of dependent PD features at step two ( $\beta = .10, t = 1.98, p = .049$ ). However, inspection of the difference between the sign and

size of its beta weight and its zero-order correlation coefficient ( $r = -.22, p < .001$ ) led to identifying Trust as a negative suppressor variable, rather than as a unique predictor of dependent PD features. A follow-up hierarchical regression analysis with the aforementioned FFM traits and EMSs entered as predictors at step one and Trust entered as a predictor at step two revealed that Trust slightly increased the beta weights of Self-Consciousness, Warmth, Assertiveness, Straightforwardness, Defectiveness/Shame and Enmeshment/Undeveloped Self and consequently increased  $R^2$  in the prediction of dependent PD features,  $\Delta R^2 = .01, \Delta F(1, 283) = 3.92, p = .049$ . Trust was significantly negatively correlated with the EMSs of Defectiveness/Shame and Enmeshment/Undeveloped Self (see Table 2.6) and this may explain the suppression effect.

Lastly, at step three, the addition of the dependent PD dysfunctional beliefs scale significantly accounted for a further 4.8% of the variance in dependent PD features,  $\Delta F(1, 282) = 44.14, p < .001$ . Overall, the final model significantly explained 69.5% (66.2% adjusted) of the variance in dependent PD features,  $R^2 = .70, F(30, 282) = 21.40, p < .001$ . The final model revealed that the most salient predictors of dependent PD features were the dependent PD beliefs scale ( $\beta = .30, t = 6.64, p < .001$ ), Subjugation ( $\beta = .26, t = 4.33, p < .001$ ), Abandonment/Instability ( $\beta = .16, t = 3.05, p = .003$ ), Vulnerability ( $\beta = .15, t = 2.57, p = .011$ ), Self-Consciousness ( $\beta = .12, t = 2.18, p = .030$ ), Deliberation ( $\beta = -.11, t = -2.39, p = .017$ ), Approval/Recognition-Seeking ( $\beta = .10, t = 2.24, p = .026$ ) and Values ( $\beta = -.09, t = -2.35, p = .020$ ).

Whilst Depression, Straightforwardness and Self-Discipline were significant predictors of dependent PD features at step one, they were no longer significant predictors at step two when the EMSs were entered into the analysis. Likewise, whilst Dependence/Incompetence was a significant predictor of dependent PD features at step two, it was no longer a significant predictor at step three when the dependent PD dysfunctional beliefs scale was entered into the analysis. This suggests that Depression, Straightforwardness and Self-Discipline may indirectly influence dependent PD features through their relationships with EMSs, whereas Dependence/Incompetence may indirectly influence dependent PD through its relationship with dependent PD beliefs. Furthermore, both Self-Consciousness and Deliberation were not significant predictors of dependent PD features at step one, but

became significant predictors at steps two and three, indicating that EMSs may influence the relationships between these traits and dependent PD symptomology.

**2.3.6.10 Predictors of obsessive-compulsive PD features.** In order to examine whether dysfunctional schemas could incrementally add to the prediction of obsessive-compulsive PD features over and above FFM traits and to determine the most salient predictors of obsessive-compulsive PD features, a hierarchical multiple regression analysis was performed with the selected FFM traits, EMSs and the PBQ obsessive-compulsive PD dysfunctional beliefs scale entered as predictors in successive blocks. Table 2.21 displays the summary statistics of this analysis.

Table 2.21

*Hierarchical Regression Results Predicting Obsessive-Compulsive PD Features*

Predictor	<i>B</i>	<i>SE B</i>	$\beta$	Partial <i>r</i>	Part <i>r</i>	$\Delta R^2$
Step 1						.18***
(Constant)	4.46	.817				
Anxiety	.00	.01	.02	.01	.01	
Angry Hostility	.01	.01	.05	.04	.04	
Depression	.01	.01	.10	.07	.06	
Self-Consciousness	.02	.01	.15*	.12	.11	
Vulnerability	.00	.01	-.04	-.03	-.03	
Gregariousness	-.01	.01	-.09	-.09	-.08	
Actions	-.01	.01	-.08	-.09	-.08	
Values	-.02	.01	-.18***	-.18	-.17	
Trust	-.01	.01	-.08	-.08	-.07	
Step 2						.32***
(Constant)	1.59	.72				
Anxiety	.01	.01	.04	.04	.03	
Angry Hostility	-.01	.01	-.05	-.05	-.03	
Depression	-.01	.01	-.10	-.08	-.06	
Self-Consciousness	.00	.01	.04	.04	.03	
Vulnerability	.01	.01	.06	.06	.04	
Gregariousness	.00	.01	-.03	-.03	-.02	
Actions	-.01	.01	-.09*	-.11	-.08	
Values	-.01	.01	-.09*	-.14	-.08	
Trust	.00	.01	.00	.00	.00	
Mistrust/Abuse	.05	.10	.03	.03	.02	
Social Isolation/Alienation	.27	.09	.21**	.18	.13	
Defectiveness/Shame	-.24	.11	-.16*	-.12	-.09	
Failure	.06	.07	.05	.05	.04	
Emotional Inhibition	.17	.08	.13*	.12	.09	
Unrelenting Standards	.21	.07	.16**	.18	.13	
Entitlement/Grandiosity	1.18	.48	.14*	.14	.10	

Approval/Recog.-Seeking	.26	.07	.20***	.20	.14
Negativity/Pessimism	.33	.47	.05	.04	.03
Punitiveness	.22	.08	.15**	.16	.12
Step 3					.06***
(Constant)	1.14	.68			
Anxiety	.00	.01	.01	.01	.00
Angry Hostility	-.01	.01	-.06	-.07	-.05
Depression	-.01	.01	-.07	-.06	-.04
Self-Consciousness	.00	.01	.02	.02	.02
Vulnerability	.01	.01	.10	.10	.06
Gregariousness	.00	.01	-.01	-.01	-.01
Actions	-.01	.01	-.09	-.11	-.08
Values	-.01	.01	-.05	-.07	-.05
Trust	.00	.01	.02	.03	.02
Mistrust/Abuse	.03	.10	.02	.02	.01
Social Isolation/Alienation	.28	.08	.21***	.19	.13
Defectiveness/Shame	-.22	.11	-.15*	-.12	-.08
Failure	.08	.07	.06	.06	.04
Emotional Inhibition	.16	.08	.12*	.12	.08
Unrelenting Standards	.06	.07	.04	.05	.03
Entitlement/Grandiosity	1.15	.46	.14*	.15	.10
Approval/Recog.-Seeking	.18	.07	.14*	.14	.10
Negativity/Pessimism	.00	.44	.00	.00	.00
Punitiveness	.16	.07	.11*	.13	.09
Obs.-Compulsive PD beliefs	.04	.01	.33***	.34	.24

Note. Values for *B* and *SE B* appear low due to rounding.

\* $p \leq .05$ . \*\* $p \leq .01$ . \*\*\* $p \leq .001$ .

Table 2.21 shows that at step one the FFM personality traits significantly explained 17.6% of the variance in obsessive-compulsive PD features,  $F(9, 303) = 7.18, p < .001$ . In this model, Values ( $\beta = -.18, t = -3.22, p = .001$ ) and Self-Consciousness ( $\beta = .15, t = 2.03, p = .043$ ) were significant predictors of obsessive-compulsive PD features.

After controlling for the personality traits at step two, the EMSs significantly explained an additional 32.4% of the variance in obsessive-compulsive PD features,  $\Delta F(10, 293) = 19.00, p < .001$ , and *R* was significantly different from zero,  $R^2 = .50$  (adjusted  $R^2 = .47$ ),  $F(19, 293) = 15.42, p < .001$ . In this second model, Social Isolation/Alienation ( $\beta = .21, t = 3.10, p = .002$ ), Approval/Recognition-Seeking ( $\beta = .20, t = 3.44, p = .001$ ), Unrelenting Standards ( $\beta = .16, t = 3.12, p = .002$ ), Punitiveness ( $\beta = .15, t = 2.83, p = .005$ ), Entitlement/Grandiosity ( $\beta = .14, t = 2.44, p = .015$ ), Emotional Inhibition ( $\beta = .13, t = 2.05, p = .042$ ), Values ( $\beta = -.09, t = -$

1.98,  $p = .049$ ) and Actions ( $\beta = -.09$ ,  $t = -1.97$ ,  $p = .050$ ) were significant predictors of obsessive-compulsive PD symptomology.

Defectiveness/Shame was also found to be a significant predictor of obsessive-compulsive PD features at step two ( $\beta = -.16$ ,  $t = -2.12$ ,  $p = .034$ ). Yet, inspection of the difference between the sign and size of its beta weight and zero-order correlation coefficient ( $r = .35$ ,  $p < .001$ ) revealed that Defectiveness/Shame was a negative suppressor variable. A follow-up hierarchical regression analysis with the aforementioned traits and EMSs entered as predictors at step one and Defectiveness/Shame entered as a predictor at step two revealed that Defectiveness/Shame slightly increased the beta weights of Mistrust/Abuse, Social Isolation/Alienation, Failure, Emotional Inhibition, Negativity/Pessimism and Approval/Recognition-Seeking and consequently increased  $R^2$  in the prediction of obsessive-compulsive PD features,  $\Delta R^2 = .01$ ,  $\Delta F(1, 293) = 4.51$ ,  $p = .034$ .

Lastly, at step three, the addition of the obsessive-compulsive PD dysfunctional beliefs scale significantly accounted for a further 5.7% of the variance in obsessive-compulsive PD features,  $\Delta F(1, 292) = 37.37$ ,  $p < .001$ . Overall, this final model significantly explained 55.7% (52.6% adjusted) of the variance in obsessive-compulsive PD features,  $R^2 = .56$ ,  $F(20, 292) = 18.34$ ,  $p < .001$ . The final model revealed that the most salient predictors of obsessive-compulsive PD features were the obsessive-compulsive PD beliefs scale ( $\beta = .33$ ,  $t = 6.11$ ,  $p < .001$ ), Social Isolation/Alienation ( $\beta = .21$ ,  $t = 3.36$ ,  $p = .001$ ), Entitlement/Grandiosity ( $\beta = .14$ ,  $t = 2.52$ ,  $p = .012$ ), Approval/Recognition-Seeking ( $\beta = .14$ ,  $t = 2.46$ ,  $p = .014$ ), Emotional Inhibition ( $\beta = .12$ ,  $t = 1.99$ ,  $p = .047$ ) and Punitiveness ( $\beta = .11$ ,  $t = 2.23$ ,  $p = .026$ ).

As with step two, Defectiveness/Shame initially appeared to be a significant predictor of obsessive-compulsive PD features at step three ( $\beta = -.15$ ,  $t = -2.08$ ,  $p = .039$ ), however inspection of the difference between the sign and size of its beta weight and its zero-order correlation led to identifying Defectiveness/Shame as a negative suppressor variable. A follow-up hierarchical regression analysis with the traits, EMSs and the obsessive-compulsive PD beliefs scale entered as predictors at step one and Defectiveness/Shame entered as a predictor at step two revealed that Defectiveness/Shame slightly increased the beta weights of Mistrust/Abuse, Social Isolation/Alienation, Failure, Emotional Inhibition and Approval/Recognition-

Seeking and consequently increased  $R^2$  in the prediction of obsessive-compulsive PD symptomology,  $\Delta R^2 = .01$ ,  $\Delta F(1, 292) = 4.32$ ,  $p = .039$ .

While Self-Consciousness was a significant predictor of obsessive-compulsive PD features at step one, it was no longer a significant predictor at step two when the EMSs were entered into the analysis. Likewise, whilst Actions, Values and Unrelenting Standards were significant predictors of obsessive-compulsive PD features at step two, they were no longer significant predictors at step three when the obsessive-compulsive PD dysfunctional beliefs scale was entered into the analysis. In fact, no personality traits were significant predictors in the final model. These results suggest that Self-Consciousness may indirectly influence obsessive-compulsive PD symptomology through its relationships with EMSs; whereas Actions, Values and Unrelenting Standards may indirectly influence obsessive-compulsive PD symptomology through their relationships with the obsessive-compulsive PD beliefs scale, which in turn was the most salient predictor of obsessive-compulsive PD features overall.

**2.3.6.11 Predictors of passive-aggressive PD features.** In order to examine whether dysfunctional schemas could incrementally add to the prediction of passive-aggressive PD features over and above FFM traits and to determine the most salient predictors of passive-aggressive PD features, a hierarchical multiple regression analysis was performed with the selected FFM traits, EMSs and the passive-aggressive PD dysfunctional beliefs PBQ scale entered as predictors in successive blocks. The summary statistics of this analysis are presented in Table 2.22.

Table 2.22

*Hierarchical Regression Results Predicting Passive-Aggressive PD Features*

Predictor	<i>B</i>	<i>SE B</i>	$\beta$	Partial <i>r</i>	Part <i>r</i>	$\Delta R^2$
Step 1						.40***
(Constant)	7.30	1.08				
Anxiety	.00	.01	-.03	-.02	-.02	
Angry Hostility	.01	.01	.05	.04	.03	
Depression	.01	.01	.12	.09	.07	
Self-Consciousness	.01	.01	.12	.10	.08	
Impulsiveness	.00	.01	.03	.03	.02	
Vulnerability	-.01	.01	-.06	-.05	-.04	
Warmth	.00	.01	-.01	.00	.00	
Gregariousness	-.01	.01	-.05	-.04	-.03	
Activity	-.01	.01	-.11	-.10	-.08	
Positive Emotions	.01	.01	.05	.05	.04	
Actions	-.01	.01	-.08	-.09	-.07	
Values	-.02	.01	-.18***	-.19	-.15	
Trust	-.01	.01	-.07	-.06	-.05	
Straightforwardness	-.01	.01	-.10	-.09	-.07	
Altruism	.00	.01	-.03	-.02	-.02	
Compliance	.00	.01	.01	.01	.01	
Modesty	-.02	.01	-.22***	-.23	-.19	
Tender-Mindedness	.00	.01	.00	.00	.00	
Competence	-.01	.01	-.08	-.07	-.05	
Order	-.01	.01	-.13*	-.12	-.09	
Dutifulness	.01	.01	.11	.09	.07	
Achievement Striving	.01	.01	.12	.10	.07	
Self-Discipline	-.03	.01	-.29***	-.20	-.16	
Deliberation	-.01	.01	-.05	-.05	-.04	
Step 2						.21***
(Constant)	3.87	.95				
Anxiety	.00	.01	.02	.02	.01	
Angry Hostility	.00	.01	.02	.02	.01	
Depression	-.01	.01	-.09	-.08	-.05	
Self-Consciousness	.00	.01	.04	.04	.02	
Impulsiveness	.00	.01	.03	.03	.02	
Vulnerability	.00	.01	-.04	-.04	-.03	
Warmth	.01	.01	.07	.06	.04	
Gregariousness	.00	.01	.03	.04	.02	
Activity	-.02	.01	-.14**	-.16	-.10	
Positive Emotions	.01	.01	.05	.06	.04	
Actions	-.01	.01	-.08	-.11	-.07	
Values	-.01	.01	-.09	-.11	-.07	
Trust	-.01	.01	-.05	-.05	-.03	
Straightforwardness	-.01	.01	-.05	-.05	-.03	
Altruism	-.01	.01	-.08	-.08	-.05	
Compliance	.00	.01	-.04	-.04	-.03	



Modesty	-.01	.01	-.10	-.12	-.07
Tender-Mindedness	.01	.01	.08	.10	.07
Competence	.00	.01	-.04	-.04	-.03
Order	.00	.01	-.04	-.05	-.03
Dutifulness	.00	.01	.02	.02	.01
Achievement Striving	.01	.01	.07	.07	.04
Self-Discipline	-.02	.01	-.17*	-.14	-.09
Deliberation	-.01	.01	-.07	-.09	-.05
Social Isolation/Alienation	.26	.08	.20***	.20	.13
Failure	.10	.07	.08	.08	.05
Subjugation	.13	.09	.09	.09	.05
Emotional Inhibition	.22	.08	.16**	.16	.10
Entitlement/Grandiosity	2.43	.46	.28***	.30	.20
Insufficient Self-Control	-.02	.09	-.02	-.02	-.01
Approval/Recog.-Seeking	.08	.07	.06	.07	.04
Step 3					.04***
(Constant)	3.24	.90			
Anxiety	.00	.01	.02	.02	.01
Angry Hostility	.00	.01	.00	.00	.00
Depression	-.01	.01	-.09	-.08	-.05
Self-Consciousness	.00	.01	.04	.04	.02
Impulsiveness	.00	.01	.00	.00	.00
Vulnerability	.00	.01	-.04	-.04	-.02
Warmth	.01	.01	.04	.04	.02
Gregariousness	.00	.01	.03	.03	.02
Activity	-.01	.01	-.11*	-.13	-.08
Positive Emotions	.01	.01	.07	.08	.05
Actions	-.01	.01	-.07	-.10	-.06
Values	-.01	.01	-.07	-.11	-.06
Trust	.00	.01	-.01	-.01	-.01
Straightforwardness	-.01	.01	-.05	-.06	-.03
Altruism	-.01	.01	-.08	-.08	-.05
Compliance	.00	.01	-.03	-.03	-.02
Modesty	-.01	.01	-.06	-.08	-.05
Tender-Mindedness	.01	.01	.05	.07	.04
Competence	.00	.01	-.03	-.03	-.02
Order	.00	.01	-.04	-.05	-.03
Dutifulness	.00	.01	-.04	-.04	-.03
Achievement Striving	.01	.01	.07	.07	.04
Self-Discipline	-.01	.01	-.15*	-.13	-.08
Deliberation	-.01	.01	-.05	-.06	-.03
Social Isolation/Alienation	.20	.07	.16**	.17	.10
Failure	.12	.07	.09	.11	.06
Subjugation	.13	.09	.08	.09	.05
Emotional Inhibition	.15	.08	.11	.12	.07
Entitlement/Grandiosity	1.68	.45	.20***	.22	.13
Insufficient Self-Control	-.02	.08	.01	.01	.01

Approval/Recog.-Seeking	.06	.07	.04	.05	.03
Passive-aggressive PD beliefs	.04	.01	.27***	.33	.21

Note. Values for *B* and *SE B* appear low due to rounding.

\* $p \leq .05$ . \*\* $p \leq .01$ . \*\*\* $p \leq .001$ .

As shown in Table 2.22, at step one, the FFM traits significantly explained 40.2% of the variance in passive-aggressive PD features,  $F(24, 288) = 8.06, p < .001$ . In this model, Self-Discipline ( $\beta = -.29, t = -3.48, p = .001$ ), Modesty ( $\beta = -.22, t = -4.06, p < .001$ ), Values ( $\beta = -.18, t = -3.31, p = .001$ ) and Order ( $\beta = -.13, t = -2.06, p = .041$ ) were significant predictors of passive-aggressive PD features.

After controlling for the personality traits at step two, the EMSs significantly explained a further 20.8% of the variance in passive-aggressive PD features,  $\Delta F(7, 281) = 21.38, p < .001$ , and *R* was significantly different from zero,  $R^2 = .61$  (adjusted  $R^2 = .57$ ),  $F(31, 281) = 14.16, p < .001$ . In this second model, Entitlement/Grandiosity ( $\beta = .28, t = 5.34, p < .001$ ), Social Isolation/Alienation ( $\beta = .20, t = 3.45, p = .001$ ), Self-Discipline ( $\beta = -.17, t = -2.32, p = .021$ ), Emotional Inhibition ( $\beta = .16, t = 2.69, p = .008$ ) and Activity ( $\beta = -.14, t = -2.80, p = .006$ ) were significant predictors of passive-aggressive PD symptomology; whilst Modesty ( $\beta = -.10, t = -1.96, p = .051$ ) and Values ( $\beta = -.09, t = -1.93, p = .055$ ) approached significance.

Lastly, at step three, the addition of the passive-aggressive PD dysfunctional beliefs scale significantly accounted for a further 4.3% of the variance in passive-aggressive PD features,  $\Delta F(1, 280) = 34.42, p < .001$ . Overall, the final model significantly explained 65.2% (61.3% adjusted) of the variance in passive-aggressive PD features,  $R^2 = .65, F(32, 280) = 16.43, p < .001$ . The most salient predictors of passive-aggressive PD features were the passive-aggressive PD beliefs scale ( $\beta = .27, t = 5.87, p < .001$ ), Entitlement/Grandiosity ( $\beta = .20, t = 3.74, p < .001$ ), Social Isolation/Alienation ( $\beta = .16, t = 2.83, p = .005$ ), Self-Discipline ( $\beta = -.15, t = -2.12, p = .035$ ) and Activity ( $\beta = -.11, t = -2.24, p = .026$ ); while Emotional Inhibition approached significance ( $\beta = .11, t = 1.95, p = .053$ ).

Whereas Values, Modesty and Order were significant predictors of passive-aggressive PD features at step one, they were no longer significant predictors at step two when the EMSs were entered into the analysis. Likewise, whilst Emotional Inhibition was a significant predictor of passive-aggressive PD features at step two,

it was no longer a significant predictor at step three when the passive-aggressive-PD dysfunctional beliefs scale was entered into the analysis. This pattern of results suggests that Values, Modesty and Order may indirectly influence passive-aggressive PD symptomology through their relationships with EMSs, whereas Emotional Inhibition may indirectly influence passive-aggressive PD symptomology through a relationship with the passive-aggressive PD beliefs scale. Furthermore, Activity was not a significant predictor of passive-aggressive PD features at step one, but was at steps two and three, indicating that EMSs and dysfunctional beliefs may influence its relationship with passive-aggressive PD symptomology.

## **2.4 Discussion**

The overall objectives of this study were twofold: first, to examine the relationships between FFM traits, dysfunctional schemas and PD features; and second, to investigate whether dysfunctional schemas added incremental validity to the prediction of PD features over and above FFM traits. Five research questions were posed and the main findings will be discussed in relation to each research question. The broader implications will be discussed in the General Discussion (Chapter 5).

### **2.4.1 Are there Theoretically-Meaningful Relationships between FFM Traits and Dysfunctional Schemas?**

Consistent with previous research (Butler et al., 2007; Muris, 2006; Sava, 2009; Thimm, 2010), the hypotheses that most dysfunctional schemas would be positively correlated with Neuroticism and negatively correlated with Agreeableness were supported. In fact, correlational analyses revealed that Neuroticism, Extraversion, Agreeableness and Conscientiousness, and their respective facets, were meaningfully related with a broad range of dysfunctional schemas. That is, most EMSs and dysfunctional PD belief scales were positively correlated with Neuroticism and its facets, yet negatively correlated with Extraversion, Agreeableness and Conscientiousness and their respective facets. Openness did not obtain any statistically significant correlations with the dysfunctional schemas. However, a few Openness facets, notably Values, did obtain some weak correlations with a range of EMSs and dysfunctional PD belief scales. Clearly, being willing to question existing belief systems is incompatible with holding rigid, dysfunctional schemas (Costa & McCrae, 1992). The overall pattern of results indicates that, with a

few theoretically meaningful exceptions, the high or positive pole of Neuroticism and the low or negative poles of Extraversion, Agreeableness and Conscientiousness are associated with the presence of deeply-rooted maladaptive thinking patterns in general.

In comparison to the other personality domains, Neuroticism in particular evidenced stronger correlations with a broader range of dysfunctional schemas. This finding indicates a link between traits that are associated with a proneness to experience a range of negative emotional states and the maladaptive thinking patterns that are associated with personality dysfunction. According to Costa and McCrae (1992), individuals high in Neuroticism are more susceptible to dysfunctional or irrational thoughts and beliefs because the negative emotions that are associated with Neuroticism can interfere with how an individual interprets, adapts to and copes with the environment. Since Neuroticism “appears to be approximately 50 per cent heritable in humans” (Craske, 2003, p. 46), this innate personality disposition may be an important risk factor for the development of a wide array of maladaptive schemas and dysfunctional beliefs. Indeed, as was described in section 1.5.1, Muris (2006) found that Neuroticism accounted for a unique proportion of variance in most EMSs.

Whilst a positive correlation with Neuroticism was common to most dysfunctional schemas, the domains of Agreeableness, Conscientiousness and Extraversion appeared to differentiate some specific EMSs and dysfunctional PD belief scales, suggesting that these personality domains may be important for the development of particular maladaptive thinking patterns. For instance, Agreeableness was negatively correlated with most dysfunctional schemas but positively correlated with the EMS of Self-Sacrifice, which is characterised by an excessive and maladaptive focus on voluntarily meeting others’ needs to the detriment of one’s own needs (Young et al., 2003). Similarly, although Conscientiousness was negatively correlated with most dysfunctional schemas, it was positively correlated with the EMS of Unrelenting Standards and the obsessive-compulsive PD beliefs scale. Both of these dysfunctional schemas are characterised by an inexorable drive to meet extremely high internalised standards of behaviour and performance (Beck et al., 2004; Young et al., 2003). Finally, a weak positive correlation between Extraversion and the histrionic PD beliefs scale trended towards statistical significance, suggesting a possible link between Extraversion and holding

dysfunctional beliefs characteristic of histrionic PD. These results run counter to Thimm's (2010) suggestion that the positive poles of Agreeableness, Conscientiousness and Extraversion may be "irrelevant or unnecessary" (p. 377) for the understanding of EMSs. Rather, the results indicate that the positive poles of these personality domains are also related to specific maladaptive thinking patterns that are associated with personality dysfunction and this in turn could have important implications for PDs.

Despite the finding that some dysfunctional schemas were differentially correlated with Agreeableness, Conscientiousness and Extraversion, the overall domain-level pattern of a positive relationship with Neuroticism and negative relationships with Extraversion, Agreeableness and Conscientiousness provided little discrimination between the EMSs and dysfunctional PD belief scales. Rather, these dysfunctional schemas were further differentiated by their unique and theoretically-meaningful relationships with the lower-order facet traits of the FFM. For example, the EMS of Punitiveness was characterised by positive correlations with Depression and Self-Consciousness and a negative correlation with Trust. In other words, a dispositional proneness to experience negative emotions such as sadness, guilt, shame or embarrassment and a basic sense of mistrust about the world are associated with the presence of a rigid, pervasive and self-defeating EMS that oneself and others should be harshly punished for making mistakes. Furthermore, the antisocial PD beliefs scale was characterised by a positive correlation with Angry Hostility and negative correlations with Warmth, Values, Trust, Straightforwardness, Altruism, Compliance, Modesty and Tender-Mindedness. That is, a dispositional proneness to experience anger coupled with tendencies towards having weak attachments to others, closed-mindedness regarding morals or ethics and widespread interpersonal antagonism are linked with holding dysfunctional beliefs that are central to antisocial PD. Overall, the results revealed nuanced relationships between specific FFM facet traits and specific dysfunctional schemas that were theoretically-meaningful given the descriptions of each trait and dysfunctional schema concept that were provided in Chapter 1. While causal inferences cannot be made due to the correlational and cross-sectional design of the study, these findings are nonetheless in line with the FFT postulate that individuals develop characteristic (mal)adaptations, such as dysfunctional schemas, that are consistent with their personality traits (McCrae & Costa, 2003). The findings are also in accordance with the schema theory assertion

that specific temperament or personality dispositions are associated with the development of specific EMSs (Young et al., 2003).

#### **2.4.2 Are there Theoretically-Meaningful Relationships between Dysfunctional Schemas?**

Results revealed a large number of positive correlations between most EMSs and the PBQ dysfunctional PD belief scales, including correlations between theoretically-dissimilar concepts, such as between Unrelenting Standards and the passive-aggressive PD beliefs scale. Nevertheless, stronger correlations were observed between those dysfunctional schemas that were theoretically or conceptually similar. For example, the antisocial PD beliefs scale was moderately positively correlated with Entitlement/Grandiosity, yet had little relationship with Self-Sacrifice.

Despite the large number of positive correlations between EMSs and dysfunctional PD beliefs, no correlation was so high as to indicate that any two specific dysfunctional schemas were isomorphic constructs. Indeed, Beck et al. (2004) consider core beliefs and assumptions to be the cognitive content of broader schemas. Likewise, Young et al. (2003) posit that cognitions are but one component of EMSs. As such, there are two plausible explanations for the large number of positive correlations between the EMSs and the dysfunctional PD belief scales. First, it is possible that these dysfunctional schemas are related to the extent that they share content or tap into common variance relevant to PD symptomology. In this instance, general PD symptomology may act as a confounding variable. For instance, a shared relationship with dependent PD features could explain the strong positive correlation that was observed between Abandonment/Instability and the avoidant PD beliefs scale in this study. The study by Nelson-Gray et al. (2004) also found a large number of positive correlations between EMSs as measured by an early version of the YSQ and various PD thought scales which are conceptually similar to the PBQ dysfunctional belief scales. Thus, to the extent that EMSs and the dysfunctional PD belief scales do tap into general overlapping variance relevant to PDs, one task for future studies is to examine the relationships between specific EMSs and the dysfunctional PD belief scales using partial correlations, that is, by removing the variance attributable to PD symptomology.

Another plausible explanation for the large number of correlations between EMSs and the dysfunctional PD belief scales is that psychological distress may have inflated the correlations. Previous studies have found that EMSs (Nordahl et al., 2005; N. B. Schmidt et al., 1995; Welburn et al., 2002) and the PBQ dysfunctional PD belief scales (Beck et al., 2001; Butler et al., 2007) were associated with psychological distress or a general psychopathology factor. Thus, these dysfunctional schemas may be positively correlated with each other to the extent that they share common variance with psychological distress. While Neuroticism has been used as a measure of psychological distress or psychopathology in a previous study using the PBQ (e.g., Butler et al., 2007), Costa and McCrae (1992) have warned against this. They argue that trait Neuroticism should not be used as an indicator of state-based psychological distress or psychopathology because it is not a measure of these constructs. Therefore, future studies should consider measuring psychological distress in its own right and control for its potential effects when examining the relationships between EMSs and the dysfunctional PD belief scales. The potential confounding effects of general PD symptomology and psychological distress on the relationships between EMSs and the dysfunctional PD belief scales will be further explored in Study 2 of this thesis.

### **2.4.3 Are there Theoretically-Meaningful Relationships between PD Features and either FFM Traits or Dysfunctional Schemas?**

**2.4.3.1 PD features and FFM traits.** Consistent with previous studies that have used other instruments to measure PDs (Bagby, Marshall, et al., 2005; Bagby et al., 2008; Costa & Widiger, 2002b; Samuel & Widiger, 2008; Saulsman & Page, 2004), correlational analyses in the current study revealed that four personality domains from the FFM were associated with the majority of WISPI-IV PD scales. In general, Neuroticism was positively correlated with most PD scales while Extraversion, Agreeableness and Conscientiousness were negatively correlated. The sole exception to this pattern was a positive correlation between Extraversion and the histrionic PD scale, which accords with previous work (Saulsman & Page, 2004). This overall pattern of correlations resembles those which were obtained between FFM domains and dysfunctional schemas. Taken together, these findings indicate that, in general, the high pole of Neuroticism and the low poles of Extraversion, Agreeableness and Conscientiousness are not only associated with the dysfunctional

thinking patterns that are said to characterise the PDs, but are also associated with the personality pathology features, symptomology and behaviours that comprise the DSM-IV-TR PD criteria as measured by the WISPI-IV PD scales in the present research. Furthermore, in contrast to other FFM domains, Neuroticism and Agreeableness, plus their respective facets, obtained relatively stronger correlations with most PD scales. Again, this is consistent with previous research (Madsen et al., 2006; Saulsman & Page, 2004) which indicates that traits that are associated with emotional maladjustment and interpersonal antagonism may be common to most PD syndromes.

As was the case with the dysfunctional schemas, Openness did not obtain prominent correlations with the PD scales. However, Openness did obtain statistically significant, though weak, negative correlations with schizoid and antisocial PD scales, suggesting that the closed-mindedness that is characteristic of the low pole of this broad personality domain may be relevant to a few specific PD syndromes. Previous literature has suggested that the Openness domain has no salient relationships with PDs (Saulsman & Page, 2004). However, as will be discussed later in section 2.4.5.1, some Openness facets such as Values may have key relationships with PDs that have not been fully explored in previous research.

The correlational analyses also revealed unique relationships between the WISPI-IV PD scales and the FFM lower-order facet traits, which provided a more nuanced description of and better discrimination between the PD scales than did the higher-order personality domains. As expected, more than 50% of the Widiger, Trull, et al. (2002) hypothesised PD-FFM facet trait relationships were confirmed using the WISPI-IV as a measure of PD features. In fact, the results revealed that 60% of these hypothesised relationships were confirmed, indicating the PD-FFM facet trait correlations in this study were largely consistent with the hypotheses proposed by Widiger, Trull, et al. The high percentage of confirmed correlations compares favourably to those that have been obtained by previous researchers using other PD measures (e.g., De Fruyt et al., 2006). The implication is that most PD syndromes as measured by the WISPI-IV can be understood and differentiated in terms of combinations of specific traits from the FFM.

While most PD-FFM facet trait profiles were consistent with those proposed by Widiger, Trull, and colleagues (2002), the results did not confirm several key hypothesised relationships, most notably for schizotypal, histrionic, obsessive-



compulsive and dependent PDs. For example, the schizotypal PD scale did not obtain statistically significant correlations with the Openness facets of Fantasy, Actions and Ideas. Although the histrionic PD scale was significantly positively correlated with Extraversion, it did not obtain statistically significant positive correlations with the Extraversion facets of Warmth, Gregariousness or Positive Emotions. The obsessive-compulsive PD scale evidenced no statistically significant positive correlations with Conscientiousness or its facets. Finally, although the dependent PD scale had statistically significant negative correlations with Agreeableness and some of its facets, these correlations were in the opposite direction to that which was hypothesised by Widiger, Trull, et al. These findings, however, are not unique to this study as several other studies have failed to obtain support for the Widiger, Trull, et al. hypothesised PD-FFM facet trait relationships for some or all four of these PDs using alternative PD measures (e.g., Aluja et al., 2007; Bagby, Costa, et al., 2005; Bagby, Marshall, et al., 2005; Bagby et al., 2008; De Clercq & De Fruyt, 2003; De Fruyt et al., 2006; Dyce & O'Connor, 1998; Huprich, 2003; Mullins-Sweatt & Widiger, 2007a; Samuel & Widiger, 2008; Trull et al., 2001; Yang et al., 2002).

There are several explanations for the lack of relationships between these PD scales and FFM facet traits. First, the results could be instrument-specific since there is no gold standard measure of PDs (Clark & Harrison, 2001). Indeed, in their meta-analysis, Samuel and Widiger (2008) found that PD-FFM facet trait relationships differed depending on the type of PD measure that was used. Samuel and Widiger found for example that studies that used the MCMI-III (Millon et al., 1997) or the SNAP (Clark, 1993a) to measure obsessive-compulsive PD obtained moderate to strong positive correlations between obsessive-compulsive PD and Conscientiousness facets. In contrast, studies that used the PDQ-4 (Hyler, 1994) and its predecessors or the SCID-II (First et al., 1997a) to measure this PD obtained negligible or extremely weak correlations between obsessive-compulsive PD and Conscientiousness facets. Importantly, the WISPI-IV PD scales have been shown to have better convergence with the PDQ-4 and SCID-II PD scales compared to MCMI PD scales (Klein et al., 1993; Smith et al., 2003). Thus, the negligible relationships between the WISPI-IV obsessive-compulsive PD scale and Conscientiousness facets that were obtained in this study are not surprising if viewed in the context of this research. A related issue, as discussed in section 1.3.5, is that the FFM as

operationalised in the NEO-PI-R disproportionately emphasises adaptive or desirable rather than maladaptive expressions of Agreeableness, Extraversion, Conscientiousness and Openness at the high end poles (Haigler & Widiger, 2001). If there is insufficient coverage of maladaptive personality functioning in the NEO-PI-R, then weak or negative correlations between the high poles of these domains and specific PD features may not be unexpected (Gore et al., 2011).

Interestingly, Samuel and Widiger (2010b, 2011) found weak positive correlations between the WISPI-IV obsessive-compulsive PD scale and Conscientiousness and its facets of Order, Dutifulness and Deliberation. However, these findings were not supported by the results of the current study. One explanation for the contradictory findings could be differences in sampling. Specifically, Samuel and Widiger's studies employed a much larger sample ( $N = 536$ ) and they oversampled for obsessive-compulsive PD symptomology. Hence, it is possible their studies captured more variance in obsessive-compulsive PD features in comparison to the current study and therefore were better equipped to test the theoretical connection between Conscientiousness and obsessive-compulsive PD features.

The correlational analyses in the current study revealed several PD-FFM facet trait relationships that Widiger, Trull, et al. (2002) did not predict (cf., Lynam & Widiger, 2001; Samuel & Widiger, 2004). Thus, another explanation for the lack of confirmed relationships between specific FFM facets and corresponding schizotypal, histrionic, obsessive-compulsive and dependent PD scales is that the hypothesised PD-FFM facet trait profiles for these PDs proposed by Widiger, Trull, et al. may be inexact in that these PDs may be better characterised by other FFM facets (Huprich, 2003). For instance, since the obsessive-compulsive PD scale was positively correlated with Neuroticism and most of its facets in the current study, it is possible that some of the features that comprise this PD syndrome may be more strongly rooted in Neuroticism facets rather than in Conscientiousness facets. Likewise, since the histrionic PD scale was negatively correlated with Straightforwardness and Modesty, it is plausible that some of the features that comprise this PD syndrome may be more strongly associated with Agreeableness facets rather than Extraversion facets. In line with these speculations, the clinicians in Samuel and Widiger's (2004) study rated the prototypical individual with obsessive compulsive PD as being high on several Neuroticism facets such as

Anxiety, Depression and Self-Consciousness, whereas the prototypical individual with histrionic PD was rated as being low on the Agreeableness facets of Modesty and Straightforwardness.

Alternatively, it is possible that some FFM traits may be more closely related to dysfunctional schemas rather than full-blown PD symptomology. While Conscientiousness and its facets for example were not positively correlated with the obsessive-compulsive PD scale, they were positively correlated with the Unrelenting Standards EMS and with the obsessive-compulsive PD beliefs scale. In turn, these dysfunctional schemas were positively correlated with obsessive-compulsive PD features as measured by the WISPI-IV, as will be discussed next. Thus, it is possible that some EMSs and dysfunctional PD belief scales could act as the cognitive links between particular personality traits and PD features (Ball, 2005). This possible link is discussed in more detail in Chapter 5.

**2.4.3.2 PD features and EMSs.** In line with previous studies that have used other PD instruments and earlier versions of the YSQ (Ball & Cecero, 2001; Nordahl et al., 2005), results in the present study revealed several positive correlations between the WISPI-IV PD scales and EMSs. Some of these correlations were theoretically-meaningful. For example, consistent with the hypotheses, there were statistically significant positive correlations between the paranoid PD scale and Mistrust/Abuse, the schizoid PD scale and Emotional Inhibition, the narcissistic PD scale and Entitlement/Grandiosity, and the obsessive-compulsive PD scale and Unrelenting Standards. These results support those of previous research (Carr & Francis, 2010; Reeves & Taylor, 2007; Thimm, 2011) and suggest meaningful links between specific EMSs and conceptually-related PD symptomology.

However, the large number of positive correlations also suggests a degree of overlap between EMSs and the WISPI-IV PD scales. This finding is perhaps not unexpected as the DSM-IV-TR's categorical classification of PDs has been criticised as lacking discriminant validity (Bornstein, 1998). It also provides support for Young and colleagues' (2003) claim that EMSs cut across diagnostic categories. Yet, in spite of this, the results revealed positive correlations between theoretically unrelated concepts. For example, Dependence/Incompetence obtained a theoretically-meaningful strong positive correlation with the dependent PD scale, yet also obtained a positive correlation with the conceptually-dissimilar schizoid PD scale. Therefore, the large number of positive correlations between the PD scales and

EMSs in the current study could have been inflated due to the influence of other variables. Some evidence for this suggestion was provided by the part and partial correlations in the hierarchical regression analyses (see Tables 2.12-2.22), which revealed substantially reduced correlations between specific EMSs and the relevant PD scale when the effects of other PD-related variables were taken into account.

As discussed in section 1.2.2, there is a problematic level of overlap amongst the PD categories. Moreover, a fundamental association with distress is common to both PDs (APA, 2000) and EMSs (Young et al., 2003). Thus, as suggested in section 2.4.2, it is possible that general PD symptomology or psychological distress could have obscured the relationships between specific EMSs and PD scales. The potential confounding effects of general PD symptomology and psychological distress on the relationships between EMSs and the WISPI-IV PD scales is further explored in Study 2 of this research.

**2.4.3.3 PD features and dysfunctional PD beliefs.** As hypothesised, each WISPI-IV PD scale was most strongly positively correlated with its corresponding PBQ dysfunctional PD beliefs scale. These results provide some support for the contention of cognitive theorists that each PD is characterised by a specific set of dysfunctional beliefs (Beck et al., 2004).

However, the results of this research also revealed moderate to strong positive correlations between most PD scales and dysfunctional PD belief scales. This may be because the dysfunctional beliefs that are assessed by each scale of the PBQ may not be unique to each PD as is proposed by Beck et al. (2004). Rather, the dysfunctional beliefs are also likely to be associated with other categories of PD. This is a significant finding because the correlations between PBQ scales and non-corresponding PD categories have not been explored in previous research (Beck et al., 2001; Trull et al., 1993). Since the dysfunctional PD belief scales are dimensional constructs, it is conceivable that anyone can endorse such dysfunctional beliefs to some extent, but that individuals with the corresponding PD hold the set of dysfunctional beliefs that are characteristic of their PD with greater conviction (Beck et al., 2001; Butler et al., 2007; Butler et al., 2002). Moreover, given the problem with symptom overlap in the DSM-IV-TR PD categories, the large number of positive correlations between the PD scales and the dysfunctional PD belief scales is perhaps not surprising. However, this does not fully explain the large number of positive correlations between dysfunctional PD belief scales and theoretically

unrelated PD features. For example, the WISPI-IV histrionic PD scale obtained a theoretically-meaningful positive correlation with the narcissistic PD beliefs scale, yet also obtained a positive correlation with the theoretically-dissimilar avoidant PD beliefs scale. Since the PBQ scales assess the cognitive aspects of personality-related psychological dysfunction, another explanation for the large number of positive correlations between the PD scales and dysfunctional PD belief scales is that, akin to the correlations between the PD scales and EMSs, a third variable such as psychological distress or a general PD symptomology factor may have inflated the correlations (Beck et al., 2001; Butler et al., 2007). This issue is further explored in Study 2 of this research.

#### **2.4.4 Can Dysfunctional Schemas Incrementally Add to the Prediction of PD Features Over and Above FFM Traits? What are the Most Salient Predictors?**

**2.4.4.1 FFM traits.** Consistent with previous work (Aluja et al., 2007; Bagby, Costa, et al., 2005; De Fruyt et al., 2006; O'Connor & Dyce, 2002; Reynolds & Clark, 2001; Trull et al., 2001), results across the regression analyses revealed that FFM facets as a class of predictors significantly explained between 18% (obsessive-compulsive PD) to 49% (avoidant PD) of unique variance in scores on the WISPI-IV PD scales, indicating that PD features to some extent can be understood in terms of a combination of key personality traits from the FFM.

In contrast to the correlational analyses where several FFM facet traits were significant correlates of individual PD scales (see Table 2.9), the regression analyses revealed that only a small number of the trait correlates were actually statistically significant predictors of the relevant PD scales. For instance, of the 13 FFM facet trait correlates entered into the regression analysis predicting narcissistic PD features, only the facets of Self-Consciousness, Values and Modesty were statistically significant predictors (see Table 2.16). Moreover, several FFM facets listed in the Widiger, Trull, et al. (2002) PD-FFM facet trait profiles were not statistically significant predictors of their respective PD scales. For example, Widiger, Trull, et al. hypothesised important relationships between narcissistic PD and the FFM facets of Angry Hostility, Altruism and Tender-Mindedness. Although these traits were correlates of narcissistic PD features in the current research, they nonetheless had no predictive relationship with narcissistic PD features in the regression analysis. These traits were also not found to be predictors of narcissistic

PD in other studies that have used regression analysis (Aluja et al., 2007; Dyce & O'Connor, 1998). The implication from this finding is that while several traits may be correlated with PD features, they may not necessarily be significant predictors of PD features when the effects of other traits are taken into account. That is, some traits are more relevant for the prediction of PD features than others. Previous studies have consistently found that only a handful of traits from a broader set are significant predictors of individual PDs (Aluja et al., 2007; De Clercq & De Fruyt, 2003; De Fruyt et al., 2006; Trull et al., 2001). The current finding perhaps highlights the need for further research on the relationships between PD features and FFM traits to move beyond simply examining zero-order correlations. In light of the findings of the current study and those of previous studies, there is a need for research in this area to use more powerful regression analyses in order to fully evaluate PD-FFM trait relationships because such analyses will help to identify the traits that have the most salient relationships with PD features. To this end, a methodological strength of the current study was that it included all trait correlates of each PD scale as predictor variables, rather than select predictor variables based on a priori theoretical predictions as has been done in most previous research (see Table 1.5 in Chapter 1), thereby allowing for a more meaningful examination of PD-FFM facet trait relationships.

**2.4.4.2 EMSs.** Whilst FFM traits explained a significant amount of variance in PD features in the first block, the results across the regression analyses revealed that, as hypothesised and consistent with the results of Thimm (2011), selected subsets of EMSs yielded incremental validity to the prediction of PD features once the effects of FFM traits had been controlled. Specifically, EMSs significantly explained between 16% (schizoid PD) and 32% (obsessive-compulsive PD) of unique variance in PD features, over and above the amount of variance that was already explained by FFM traits alone. The range of incremental variance in PD features explained by EMSs in this study differs substantially from the 0% (schizoid PD) to 12% (schizotypal PD) range found by Thimm's study. This could be because Thimm selected very few EMSs as predictor variables of specific PDs. As such, the results of the current study provide support the suggestion made in section 1.5.3 that Thimm may have overlooked some PD-EMS relationships due to methodological limitations of his study. In accordance with arguments presented by several scholars (Clark, 2007; Krueger, Eaton, Clark, et al., 2011; Wright, 2011) the key implication

of the findings of the current study is that conceptualising PDs solely in terms of traits from the FFM may not be sufficient to capture the complex features of PDs. Rather, the findings indicate that deeply-rooted maladaptive schemas that are associated with personality dysfunction also account for unique variance in PD symptomology and, given their importance in the treatment of PDs (Livesley, 2003), could be important factors to consider in any reconceptualisation of the PDs.

Although a large number of EMSs were correlates of PD scales (see Table 2.10), only a small number of EMSs were actually statistically significant predictors of PD features at step two in the regression analyses. For instance, whilst all 18 EMSs were positively correlated with the paranoid PD scale, only Mistrust/Abuse and Entitlement/Grandiosity were statistically significant predictors (see Table 2.12). Three previous studies that used regression analyses also found only a handful of EMSs to be statistically significant predictors of specific PDs (Carr & Francis, 2010; Reeves & Taylor, 2007; Thimm, 2011). When considered in the context of these previous studies, the finding of the current research provides some credence for the proposal in section 2.4.3.2 that the influence of other variables could have impacted on the zero-order correlations between the PD scales and EMSs.

Consistent with the findings of Carr and Francis (2010), Reeves and Taylor (2007) and Thimm (2011), the current study found significant predictive relationships between Mistrust/Abuse and paranoid PD features, Emotional Inhibition and schizoid PD features, Entitlement/Grandiosity and narcissistic PD features, and Unrelenting Standards and obsessive-compulsive PD features. However, in contrast to these studies, the findings of the current study also provided a description of the core EMSs pertaining to specific PD syndromes that was more in line with theoretical expectations based on DSM-IV-TR descriptions of the PDs. For example, after controlling for FFM traits, the EMSs of Abandonment/Instability, Mistrust/Abuse, Emotional Inhibition and Entitlement/Grandiosity were statistically significant predictors of borderline PD features in the current study. In contrast, mixed findings emerged in previous research about borderline PD. Specifically, Carr and Francis found no statistically significant EMS predictors of borderline PD features, Thimm found that Mistrust/Abuse was the sole predictor and Reeves and Taylor found that Abandonment/Instability, Social Isolation/Alienation and, paradoxically, low Enmeshment/Undeveloped Self were significant predictors of borderline PD. Various methodological differences, such as using the earlier YSQ-

SF (all previous studies), a low sample size (Thimm, 2011) and controlling for diverse potential covariates such as depression, anxiety and eating disorder symptoms (Carr & Francis, 2010) or within-cluster PDs (Reeves & Taylor, 2007), most likely account for the different findings.

**2.4.4.3 Dysfunctional PD beliefs.** As expected, each dysfunctional PD beliefs scale explained between 1% (borderline PD) and 12% (schizoid PD) of unique incremental variance in their corresponding WISPI-IV PD scale, over and above the variance already accounted for by the blocks of FFM traits and EMSs, respectively. Although the dysfunctional PD belief scales accounted for the smallest proportion of unique additional variance in PD features in comparison to the blocks of FFM traits and EMSs, the dysfunctional PD belief scales nonetheless obtained the largest beta weights relative to the other predictors in the regression models predicting schizoid, histrionic, narcissistic, antisocial, borderline, avoidant, dependent, obsessive-compulsive and passive-aggressive PD features. Thus, the dysfunctional PD belief scales obtained stronger relationships with index PD features and were the most salient predictors of PD symptomology overall. As such, the results suggest that dysfunctional beliefs may have a more proximal relationship with PD features in contrast to FFM traits and EMSs. These results provide support for McCrae's (2006) assertion that disordered cognition is central to PDs and may account for the persistence of maladaptive PD-related symptoms and behaviours. Further, that PD-specific dysfunctional belief scales were predictors of theoretically-consistent PD categories provides support for the cognitive theory position that specific dysfunctional beliefs may underlie each PD and drive associated maladaptive behaviours (Beck et al., 2004; Weishaar & Beck, 2006).

**2.4.4.4 Total variance explained.** Overall, the hierarchical regression analyses revealed that selected FFM personality traits, EMSs and PD-specific dysfunctional belief scales together explained between 49% (antisocial PD) and 74% (avoidant PD) of the variance in PD features. The observed range of explained variance compares favourably to that of Thimm (2011), who found that selected FFM traits and EMSs together accounted for 27% (obsessive-compulsive PD) to 69% (avoidant PD) of the variance in PDs. Taken together, these results do suggest that the problematic features, symptoms and behaviours that comprise the diagnostic criteria of each DSM-IV-TR PD category as measured by the WISPI-IV in this study



can generally be understood in terms of combinations of underlying FFM trait and dysfunctional schema dimensions.

**2.4.4.5 Relative importance of predictors.** Some noteworthy patterns of results emerged across the hierarchical regression analyses with respect to the relative importance of individual predictors. First, the majority FFM traits that were statistically significant predictors of a specific PD scale in the first step had either reduced beta values or were no longer significant predictors of that PD at the second and third steps when the EMSs and dysfunctional PD belief scales, respectively, were entered into the analysis. In fact, relative to these dysfunctional schemas, very few FFM traits were significant predictors of PD features in the final regression models. When considered in the context of the correlational analyses, which demonstrated meaningful relationships between various FFM traits and dysfunctional schemas (see Tables 2.6-2.7), these findings imply that some FFM traits may have indirect predictive relationships with PD features that are either partially or fully mediated by dysfunctional schemas, which in turn appear to have stronger relationships with PD features.

Second, similar to FFM traits, several EMSs that were statistically significant predictors of specific PD syndromes in the second step of the regression analyses had either reduced beta values or were no longer significant predictors at step three when the dysfunctional PD belief scales were entered. Given the positive correlations between EMSs and the dysfunctional PD belief scales (see Table 2.8) and the strong positive correlations between the WISPI-IV PD scales and their index dysfunctional PD belief scales (see Table 2.11), these findings suggest that some predictive relationships between specific EMSs and PD features could be partially or fully mediated by the dysfunctional PD belief scales. The implication from this finding is that specific PD beliefs and assumptions could have a more proximal relationship with corresponding PD features in contrast to the broader cognitive and emotional themes that are represented by the EMSs.

Third, several FFM traits that were not significant predictors of a specific PD syndrome at any step of the regressions were nonetheless significant correlates of some of the EMSs and dysfunctional PD belief scales that were significant predictors of that PD syndrome in the final regression model. To illustrate, the FFM traits of Anxiety, Angry-Hostility, Depression, Warmth, Gregariousness, Altruism, Compliance and Tender-Mindedness were not significant predictors of paranoid PD

features at the first step in the regression analysis for this PD (see Table 2.12). However, these traits were all significantly correlated with Mistrust/Abuse (see Table 2.6) and with the paranoid PD dysfunctional beliefs scale (see Table 2.7). In turn, these dysfunctional schemas were salient predictors of paranoid PD features at step three of the regression model. It is possible therefore that some FFM traits could be more closely associated with dysfunctional schemas rather than full-blown PD symptoms. Identifying the specific FFM facet predictors of the EMSs and dysfunctional PD belief scales was beyond the scope of this study. However, in conjunction with Thimm's (2010) finding that FFM domains could explain some variance in EMSs, the results of the correlational and regression analyses in the current study suggest that some FFM traits thought to be related to PD features may actually be more closely related with EMSs and dysfunctional PD beliefs, which in turn appear to be better predictors of PD features.

Finally, at steps two and three of all regression analyses the statistically significant EMS predictors of specific PD syndromes generally obtained larger beta values in comparison to the corresponding FFM trait predictors. It can be argued that EMSs in comparison to FFM traits generally have stronger relationships with PD features. Similarly, at step three of all regression analyses, the dysfunctional PD belief scales had larger beta values in comparison to FFM traits and EMSs for all but paranoid PD symptomology. In sum, the dysfunctional PD belief scales were the strongest and most salient predictors of PD features. The broader implications of these findings are discussed in Chapter 5.

#### **2.4.5 PD “Type” Profiles**

The direct and indirect predictors of each PD syndrome across all steps of the hierarchical regression analyses are summarised in Table 2.23. Direct predictors were statistically significant and salient predictors of the specific PD syndrome in the final step of the relevant regression analysis, whereas indirect predictors were statistically significant predictors of that PD syndrome at earlier steps but not at later steps. The predictors at every step of the regression analyses are shown because these variables had salient predictive relationships and scores on these variables would arguably be elevated in individuals with the corresponding PD features.

Table 2.23

*Direct and Indirect Predictors of PD Features*

<b>PD</b>	<b>FFM Facet Traits</b>	<b>EMSs</b>	<b>Dysfunctional PD Beliefs Scale</b>
<i>Cluster A</i>			
Paranoid	(+) Self-Consciousness (-) Values*, Trust, Straight-Forwardness, Compliance	(+) Mistrust/Abuse*, Entitlement/Grandiosity	(+) Paranoid PD beliefs*
Schizoid	(-) Gregariousness, Values*	(+) Emotional Deprivation, Mistrust/Abuse, Social Isolation/Alienation*, Emotional Inhibition*	Schizoid PD beliefs*
Schizotypal	(+) Depression (-) Values*, Modesty	(+) Mistrust/Abuse*, Social Isolation/Alienation*, Vulnerability to Harm/Illness*, Entitlement/Grandiosity*	N/A
<i>Cluster B</i>			
Histrionic	(+) Assertiveness*, Excitement-Seeking (-) Straight-Forwardness, Modesty, Self-Discipline, Deliberation	(+) Enmeshment/Undeveloped Self, Entitlement/Grandiosity*, Approval/Recognition-Seeking*	Histrionic PD beliefs*
Narcissistic	(+) Self-Consciousness (-) Values*, Modesty	(+) Emotional Deprivation*, Social Isolation/ Alienation*, Entitlement/Grandiosity*, Approval/Recognition-Seeking*	Narcissistic PD beliefs*
Antisocial	(+) Depression (-) Values, Straight-Forwardness, Modesty	(+) Mistrust/Abuse*, Dependence/Incompetence, Entitlement/Grandiosity*	Antisocial PD beliefs*
Borderline	(+) Depression*, Vulnerability (-) Straight-Forwardness*, Tender-Mindedness, Deliberation*	(+) Abandonment/Instability*, Mistrust/Abuse, Emotional Inhibition, Entitlement/Grandiosity*	Borderline PD beliefs*
<i>Cluster C</i>			
Avoidant	(+) Depression, Self-Consciousness* (-) Gregariousness	(+) Abandonment/Instability, Social Isolation/Alienation*, Subjugation*, Emotional Inhibition*, Approval/	Avoidant PD beliefs*

		Recognition–Seeking*	
Dependent	(+) Depression, Self-Consciousness*, Vulnerability* (-) Values*, Straight-Forwardness, Self-Discipline, Deliberation*	(+) Abandonment/Instability*, Dependence/Incompetence, Subjugation*, Approval/Recognition–Seeking*	Dependent PD beliefs*
Obsessive-Compulsive	(+) Self-Consciousness (-) Values, Actions	(+) Social Isolation/Alienation*, Emotional Inhibition*, Unrelenting Standards, Entitlement/Grandiosity*, Approval/Recognition–Seeking*, Punitiveness*	Obsessive-compulsive PD beliefs*
<i>DSM-IV-TR Appendix</i>			
Passive-Aggressive	(-) Activity*, Values, Modesty, Order, Self-Discipline*	(+) Social Isolation/Alienation*, Emotional Inhibition, Entitlement/Grandiosity*	Passive-aggressive PD beliefs*

*Note.* N/A = Not applicable. \*Indicates that the variable was a significant predictor of the relevant PD syndrome in the final regression model for that PD; (+) indicates a positive predictive relationship; (–) indicates a negative predictive relationship.

As can be seen in Table 2.23, each PD syndrome is associated with a unique combination of FFM traits, EMSs and dysfunctional PD beliefs scale. In accordance with the dimensional approach to classifying and describing personality pathology, these unique combinations of dimensional characteristics for each PD could constitute a prototypic personality “type” profile (Tackett et al., 2009). Specifically, it can be argued that a person whose profile contains prominent scores on the relevant FFM traits, EMSs and dysfunctional PD beliefs scale may be said to have personality pathology features that correspond to a specific PD prototype. In this approach, personality pathology is conceptualised dimensionally in that individuals are rated on several dimensional personality constructs central to trait and cognitive-behavioural theories of PD, rather than assessed on the basis of present/absent diagnostic categories. Overall, the PD type profiles appear to capture and account for most of the key behavioural symptoms and features of PDs as they are currently described in the DSM-IV-TR (APA, 2000). As will be discussed in more detail in Chapter 5, these PD type profiles are also comparable to the PD trait profiles proposed for DSM-5 (APA, 2011).

**2.4.5.1 The role of Values.** An interesting observation across the PD type profiles is the prominent role of Values as a predictor of most PD features. Whereas Openness did not obtain salient correlations with dysfunctional schemas or WISPI-IV PD scales, its lower-order facet of Values was negatively correlated with a range of dysfunctional schemas and PD features. The facet of Values was also a significant negative predictor of paranoid, schizoid, schizotypal, narcissistic and dependent PD features even when the effects of other traits and dysfunctional schemas were taken into account in the final models of the regression analyses for these PDs. Costa and McCrae (1992) defined Openness to Values as “the readiness to re-examine social, political, and religious values” (p. 17). Low scores on this facet suggest an individual who possesses a rigid values system or ideological framework that guides how he or she operates in the world and this belief system is not open to negotiation, evaluation or modification (Piedmont, 1998). As such, a low scorer is typically described as someone who “is dogmatic and closed minded with respect to his or her moral, ethical, or other belief system; rejects and is intolerant of alternative belief systems; may be prejudiced and bigoted” (Widiger, Costa, et al., 2002, p. 440). Although a low score on Values means that an individual holds a rigid set of beliefs, this facet offers no information about the specific types of rigid beliefs or values that are held, just the degree to which the individual is willing to re-examine them (Piedmont, 1998). Thus, it is possible that low Values may be a risk factor for the development and maintenance of inflexible dysfunctional beliefs, ideas, assumptions and values; all of which appear to be common cognitive features of PDs (APA, 2000; Beck et al., 2004; McCrae, 2006). Indeed, a dispositional unwillingness to re-examine rigid core belief systems or ideological frameworks may explain why PDs are notoriously difficult to treat, particularly with traditional cognitive therapy techniques, such as identifying and challenging negative automatic thoughts (Young et al., 2003).

In their hypothesised PD-FFM facet trait profiles, Widiger, Trull, et al. (2002) proposed that (low) Values was only salient to obsessive-compulsive PD. Yet, the results of the current study revealed that Values was an important negative predictor of several PD syndromes, including paranoid, schizoid, schizotypal, narcissistic, antisocial, dependent, obsessive-compulsive and passive-aggressive PD symptomology. This finding lends some support for the possibility that the Widiger, Trull, et al. PD-FFM facet trait profiles could be better conceptualised for some PDs (Huprich, 2003). Moreover, in the current study, Values was a significant negative

predictor of obsessive-compulsive PD features in the first and second steps of the hierarchical regression analysis. However, Values was no longer a significant predictor of obsessive-compulsive PD features once the obsessive-compulsive PD beliefs scale was entered in the third step of the regression analysis. The implication from this finding is that the dysfunctional beliefs said to be characteristic of obsessive-compulsive PD could have a stronger and more salient relationship with obsessive-compulsive PD features than does the general tendency of towards rigid, closed-minded or dogmatic thinking that is represented by low Values. That is, this result suggests that Values may indirectly influence obsessive-compulsive PD symptomology through its relationship with obsessive-compulsive PD beliefs.

It is difficult to discuss the predictive role of Values within the context of previous research because most studies that have used regression analyses to explore the FFM trait predictors of each PD (e.g., Bagby, Costa, et al., 2005; De Clercq & De Fruyt, 2003; De Fruyt et al., 2006; Reynolds & Clark, 2001; Trull et al., 2001) have only entered trait predictor variables based on a priori hypothesised relationships, such as the Widiger, Trull, et al. (2002) PD-FFM facet trait profiles, where Values has no prominent role. However, Aluja et al. (2007) entered all 30 FFM facets as predictors of each PD using stepwise regressions and found that Values was a significant negative predictor of schizoid, obsessive-compulsive and paranoid PD symptomology in a non-clinical student sample. Further, Reynolds and Clark (2001) found that low Values was the primary predictor of the SNAP maladaptive personality trait of Propriety, which contrasts a preference for conservative morality with the rejection of social rules and convention. In turn, Propriety has been associated with paranoid, schizoid, schizotypal, antisocial, borderline, avoidant, dependent, obsessive-compulsive and passive-aggressive PDs in previous research (Clark et al., in press; Hurt & Oltmanns, 2002; Morey et al., 2003; Wolf et al., 2011). Thus, it could be argued that while the broad personality domain of Openness may have little relationship with PDs, some of its lower-order facets, notably Values, may be salient to specific PD features. The implication is that lower-order traits could provide clinicians and researchers with a more comprehensive picture about an individual's personality pathology in contrast to that which is provided by higher-order traits (Reynolds & Clark, 2001). Therefore, future research should explore all possible relationships between lower-order traits and PDs, rather than only a priori hypothesised relationships.

#### 2.4.6 Limitations

The findings of this study should be interpreted in the context of some limitations. First, although the study involved a relatively large non-clinical sample with an adequate gender balance, the participants were primarily university students with relatively high levels of education. Future studies should consider examining the relationships between the FFM traits, dysfunctional schemas and PD features in more diverse samples, such as heterogeneous community samples or clinical samples involving participants diagnosed with PDs, so as to ensure the wider generalisability of results. A related issue is that the non-clinical nature of the sample may have reduced the variability in scores on the study variables, all of which were dimensional constructs. In turn, this may have resulted in a number of positively skewed variables. Utilising clinical samples could help to ensure that adequate variance is sampled for all variables.

Second, despite the fact that the sample comprised a non-clinical analogue sample, psychological distress or general PD symptomology may have influenced the intercorrelations between the EMSs, dysfunctional PD belief scales and WISPI-IV PD scales. Thus, one of the major aims of Study 2 was to assess these relationships through the use of partial correlations whereby psychological distress and PD symptomology are statistically controlled.

Third, due to sample size and power considerations, only a selected number of EMSs and dysfunctional PD belief scales could be entered into the regression analyses as predictor variables over and above FFM traits. Given the positive correlations between most dysfunctional schemas and PD scales it is possible that the excluded EMSs or dysfunctional PD belief scales could also have been significant predictors of particular PD syndromes. However, as discussed above, this may not be the case if psychological distress and general PD symptomology obscured these correlations. Indeed, the regression analyses revealed that, in contrast to the large amount of EMSs entered into the analysis, only a small number of EMSs were actually significant predictors of PD features. With regards to the PBQ dysfunctional PD belief scales, Jones et al. (2007) found that only the corresponding dysfunctional PD belief scale was a significant predictor of each PD they measured, that is, avoidant, dependent, passive-aggressive, schizoid and borderline PDs. In order to include all 18 EMSs and 10 dysfunctional PD belief scales on top of subsets

of FFM traits as predictors of each PD using regression analyses, a much larger sample size is required to ensure adequate statistical power.

Fourth, since the study employed a cross-sectional and correlational design no conclusions can be made regarding causal relationships amongst the variables. Longitudinal studies are needed to examine how FFM traits and dysfunctional schemas are causally related to each other and how such variables may lead to the development of PDs.

Finally, since all variables were measured through self-report methods, the possibility that shared method variance could have influenced the results cannot be ruled out. A related issue is that self-report methods may not be the most appropriate way to measure EMSs in particular because some individuals may not be aware of the EMSs they possess due to schema avoidance processes and coping strategies that can render EMSs to be partly unconscious (Young et al., 2003). Thus, future studies should consider employing other assessment methods, such as implicit methods (Weertman, Arntz, de Jong, & Rinck, 2008), in order to fully assess the dysfunctional schemas that an individual possesses.

#### **2.4.7 Conclusion**

This study demonstrated that FFM personality traits and dysfunctional schemas conceptualised as either EMSs or dysfunctional PD beliefs were meaningfully related with each other and with theoretically-relevant PD features, as measured by the WISPI-IV, in a non-clinical analogue sample. Notably, this study showed that FFM traits could explain significant proportions of variance in PD features; however, EMSs and PD-specific dysfunctional beliefs incrementally added to the prediction of all PD features over and above FFM traits. The results also revealed that each PD syndrome was associated with its own “type” profile of a unique combination of dimensional FFM traits and dysfunctional schemas. These are significant findings which could have theoretical and practical implications for the conceptualisation of PDs. The broader implications of these findings are further discussed in Chapter 5.



## **Chapter 3: The Relationships between Personality Disorder Features, Dysfunctional Schemas and SNAP Maladaptive Personality Traits (Study 2)**

### **3.1 Introduction**

Building on from the results of Study 1, the focus of Study 2 was on the relationships between maladaptive personality traits and PD features. As discussed in Chapter 1, the FFM as measured by the NEO-PI-R (Costa & McCrae, 1992) is only one of the dimensional trait models which is an alternative to the DSM-IV-TR's categorical system of classifying PDs. Another leading dimensional alternative is the trait and temperament model of Clark which is operationalised in the SNAP instrument (Clark et al., in press). Unlike the NEO-PI-R which is a measure of general-range personality traits, the SNAP is a measure of maladaptive-range personality traits that are central to personality pathology.

In contrast to the growing literature on the relationships between FFM traits and PDs, there have been relatively few studies examining the relationships between the SNAP maladaptive traits and PD features. Furthermore, no published research that has examined the relationships between SNAP maladaptive traits and dysfunctional schemas conceptualised as either EMSs or dysfunctional PD beliefs could be located to date. Thus, the present study was designed to examine these relationships to compare and contrast the findings with those of Study 1. The overarching objectives of Study 2 were to: (a) examine the relationships between SNAP maladaptive traits, dysfunctional schemas and PD features; and (b) investigate whether dysfunctional schemas added incremental validity to the prediction of PD features over and above SNAP traits in an Australian non-clinical analogue sample.

There were several specific major aims of Study 2. The first major aim was to explore the relationships between SNAP maladaptive personality traits and dysfunctional schemas conceptualised as either EMSs or dysfunctional PD beliefs. Since Study 1 revealed that EMSs and the PBQ dysfunctional PD belief scales were meaningfully correlated with general personality traits from the FFM, it was expected that these dysfunctional schemas would also be related with SNAP maladaptive personality traits. Specifically, the pattern of correlations between dysfunctional schemas and the SNAP's three broad temperaments of Negative Temperament, Positive Temperament and Disinhibition were expected to resemble those that were obtained in Study 1 with the FFM domains of Neuroticism,

Extraversion and Agreeableness/Conscientiousness, respectively, given the conceptual and theoretical similarities between these higher-order personality dimensions (Clark et al., 2002).

The second major aim of this study was to examine the relationships between SNAP maladaptive traits and PD features as measured by the WISPI-IV. As indicated in Table 1.8 of Chapter 1, all of the key published studies to date that have examined directly the relationships between SNAP maladaptive traits and PDs have used clinical samples and no study used the WISPI-IV as the measure of PDs. It is important to explore relationships between SNAP traits and PD features in non-clinical samples where the confounding effects of psychopathology that are typical in clinical samples are minimised so that a clearer picture emerges concerning PD-SNAP trait relationships. Furthermore, just as relationships between some specific FFM traits and PDs have been shown to be instrument-specific (Samuel & Widiger, 2008), there is some evidence that instrument effects could moderate the relationships between specific SNAP traits and PD features. For example, Clark et al. (in press) used interview-based ratings of PDs and found a positive correlation between Negative Temperament and obsessive-compulsive PD. In contrast, Miller et al. (2010) measured PDs through the use of clinician-rated FFM PD counts and expert-consensus ratings of PDs based on DSM-IV-TR criteria and found negative correlations between Negative Temperament and obsessive-compulsive PD scores using both measurement methods. Given the dearth of research, it is important to explore how SNAP traits relate to the WISPI-IV PD scales so as to better understand PD-SNAP trait relationships across instruments. In addition to examining the overall patterns of relationships between SNAP traits and WISPI-IV PD scales, a subsidiary aim of the current study was to expand on Reynolds and Clark's (2001) work by investigating the validity of Clark's (1993a) hypothesised PD-SNAP trait relationships.

The third major aim of this study was to examine whether the large number of positive correlations between EMSs and the PBQ dysfunctional PD belief scales and between these dysfunctional schemas and WISPI-IV PD scales that were obtained in Study 1 would be affected once psychological distress and general PD symptomology were statistically controlled. Previous research has shown that dysfunctional schemas and PDs are positively correlated with various indices of psychological distress, such as depression and anxiety symptoms or composite

measures of various psychiatric symptoms (Butler et al., 2007; Glaser, Campbell, Calhoun, Bates, & Petrocelli, 2002; Nordahl et al., 2005; Noren et al., 2007; N. B. Schmidt et al., 1995; Welburn et al., 2002). However, none of these published studies have used the measure of distress that was used in this study, that is, the Kessler Psychological Distress Scale (K10; Kessler et al., 2002).

The final major aim of Study 2 was to investigate the incremental validity of dysfunctional schemas in accounting for variance in PD features, over and above SNAP traits. As reviewed in Table 1.8 in Chapter 1, previous studies have shown that SNAP traits can account for variance in PD features. However, to date no published study that has examined the incremental validity of dysfunctional schemas in the prediction of PD features over and above SNAP traits could be located. This is an important area of research in light of the findings of Thimm (2011) and Study 1 of this thesis that dysfunctional schemas explained incremental variance in PD features over and above FFM traits.

Due to the paucity of prior research and the largely exploratory nature of the current study, a combination of research questions and specific hypotheses were posed. First, are there theoretically-meaningful relationships between SNAP maladaptive personality traits and dysfunctional schemas conceptualised as either EMSs or dysfunctional PD beliefs? Based on the pattern of findings obtained in Study 1 using FFM traits, it was hypothesised that most dysfunctional schemas would be positively correlated with Negative Temperament and Disinhibition, but negatively correlated with Positive Temperament.

Second, are there theoretically-meaningful relationships between PD features as measured by the WISPI-IV and the SNAP maladaptive personality traits? Based on previous research summarised in Table 1.8 of Chapter 1, it was hypothesised that more than 50% of Clark's (1993a) predicted PD-SNAP trait relationships would be confirmed using the WISPI-IV as the measure of PD features.

Third, would controlling for the effects of psychological distress and general PD symptomology influence specific relationships between: (a) EMSs and the PBQ dysfunctional PD belief scales; (b) EMSs and WISPI-IV PD scales; and (c) PBQ dysfunctional PD belief scales and WISPI-IV PD scales? It was hypothesised that correlations amongst these variables would be reduced once distress and general PD symptomology were statistically controlled.

Fourth, can dysfunctional schemas, that is, EMSs and dysfunctional PD beliefs, incrementally add to the prediction of PD features over and above SNAP maladaptive traits? On the basis of the overall pattern of findings from Study 1, it was hypothesised that dysfunctional schemas would explain incremental variance in all PD features over and above SNAP traits.

Fifth, what are the most salient predictors of PD features?

## 3.2 Method

### 3.2.1 Participants

Participants were required to be aged 18 years or older. Most of the participants were recruited from an urban university in Melbourne through the use of campus noticeboard flyers, advertisements placed on the university's online teaching interface, email invitations that were sent to all student email accounts, class sign-up sheets and word-of-mouth. Some university student participants received minor course credit in exchange for their participation. A smaller number of participants were recruited from the general population in Melbourne through associates and networks of existing participants.

In total, 290 participants ( $M = 23.05$  years,  $SD = 8.00$ , age range = 18-58 years), with 67 men ( $M = 25.18$  years,  $SD = 9.54$ , age range = 18-56 years) and 223 women ( $M = 22.41$  years,  $SD = 7.38$ , age range = 18-58 years), completed a computerised administration of the SNAP-2, including the questions about age and gender. Of this total sample, 21 participants failed to return their questionnaire packs which contained all other measures and questions pertaining to sociodemographic characteristics. Thus, the final sample consisted of 269 participants ( $M = 23.11$  years,  $SD = 8.16$ , age range = 18-58 years), with 62 men ( $M = 25.70$  years,  $SD = 9.75$ , age range = 18-56 years) and 207 women ( $M = 22.33$  years,  $SD = 7.47$ , age range = 18-58 years). Participants had completed an average of 14.34 years of formal education ( $SD = 1.84$ ). Table 3.1 displays a breakdown of the characteristics of the sample.

Table 3.1

*Sample Characteristics*

<b>Characteristic</b>	<b><i>n</i></b>	<b>%</b>
<i>Currently attending university</i>		
Yes	250	92.9 %
No	19	7.1 %
<i>Ethnic or cultural background</i>		
Australian or New Zealander	166	61.7 %
European	41	15.2 %
Asian	33	12.3 %
Middle Eastern	17	6.3 %
South American	6	2.2 %
African	5	1.9 %
North American	1	0.4 %
<i>Employment status</i>		
Full-time student	121	45.0 %
Full-time student & employed	90	33.5 %
Part-time student & employed	23	8.6 %
Part-time student	16	5.9 %
Employed full-time	12	4.5 %
Not employed	5	1.9 %
Employed part-time	1	0.4 %
Other	1	0.4 %
<i>Relationship status</i>		
Single	139	51.7 %
Attached	106	39.4 %
Married	20	7.4 %
Other	4	1.5 %

*Note.* *N* = 269.

### 3.2.2 Materials

A small laptop computer with a mouse was used to administer the computerised version of the SNAP-2. In addition to an information letter and consent forms (see Appendix C), participants were also given a questionnaire pack that contained sociodemographic questions and the other measures used in the study. To minimise any potential order or fatigue effects, the measures in the questionnaire pack were counterbalanced and each participant randomly received one of three predetermined versions of the questionnaire pack.

**3.2.2.1 SNAP maladaptive personality traits.** SNAP maladaptive personality traits were measured by the computerised version of the Schedule for Nonadaptive and Adaptive Personality-2<sup>nd</sup> Edition (SNAP-2; Clark et al., in press; Simms, 2007). The SNAP-2 is a 390-item true/false self-report inventory which

assesses 15 personality trait dimensions central to personality pathology. It consists of three broad temperament scales (Negative Temperament, Positive Temperament and Disinhibition) and 12 lower-order trait scales (Mistrust, Manipulativeness, Aggression, Self-Harm, Eccentric Perceptions, Dependency, Exhibitionism, Entitlement, Detachment, Impulsivity, Propriety and Workaholism) that are associated with one of the three higher-order temperament scales (see Table 1.6 in Chapter 1 for a description of SNAP traits). The Self-Harm scale is comprised of two highly-correlated subscales, Low Self-Esteem and Suicide Proneness, of which separate scores can also be derived.

Raw scores for all SNAP-2 scales are summed and converted into *T* scores which have a mean of 50 and a standard deviation of 10 (Clark et al., in press). Official cut-off *T* scores are yet to be developed. However, according to the test manual (Clark et al., in press), *T* scores < 35 or > 65 are considered to be extreme scores and respondents who obtain such scores are likely to strongly exhibit the characteristic features that are associated with the given trait. The SNAP-2 has good psychometric properties, with Cronbach's alpha coefficients ranging from  $\alpha = .76$  (Manipulativeness and Entitlement) to  $\alpha = .92$  (Negative Temperament) for the trait and temperament scales in the U.S. normative sample (Clark et al., in press).

In the computerised version of the SNAP-2 each item is presented individually following the instructions page and the respondent is required to select their answer by clicking on either the "True or Mostly True" or "False or Mostly False" button. In the current study, participants completed the requisite age and gender questions as part of the computerised administration the SNAP-2 and scores for all scales were derived using the scoring feature of the SNAP-2 program (Simms, 2007).

**3.2.2.2 Sociodemographic questions.** The same questions pertaining to sociodemographic characteristics that were asked in Study 1 (see section 2.2.2.1) were also asked in the current study so as to establish some basic information about the characteristics of the sample. These questions comprised the cover page of the questionnaire pack.

**3.2.2.3 PD features.** PD features were measured by the WISPI-IV (Klein & Benjamin, 1996; Klein et al., 1993). For a description of this measure, see section 2.2.2.2.

**3.2.2.4 EMSs.** EMSs were measured by the YSQ-S3 (Young, 2005b). For a description of this measure, see section 2.2.2.4.

**3.2.2.5 Dysfunctional PD beliefs.** Dysfunctional PD beliefs were measured by the PBQ (Beck & Beck, 1995). See section 2.2.2.5 for a description of this measure.

**3.2.2.6 Psychological distress.** Psychological distress was measured by the Kessler Psychological Distress Scale (K10; Kessler et al., 2002). The K10 is a 10-item dimensional self-report measure of general psychological distress. Respondents are required to rate how frequently they experienced 10 symptoms of distress during the past four week period. For example, item 10 asks: “In the past four weeks, about how often did you feel worthless?” Each item is rated on a 5-point Likert-type scale ranging from 1 (*none of the time*) to 5 (*all of the time*). Scores on all items are summed to obtain a K10 Total score that can range from 10-50 and higher scores indicate higher levels of self-reported psychological distress. There are several ways to interpret K10 scores as official cut-off scores have not been developed. For instance, since 2001 the Victorian Population Health Survey (Department of Health, 2011) has interpreted K10 scores according to four levels of psychological distress: low (10–15), moderate (16–21), high (22–29) and very high (30–50). In a large ( $N = 1,574$ ) community sample, the K10 obtained a Cronbach’s alpha of  $\alpha = .93$ , indicating excellent reliability (Kessler et al., 2002).

The K10 is also a widely used screening instrument for the severity of psychopathology in epidemiological and outcome-focused research due to its ease of administration, excellent psychometric properties and sensitivity in identifying cases of serious mental illness (Andrews & Slade, 2001; Australian Bureau of Statistics, 2003; Kessler et al., 2002; Kessler et al., 2003). Studies have consistently shown that higher scores on the K10 are strongly associated with the presence of psychiatric disorders, especially anxiety, mood and personality disorders, and that the K10 can accurately discriminate between cases and non-cases of mental disorder (Andrews & Slade, 2001; Furukawa, Kessler, Slade, & Andrews, 2003; Kessler et al., 2002; Kessler et al., 2003).

### **3.2.3 Procedure**

Approval to conduct this study was obtained from the Human Research Ethics Committee of the Australian Catholic University (see Appendix D).

University students who were interested in participating in the study contacted the researcher to organise a time to complete the computerised administration of the SNAP-2. Each participant was required to attend an individual testing session that was held in a quiet room at the university. At the testing session the researcher provided the participant with an information letter and consent forms to read and also gave a verbal description of the general aims and participation requirements of the study. After providing written consent, each participant completed the computerised administration of the SNAP-2. Completion times ranged between 30 to 90 minutes and the researcher typically remained in the room with the participant for the duration of the testing session so as to answer any questions.

Following completion of the SNAP-2, each participant was then given a questionnaire pack enclosed in a reply-paid envelope to complete in their own time. The questionnaire packs were marked with an identification number that corresponded to each participant's identification number on his or her completed SNAP-2 protocol to ensure the match-up of data. The researcher provided participants with instructions on how to complete the measures that were contained in the pack. Participants were advised that they could return their completed questionnaire pack either by mail using the reply-paid envelope or through a designated drop box at the reception desk in the School of Psychology at the university.

The remaining participants who were recruited from the general population organised with the researcher a mutually convenient time and location to complete the SNAP-2. As with the university students, these participants were provided with a verbal description of the general aims of the study, plus an information letter to read and consent forms to sign prior to their participation. Following the provision of written consent, these participants completed the computerised administration of the SNAP-2. Participants were then provided with a questionnaire pack to complete in their own time. The researcher provided participants with instructions on how to complete the measures contained within the pack and advised the participants to return their completed pack by mail using the reply-paid envelope that was provided.



### 3.3 Results

#### 3.3.1 Data Screening

Raw data from the questionnaire packs and data from the SNAP-2 program was entered into SPSS Statistics Version 17.0 for analysis. Data screening revealed 29 cases with missing items. Of these, three cases had either one or two missing items on the SNAP-2. This small number of missing items had no impact on the automatic scoring of SNAP-2 scales within the SNAP-2 program (Simms, 2007). However, in order to calculate descriptive statistics and reliability coefficients for all SNAP-2 scales, these missing items were replaced by scores in the non-keyed direction (Eaton, Krueger, South, Simms, & Clark, 2011). Eleven cases had a single missing item in their questionnaire pack. In this instance all missing items were replaced with the mean of the non-missing items for the participant on the relevant scale (Tabachnick & Fidell, 2007). For the remaining 15 cases (5% of the total sample) the amount of missing items in their questionnaire packs ranged from 2% (9 missing items) to 9% (40 missing items). From the variable perspective, all variables with missing items had less than 2% of values missing, that is, each variable had no more than three cases with missing items. Furthermore, Little's test was not significant,  $\chi^2(1890) = 1833.30, p = .821$ , indicating that the missing items were missing completely at random (MCAR). According to Hair et al. (2010), if the extent of missing items per case or variable is less than 10% then any data imputation method can be applied as all methods will typically yield similar results. However, the expectation maximization (EM) method is generally recommended over other methods as it is said to estimate missing values with the least amount of bias (Hair et al., 2010; Tabachnick & Fidell, 2007). Thus, the EM method in SPSS Missing Values Analysis was employed and scores for all missing values were estimated using scores from other variables in the analysis. This resulted in a complete dataset for all study variables.

All SNAP-2, WISPI-IV, YSQ-S3, PBQ and K10 study variables were screened for outliers and normality in accordance with Hair et al. (2010) prior to the inferential statistical analyses. In this sample of 269 cases, standardised scores across all variables were predominantly within the -2 to +2 range. However, for a small number of variables mostly lone outliers with standardised scores greater than the threshold value of +4 were observed. Variables that had outliers with a standardised

score greater than +4 included the schizotypal, antisocial, borderline, dependent and passive-aggressive PD scales of the WISPI-IV; the YSQ-S3 scales of Failure, Dependence/Incompetence and Entitlement/Grandiosity; and the schizoid, borderline, narcissistic and antisocial PD dysfunctional belief scales of the PBQ. No multivariate outliers were detected.

Hair et al. (2010) argued that an outlier should be retained in the dataset unless there is information that may discount it as a valid observation in the sample. The univariate outliers were still theoretically possible scores on the scales and thus represented valid observations from the broader non-clinical population of scores. Furthermore, examination of the 5% trimmed mean scores for all variables that had outliers with standardised scores greater than +4 revealed that the outliers had little influence on mean scores. Therefore, the outliers were not removed.

Normality was assessed through histograms, normal Q-Q plots, detrended normal Q-Q plots, and skewness and kurtosis statistics. Inspection of histograms and normality plots revealed that scores for most of the variables approximated normal distributions. Furthermore, the statistics for skewness and kurtosis for most variables were within the accepted -1 to +1 range, indicating normality (Hair et al., 2010; Miles & Shevlin, 2001). However, histograms and normality plots also revealed that scores for several variables were moderately or strongly positively skewed. These variables also typically had skewness and/or kurtosis statistics greater than +1. The variables that were positively skewed included: the K10 Total scale; the schizoid, schizotypal, narcissistic, antisocial, borderline, avoidant and dependent PD scales of the WISPI-IV; the SNAP-2 scales of Manipulativeness, Aggression, Self-Harm, Suicide Proneness, Low Self-Esteem and Detachment; the YSQ-S3 scales of Emotional Deprivation, Abandonment/Instability, Mistrust/Abuse, Social Isolation/Alienation, Defectiveness/Shame, Dependence/Incompetence, Failure, Vulnerability to Harm/Illness and Enmeshment/Undeveloped Self; and the paranoid, narcissistic, antisocial, borderline and dependent PD dysfunctional belief scales of the PBQ.

The observation that several variables were positively skewed was not unexpected. In fact, most of the WISPI-IV, YSQ-S3 and PBQ variables that were found to be positively skewed in Study 1 were also positively skewed in the current study. Furthermore, other variables that were positively skewed are known to have non-normal distributions in non-clinical populations. For instance, previous research

has shown that K10 scores are strongly positively skewed in non-clinical populations as the majority of people experience very little psychological distress (Andrews & Slade, 2001). Thus, the non-normal distributions of scores for some variables were considered to reflect characteristics of the wider non-clinical population, rather than problems in the dataset.

Whilst the effects of non-normality are said to be negligible in samples sizes larger than 200 (Allison, 1999; Hair et al., 2010), the statistical solutions that are derived from inferential data analyses are said to be more robust if the variables are normally distributed (Tabachnick & Fidell, 2007). Thus, the appropriate square root, logarithmic and inverse transformations were attempted for all variables that were positively skewed. Histograms and skewness and kurtosis statistics revealed that data transformations improved the distribution of scores towards normality for most variables and also reduced the impact of outliers for these variables if they were present. Specifically, square root transformations improved the distribution of scores for the paranoid, narcissistic, antisocial, borderline and dependent PD dysfunctional belief scales of the PBQ. In contrast, logarithmic transformations improved the distribution of scores for the: K10 Total scale; the schizoid, schizotypal, narcissistic, borderline, avoidant and dependent PD scales of the WISPI-IV; the SNAP-2 scales of Manipulativeness, Aggression, and Detachment; and the Abandonment/Instability, Mistrust/Abuse, Social Isolation/Alienation, Failure, Dependence/Incompetence, Vulnerability to Harm/Illness and Enmeshment/Undeveloped Self scales of the YSQ-S3. These transformed variables were retained and used in the inferential statistical analyses.

Data transformations did not improve the distribution of scores towards normality for the remaining positively skewed variables, namely: the WISPI-IV scale of antisocial PD; the SNAP-2 scales of Self-Harm, Low Self-Esteem and Suicide Proneness; and the YSQ-S3 scales of Emotional Deprivation and Defectiveness/Shame. These variables remained moderately to strongly positively skewed or in some cases became moderately to strongly negatively skewed. Therefore, these variables were not transformed.

### 3.3.2 Descriptive Statistics

The untransformed mean scores, standard deviations, score ranges and internal consistency Cronbach's alpha coefficients for the study variables from each measure are displayed in Tables 3.2 to 3.5.

The descriptive statistics for the WISPI-IV PD scales are presented in Table 3.2. The WISPI-IV PD scales evidenced good internal consistency, with Cronbach's alpha coefficients ranging from  $\alpha = .81$  (schizoid PD) to  $\alpha = .93$  (antisocial, avoidant and dependent PDs). As with Study 1, examination of the normative  $z$  scores of the current study revealed that participants' scale scores were generally similar to those of the non-patients in the WISPI-IV U.S. normative validation sample (Klein & Benjamin, 1996; Klein et al., 1993).

Table 3.2

#### *Descriptive Statistics and Reliability of the WISPI-IV Scales*

<b>WISPI-IV PD Scale</b>	<b><i>M</i></b>	<b><i>SD</i></b>	<b>Range</b>	<b>Normative<sup>a</sup> <i>z</i> score</b>	<b>Cronbach's <i>α</i></b>
Paranoid PD	3.38	1.50	1 – 8.13	.26	.89
Schizoid PD	2.53	1.09	1 – 6.80	-.19	.81
Schizotypal PD	2.29	1.15	1 – 8.20	.04	.89
Histrionic PD	3.39	1.27	1.17 – 8.11	.37	.87
Narcissistic PD	2.99	1.31	1 – 8.11	-.06	.89
Antisocial PD	1.61	0.95	1 – 7.89	-.23	.93
Borderline PD	2.68	1.35	1 – 8.50	-.09	.90
Avoidant PD	3.41	1.77	1 – 8.19	.08	.93
Dependent PD	2.56	1.38	1 – 9.00	-.21	.93
Obsessive-Compulsive PD	3.56	1.27	1.26 – 7.53	.17	.85
Passive-Aggressive PD	3.07	1.23	1.05 – 8.26	.35	.88

*Note.* <sup>a</sup>Normative  $z$  scores compare the participants' mean scores with the means of the U.S. non-patients from the WISPI-IV normative validation sample (Klein & Benjamin, 1996; Klein et al., 1993).

Table 3.3 shows that participants' mean  $T$  scores for all SNAP-2 scales were within normal limits (Clark et al., in press). Moreover, the SNAP-2 scales evidenced good internal consistency, with Cronbach's alpha coefficients ranging from  $\alpha = .79$  (Propriety) and  $\alpha = .93$  (Negative Temperament).

Table 3.3

*Descriptive Statistics and Reliability of the SNAP-2 Scales*

<b>SNAP-2 Scale</b>	<b><i>M</i></b>	<b><i>SD</i></b>	<b>Range</b>	<b>Cronbach's <math>\alpha</math></b>
<b>Negative Temperament</b>	<b>55.35</b>	<b>10.69</b>	<b>35.60 – 74.40</b>	<b>.93</b>
Mistrust	56.68	11.80	38.80 – 85.10	.87
Manipulativeness	55.81	12.68	37.50 – 100.00	.81
Aggression	53.60	12.13	40.60 – 97.70	.86
Self-Harm	52.74	13.55	42.70 – 104.20	.89
Low Self-Esteem	57.06	9.06	51.30 – 84.70	.83
Suicide Proneness	53.34	14.96	43.30 – 103.30	.87
Eccentric Perceptions	54.80	10.99	38.10 – 85.00	.80
Dependency	56.69	13.40	37.10 – 95.20	.85
<b>Positive Temperament</b>	<b>47.96</b>	<b>11.32</b>	<b>18.40 – 64.80</b>	<b>.89</b>
Exhibitionism	52.12	11.30	31.90 – 75.10	.85
Entitlement	49.14	11.71	26.80 – 73.80	.84
Detachment	48.73	9.67	36.60 – 78.00	.85
<b>Disinhibition</b>	<b>53.92</b>	<b>10.94</b>	<b>36.20 – 93.10</b>	<b>.85</b>
Impulsivity	51.16	10.74	35.90 – 84.60	.82
Propriety	52.74	8.62	24.80 – 68.30	.79
Workaholism	50.18	11.59	30.00 – 78.60	.85

For the YSQ-S3, Table 3.4 shows that, similar to Study 1, the highest mean score for participants in the current study was on Unrelenting Standards and the lowest mean score was on Defectiveness/Shame. The YSQ-S3 scales showed acceptable internal consistency, with Cronbach's alpha coefficients ranging from  $\alpha = .65$  (Entitlement/Grandiosity) to  $\alpha = .88$  (Mistrust/Abuse); whereas the YSQ-S3 Total scale evidenced excellent reliability  $\alpha = .96$ .

Table 3.4

*Descriptive Statistics and Reliability of the YSQ-S3 Scales*

<b>YSQ-S3 Scale</b>	<b><i>M</i></b>	<b><i>SD</i></b>	<b>Range</b>	<b>Cronbach's <math>\alpha</math></b>
Emotional Deprivation	1.88	0.99	1 – 5.20	.81
Abandonment/Instability	2.33	1.12	1 – 5.80	.87
Mistrust/Abuse	2.37	1.08	1 – 6.00	.88
Social Isolation/Alienation	2.19	1.04	1 – 5.80	.86
Defectiveness/Shame	1.80	0.93	1 – 5.40	.85
Failure	2.20	0.94	1 – 6.00	.83
Dependence/Incompetence	2.00	0.82	1 – 5.40	.70
Vulnerability to Harm/Illness	2.04	0.91	1 – 5.40	.75
Enmeshment/Undeveloped Self	1.96	0.89	1 – 5.40	.76
Subjugation	2.13	0.82	1 – 4.80	.69
Self-Sacrifice	3.34	1.01	1.20 – 6.00	.77
Emotional Inhibition	2.35	0.94	1 – 5.60	.74
Unrelenting Standards	3.38	0.92	1.20 – 6.00	.66
Entitlement/Grandiosity	2.53	0.80	1 – 6.00	.65
Insufficient Self-Control/Self-Discipline	2.76	1.02	1 – 5.60	.80
Approval/Recognition-Seeking	2.94	0.98	1 – 5.40	.77
Negativity/Pessimism	2.50	1.00	1 – 5.40	.79
Punitiveness	2.50	0.84	1 – 5.60	.71
YSQ-S3 Total Score	215.97	54.74	107 – 389	.96

Table 3.5 shows that the PBQ scales and the K10 scale evidenced good internal consistency, with Cronbach's alpha coefficients all above  $\alpha = .80$ . Similar to Study 1, the current participants' highest and lowest mean scores on the PBQ scales were on the obsessive-compulsive PD beliefs scale and borderline PD beliefs subscale, respectively. Moreover, the mean K10 Total score of 20.07 indicates that participants in this study overall experienced a moderate level of psychological distress, as per the cut-off scores used in the Victorian Population Health Survey (Department of Health, 2011).

Table 3.5

*Descriptive Statistics and Reliability of the PBQ Scales and K10 Total Scale*

Scale	<i>M</i>	<i>SD</i>	Range	Cronbach's $\alpha$
Avoidant PD beliefs	14.52	8.72	0 – 41	.87
Dependent PD beliefs	13.79	9.44	0 – 51	.88
Passive-Aggressive PD beliefs	19.69	8.64	1 – 46	.85
Obsessive-Compulsive PD beliefs	23.12	9.91	4 – 56	.89
Antisocial PD beliefs	12.73	8.26	1 – 56	.87
Narcissistic PD beliefs	12.91	9.57	0 – 56	.90
Histrionic PD beliefs	16.23	8.95	1 – 48	.88
Schizoid PD beliefs	19.48	8.50	2 – 56	.84
Paranoid PD beliefs	14.03	11.30	0 – 56	.94
Borderline PD beliefs	11.74	9.37	0 – 50	.90
K10 Total	20.07	6.67	10 – 44	.89

**3.3.3 Relationships between SNAP Traits and Dysfunctional Schemas**

Pearson's correlations were performed to examine the relationships between SNAP maladaptive personality traits and dysfunctional schemas, conceptualised as either EMSs or dysfunctional PD beliefs. The results of these analyses are presented in Tables 3.6 and 3.7. A conservative alpha level of  $p \leq .001$  was used to determine statistical significance for all correlations so as to protect against inflated Type I errors. Statistical power of the correlational analyses was determined using Cohen's (1988) power tables for  $r$ . Using the following criteria (a) an alpha level of  $p < .05$  (two-tailed) and (b) a minimum sample size of 250, the power tables revealed that the correlational analyses had a 35% chance of detecting  $r$ s of .10, an 89% chance of detecting  $r$ s of .20 and greater than a 99.5% chance of detecting  $r$ s of .30 or larger, that is, medium to large effect sizes (Cohen, 1988).

**3.3.3.1 Relationships between SNAP traits and EMSs.** Table 3.6 displays the correlations between SNAP traits and EMSs. As expected, Negative Temperament had positive correlations with most EMSs and the total score on the YSQ-S3, indicating that a higher level of Negative Temperament is associated with the presence of a broad range of EMSs. The lower-order traits affiliated with Negative Temperament also obtained positive correlations with most EMSs. However, there were some meaningful exceptions. For example, Aggression had a weak negative, but nonsignificant correlation with Self-Sacrifice, while Dependency had little correlation with Entitlement/Grandiosity. Self-Sacrifice had little relationship with Negative Temperament or its lower-order traits.

As hypothesised, Positive Temperament was generally negatively correlated with most EMSs, indicating that a higher level of Positive Temperament is associated with fewer and weaker EMSs. However, Positive Temperament was actually positively correlated with Self-Sacrifice. Further, traits affiliated with Positive Temperament obtained theoretically-meaningful relationships with EMSs. For instance, whereas most EMSs were negatively correlated with Exhibitionism and Entitlement, the EMSs of Entitlement/Grandiosity and Approval/Recognition-Seeking were positively correlated with these traits.

As predicted, Disinhibition was generally positively correlated with most EMSs, suggesting that a higher level of Disinhibition is associated with stronger EMSs. However, Disinhibition obtained negative correlations with Self-Sacrifice and Unrelenting Standards. Further, SNAP traits associated with Disinhibition had little relationship with EMSs, with some meaningful exceptions. That is, Impulsivity was negatively correlated with Unrelenting Standards, but positively correlated with Insufficient Self-Control/Self-Discipline. Propriety was positively correlated with Self-Sacrifice and Unrelenting Standards. Finally, Workaholism was positively correlated with Self-Sacrifice, Unrelenting Standards and Punitiveness, yet negatively correlated with Insufficient Self-Control/Self-Discipline.

Inspection of Table 3.6 down each column reveals the SNAP trait profiles for each EMS. For example, Defectiveness/Shame was positively correlated with Negative Temperament and all of its lower-order traits. Notably, Defectiveness/Shame obtained a strong positive correlation with Self-Harm, indicating that the presence of this EMS is associated with a tendency to engage in self-harming behaviours. Additionally, Defectiveness/Shame was negatively correlated with Positive Temperament, but positively correlated with Detachment. In contrast, while the SNAP trait profile for the Approval/Recognition-Seeking EMS was also characterised by positive correlation with Negative Temperament and all of its lower-order traits, this EMS obtained additional positive correlations with Entitlement, Exhibitionism and Disinhibition.



Table 3.6  
Correlations between SNAP Traits and EMSs

SNAP Traits	Emotional Deprivation	Abandonment/Instability	Mistrust/Abuse	Social Isolation/Allegation	Defectiveness/Shame	Failure	Dependence/Incompetence	Vulnerability to Harm/Illness	Emmeshment/Undeveloped Self	Subjugation	Self-Sacrifice	Emotional Inhibition	Unrelenting Standards	Entitlement/Grandiosity	Insufficient Self-Control/Self-Discipline	Approval/Recognition-Seeking	Negativity/Pessimism	Punitiveness	YSQ-S3 Total Score
<b>Negative Temperament</b>	<b>.25***</b>	<b>.61***</b>	<b>.52***</b>	<b>.46***</b>	<b>.45***</b>	<b>.44***</b>	<b>.50***</b>	<b>.56***</b>	<b>.43***</b>	<b>.50***</b>	<b>.08</b>	<b>.33***</b>	<b>.21***</b>	<b>.27***</b>	<b>.46***</b>	<b>.38***</b>	<b>.61***</b>	<b>.22***</b>	<b>.63***</b>
Mistrust	.39***	.48***	.70***	.46***	.40***	.31***	.31***	.45***	.34***	.39***	.16*	.37***	.24***	.37***	.31***	.32***	.55***	.26***	.60***
Manipulativeness	.20***	.28***	.30***	.27***	.26***	.17**	.28***	.28***	.15**	.21***	-.17**	.16**	-.08	.48***	.46***	.41***	.25***	-.01	.34***
Aggression	.24***	.31***	.41***	.17**	.26***	.15*	.26***	.27***	.18**	.11	-.12	.20***	.07	.39***	.31***	.31***	.30***	.07	.34***
Self-Harm	.44***	.42***	.37***	.52***	.60***	.46***	.37***	.40***	.23***	.39***	.04	.32***	.06	.16**	.37***	.23***	.46***	.22***	.55***
Low Self-Esteem	.43***	.30***	.27***	.43***	.53***	.40***	.32***	.31***	.14*	.32***	.01	.31***	.00	.11	.33***	.20***	.37***	.16**	.44***
Suicide Proneness	.34***	.40***	.35***	.47***	.49***	.40***	.31***	.38***	.24***	.35***	.04	.26***	.07	.17**	.31***	.20***	.43***	.21***	.49***
Eccentric Perceptions	.28***	.34***	.38***	.44***	.32***	.21***	.35***	.41***	.31***	.28***	.04	.20***	.10	.30***	.22***	.24***	.38***	.16**	.44***
Dependency	.09	.40***	.16**	.19**	.30***	.40***	.49***	.30***	.29***	.53***	.11	.22***	.00	.04	.33***	.33***	.29***	.16**	.40***
<b>Positive Temperament</b>	<b>-.27***</b>	<b>-.28***</b>	<b>-.15*</b>	<b>-.30***</b>	<b>-.35***</b>	<b>-.33***</b>	<b>-.24***</b>	<b>-.26***</b>	<b>-.06</b>	<b>-.26***</b>	<b>.21***</b>	<b>-.28***</b>	<b>.16**</b>	<b>.02</b>	<b>-.31***</b>	<b>-.13*</b>	<b>-.24***</b>	<b>-.07</b>	<b>-.28***</b>
Exhibitionism	-.09	.01	.01	-.17**	-.16**	-.17**	-.06	-.03	-.02	-.15*	-.07	-.22***	-.03	.30***	.08	.30***	-.05	-.16**	-.05
Entitlement	-.02	.03	.11	-.06	-.12*	-.24***	-.05	-.04	.07	-.04	-.02	-.05	.13*	.43***	.09	.28***	-.02	-.12	.04
Detachment	.45***	.21***	.36***	.58***	.48***	.20***	.22***	.31***	.15*	.32***	-.10	.58***	.24***	.28***	.22***	.12	.34***	.21***	.45***
<b>Disinhibition</b>	<b>.19**</b>	<b>.23***</b>	<b>.20***</b>	<b>.15*</b>	<b>.16*</b>	<b>.17**</b>	<b>.22***</b>	<b>.18**</b>	<b>.04</b>	<b>.13*</b>	<b>-.21***</b>	<b>.00</b>	<b>-.29***</b>	<b>.30***</b>	<b>.48***</b>	<b>.30***</b>	<b>.15*</b>	<b>-.10</b>	<b>.21***</b>
Impulsivity	.11	.19**	.08	.12	.11	.14*	.17**	.10	-.04	.08	-.14*	-.06	-.31***	.15*	.43***	.14*	.05	-.12	.12
Propriety	-.16**	.01	.06	-.09	.00	-.06	.02	.08	.18**	.04	.26***	.14*	.28***	.05	-.10	.16**	.09	.18**	.09
Workaholism	.08	.02	.14*	.10	.09	-.13*	.00	.01	.16**	.08	.30***	.19**	.58***	.08	-.32***	-.05	.14*	.24***	.14*

Note. \* $p \leq .05$ . \*\* $p \leq .01$ . \*\*\* $p \leq .001$ .

### 3.3.3.2 Relationships between SNAP traits and dysfunctional PD beliefs.

Table 3.7 displays the correlations between SNAP traits and the PBQ dysfunctional PD belief scales. As expected, Negative Temperament obtained positive correlations with most PBQ scales with the exception of the schizoid PD beliefs scale, indicating that a higher level of Negative Temperament is associated with holding a range of dysfunctional beliefs that are characteristic of the DSM-IV-TR PDs. The lower-order traits associated with Negative Temperament were also positively correlated with most dysfunctional PD belief scales. However, Self-Harm and its subscales of Low Self-Esteem and Suicide Proneness had little relationship with the obsessive-compulsive, narcissistic and schizoid PD belief scales. Furthermore, Dependency was positively correlated with most dysfunctional PD belief scales, but had little relationship with the obsessive-compulsive and narcissistic PD belief scales and was negatively correlated with the schizoid PD beliefs scale.

Positive Temperament was negatively correlated with the avoidant, dependent and borderline PD belief scales, but had little relationship with other PBQ scales. Exhibitionism was positively correlated with the antisocial, narcissistic and histrionic PD belief scales; whereas Entitlement was positively correlated with the antisocial, narcissistic, histrionic, passive-aggressive and obsessive-compulsive PD belief scales. Detachment was positively correlated with most dysfunctional PD belief scales, yet had little relationship with the histrionic PD beliefs scale.

Disinhibition obtained positive correlations with most PBQ scales, but had little relationship with the obsessive-compulsive or schizoid PD belief scales. Impulsivity was positively correlated with the avoidant, passive-aggressive, histrionic and borderline PD belief scales. Propriety was positively correlated with only the obsessive-compulsive PD beliefs scale; whereas Workaholism was positively correlated with the obsessive-compulsive and schizoid PD belief scales.

Table 3.7  
*Correlations between SNAP Traits and PBQ Dysfunctional PD Belief Scales*

SNAP Traits	Avoidant PD beliefs	Dependent PD beliefs	Passive-Aggressive PD beliefs	Obsessive-Compulsive PD beliefs	Antisocial PD beliefs	Narcissistic PD beliefs	Histrionic PD beliefs	Schizoid PD beliefs	Paranoid PD beliefs	Borderline PD beliefs
<b>Negative Temperament</b>	<b>.51***</b>	<b>.54***</b>	<b>.34***</b>	<b>.28***</b>	<b>.33***</b>	<b>.27***</b>	<b>.36***</b>	<b>.04</b>	<b>.50***</b>	<b>.59***</b>
Mistrust	.47***	.34***	.40***	.37***	.48***	.38***	.42***	.33***	.68***	.66***
Manipulativeness	.41***	.27***	.39***	.18**	.48***	.45***	.49***	.19***	.40***	.43***
Aggression	.36***	.27***	.36***	.27***	.47***	.39***	.36***	.22***	.41***	.41***
Self-Harm	.48***	.39***	.17**	.07	.19**	.06	.25***	.11	.34***	.49***
Low Self-Esteem	.39***	.32***	.14*	.03	.15*	.01	.16**	.10	.26***	.37***
Suicide Proneness	.43***	.35***	.15*	.09	.18**	.07	.25***	.09	.31***	.44***
Eccentric Perceptions	.37***	.32***	.36***	.18**	.26***	.29***	.36***	.25***	.36***	.46***
Dependency	.46***	.58***	.17**	.07	.14*	.10	.35***	-.26***	.21***	.40***
<b>Positive Temperament</b>	<b>-.35***</b>	<b>-.28***</b>	<b>-.04</b>	<b>.09</b>	<b>-.05</b>	<b>.11</b>	<b>-.01</b>	<b>.00</b>	<b>-.17**</b>	<b>-.26***</b>
Exhibitionism	-.04	.01	.11	.12	.31***	.40***	.35***	-.02	.05	.03
Entitlement	.01	.05	.25***	.32***	.36***	.63***	.35***	.19**	.17**	.11
Detachment	.38***	.15*	.26***	.21***	.19**	.13*	.11	.44***	.39***	.40***
<b>Disinhibition</b>	<b>.35***</b>	<b>.20***</b>	<b>.31***</b>	<b>-.07</b>	<b>.35***</b>	<b>.30***</b>	<b>.44***</b>	<b>.06</b>	<b>.28***</b>	<b>.32***</b>
Impulsivity	.23***	.09	.24***	-.17**	.15*	.15*	.33***	-.04	.15*	.20***
Propriety	-.01	.09	-.01	.37***	.08	.13*	.04	.01	.03	.00
Workaholism	-.06	-.03	.03	.39***	.07	.05	-.06	.22***	.08	.05

Note. \* $p \leq .05$ . \*\* $p \leq .01$ . \*\*\* $p \leq .001$ .

Inspection of each column in Table 3.7 reveals theoretically-meaningful SNAP trait profiles of the PBQ dysfunctional PD belief scales. For example, the SNAP trait profile of the antisocial PD beliefs scale was characterised by positive correlations with Negative Temperament, Mistrust, Manipulativeness, Aggression, Eccentric Perceptions, Exhibitionism, Entitlement and Disinhibition. Conversely, the SNAP trait profile of the obsessive-compulsive PD beliefs scale consists of positive correlations with Negative Temperament, Mistrust, Aggression, Entitlement, Detachment, Propriety and Workaholism.

### 3.3.4 Relationships between PD Features and SNAP Traits

Pearson's correlations were performed to examine the relationships between PD features, as measured by the WISPI-IV PD scales, and SNAP maladaptive personality traits. As mentioned previously, a conservative alpha level of  $p \leq .001$  was used to determine statistical significance and the correlational analyses were sufficiently powered to detect even weak *rs*.

As shown in Table 3.8, all WISPI-IV PD scales were positively correlated with Negative Temperament, indicating that personality pathology in general is associated with a tendency towards emotional maladjustment. The PD scales were also generally positively correlated with all lower-order traits associated with Negative Temperament, however there were some exceptions. Notably, the histrionic PD scale had little relationship with Self-Harm, while the schizoid PD scale had little relationship with Dependency.

The PD scales were generally negatively correlated with Positive Temperament, however only the correlations regarding the borderline, avoidant and dependent PD scales reached statistical significance. Conversely, the histrionic PD scale was actually weakly positively correlated with Positive Temperament, however the correlation failed to reach the required level of statistical significance. Nuanced, theoretically-meaningful correlations emerged between the PD scales and the lower-order traits affiliated with Positive Temperament. For example, the histrionic, narcissistic and antisocial PD scales were positively correlated with Exhibitionism, while the avoidant PD scale was negatively correlated with this trait. Additionally, the paranoid, histrionic, narcissistic, antisocial, obsessive-compulsive and passive-aggressive PD scales were positively correlated with Entitlement, while the remaining PD scales had little relationship with this trait. Finally, most PD scales

were positively correlated with Detachment, yet the histrionic PD scale had little relationship with this trait.

In general, most WISPI-IV PD scales were positively correlated with Disinhibition, however the obsessive-compulsive PD scale obtained a weak negative correlation with this temperament dimension that failed to reach statistical significance. Furthermore, the histrionic, antisocial, borderline, dependent and passive-aggressive PD scales were positively correlated with Impulsivity. The narcissistic and obsessive-compulsive PD scales were positively correlated with Propriety, whereas only the obsessive-compulsive PD scale was positively correlated with Workaholism.

Examination of the SNAP maladaptive trait profile for each WISPI-IV PD scale (i.e., down each column in Table 3.8) allows for the assessment of Clark's (1993a) predicted PD-SNAP trait relationships. Overall, 35 out of 36 or 97% of Clark's hypothesised PD-SNAP trait relationships were statistically significant. The table also reveals several statistically significant PD-SNAP trait correlations which were not hypothesised by Clark. For example, the histrionic PD scale was strongly positively correlated with Manipulativeness; while the borderline, narcissistic and passive-aggressive PD scales were strongly positively correlated with Mistrust.

Table 3.8  
Correlations between SNAP Traits and PD Features

SNAP Traits	Paranoid	Schizoid	Schizotypal	Histrionic	Narcissistic	Antisocial	Borderline	Avoidant	Dependent	Obsessive-Compulsive	Passive-Aggressive
	PD	PD	PD	PD	PD	PD	PD	PD	PD	PD	PD
<b>Negative Temperament</b>	<b>.48***</b>	<b>.25***</b>	<b>.42***</b>	<b>.24***</b>	<b>.38***</b>	<b>.27***</b>	<b>.64***</b>	<b>.59***</b>	<b>.59***</b>	<b>.44***</b>	<b>.46***</b>
Mistrust	<b>.63***</b>	<b>.40***</b>	<b>.48***</b>	<b>.31***</b>	<b>.51***</b>	<b>.44***</b>	<b>.55***</b>	<b>.48***</b>	<b>.42***</b>	<b>.42***</b>	<b>.50***</b>
Manipulativeness	<b>.36***</b>	<b>.25***</b>	<b>.33***</b>	<b>.52***</b>	<b>.48***</b>	<b>.53***</b>	<b>.43***</b>	<b>.24***</b>	<b>.35***</b>	<b>.21***</b>	<b>.53***</b>
Aggression	<b>.48***</b>	<b>.31***</b>	<b>.34***</b>	<b>.43***</b>	<b>.45***</b>	<b>.56***</b>	<b>.42***</b>	<b>.24***</b>	<b>.31***</b>	<b>.25***</b>	<b>.47***</b>
Self-Harm	<b>.33***</b>	<b>.30***</b>	<b>.38***</b>	<b>.13*</b>	<b>.22***</b>	<b>.36***</b>	<b>.55***</b>	<b>.47***</b>	<b>.42***</b>	<b>.15*</b>	<b>.30***</b>
Low Self-Esteem	<b>.21***</b>	<b>.25***</b>	<b>.26***</b>	<b>.04</b>	<b>.16**</b>	<b>.21***</b>	<b>.41***</b>	<b>.40***</b>	<b>.32***</b>	<b>.13*</b>	<b>.23***</b>
Suicide Proneness	<b>.33***</b>	<b>.27***</b>	<b>.38***</b>	<b>.17**</b>	<b>.22***</b>	<b>.39***</b>	<b>.53***</b>	<b>.40***</b>	<b>.38***</b>	<b>.13*</b>	<b>.30***</b>
Eccentric Perceptions	<b>.44***</b>	<b>.33***</b>	<b>.64***</b>	<b>.35***</b>	<b>.40***</b>	<b>.40***</b>	<b>.49***</b>	<b>.30***</b>	<b>.38***</b>	<b>.32***</b>	<b>.42***</b>
Dependency	<b>.18**</b>	<b>.06</b>	<b>.26***</b>	<b>.24***</b>	<b>.16**</b>	<b>.19**</b>	<b>.36***</b>	<b>.42***</b>	<b>.62***</b>	<b>.20***</b>	<b>.23***</b>
<b>Positive Temperament</b>	<b>-.11</b>	<b>-.18**</b>	<b>-.10</b>	<b>.14*</b>	<b>-.06</b>	<b>-.07</b>	<b>-.26***</b>	<b>-.40***</b>	<b>-.28***</b>	<b>.02</b>	<b>-.17**</b>
Exhibitionism	.11	-.09	.03	<b>.62***</b>	<b>.30***</b>	<b>.32***</b>	<b>.14*</b>	<b>-.23***</b>	.03	.08	.17**
Entitlement	<b>.24***</b>	.05	<b>.17**</b>	<b>.51***</b>	<b>.44***</b>	<b>.33***</b>	<b>.13*</b>	-.08	.05	<b>.28***</b>	<b>.25***</b>
Detachment	<b>.37***</b>	<b>.55***</b>	<b>.38***</b>	-.04	<b>.31***</b>	<b>.21***</b>	<b>.36***</b>	<b>.55***</b>	<b>.24***</b>	<b>.36***</b>	<b>.37***</b>
<b>Disinhibition</b>	<b>.26***</b>	<b>.15*</b>	<b>.23***</b>	<b>.48***</b>	<b>.28***</b>	<b>.55***</b>	<b>.42***</b>	<b>.12*</b>	<b>.28***</b>	<b>-.04</b>	<b>.44***</b>
Impulsivity	.11	.03	<b>.09</b>	<b>.33***</b>	<b>.09</b>	<b>.36***</b>	<b>.34***</b>	.01	<b>.20***</b>	<b>-.17**</b>	<b>.27***</b>
Propriety	.10	.04	.07	.04	<b>.20***</b>	<b>-.13*</b>	-.07	.09	.07	<b>.36***</b>	.03
Workaholism	<b>.13*</b>	<b>.14*</b>	.06	-.11	.09	-.07	-.07	.08	-.09	<b>.36***</b>	-.07
Significant predictions <sup>a</sup>	2/2	2/2	3/3	3/4	3/3	5/5	4/4	4/4	3/3	3/3	3/3
Significant at lower <i>p</i> <sup>b</sup>	2/2	2/2	3/3	4/4	3/3	5/5	4/4	4/4	3/3	3/3	3/3

Note. <sup>a</sup>PD-SNAP trait predictions are based on the hypothesized PD-SNAP trait conceptual relationships put forth by Clark (1993a) that were statistically significant at  $p \leq .001$ . The

correlations that were predicted to be positive are shaded, whereas the correlations that were predicted to be negative are underlined.

<sup>b</sup>PD-SNAP trait predictions based on Clark's (1993a) hypotheses that would have been statistically significant if a less conservative alpha level had been used.

\* $p \leq .05$ . \*\* $p \leq .01$ . \*\*\* $p \leq .001$ .

### **3.3.5 Would Controlling for the Effects of Psychological Distress and General PD Symptomology Influence Specific Relationships between: (a) EMSs and PBQ Dysfunctional PD Belief Scales; (b) EMSs and WISPI-IV PD scales; and (c) PBQ Dysfunctional PD Belief Scales and WISPI-IV PD Scales?**

Three types of correlational analyses were performed in order to examine this research question. First, Pearson's correlations were performed to establish that the YSQ-S3 scales, PBQ dysfunctional PD belief scales and the WISPI-IV PD scales in this study were indeed correlated with psychological distress as measured by the K10 scale. Second, another set of Pearson's correlations were performed to establish the zero-order correlations between (a) EMSs and dysfunctional PD belief scales, (b) EMSs and WISPI-IV PD scales and (c) dysfunctional PD belief scales and WISPI-IV PD scales, respectively, in this study. Finally, partial correlations were performed with the possible confounding effects of psychological distress (i.e., K10 Total scale) and general PD symptomology (i.e., either all WISPI-IV PD scales or the non-targeted PD scales depending on the specific analysis) statistically controlled in each analysis. The results of these correlational analyses are presented in Tables 3.9 to 3.12. As mentioned previously, the analyses were sufficiently powered and unless otherwise specified an alpha level of  $p \leq .001$  was used to determine statistical significance.

**3.3.5.1 Relationships between psychological distress and EMSs, dysfunctional PD beliefs and PD features.** Table 3.9 displays the Pearson's zero-order correlations between psychological distress as measured by the K10 and the YSQ-S3 EMS scales, PBQ dysfunctional PD belief scales and WISPI-IV PD scales. For these smaller sets of analyses an alpha level of  $p \leq .05$  was used to determine statistical significance. The table shows that, with the exception of the schizoid PD beliefs scale, all scales obtained statistically significant positive correlations with psychological distress. The magnitude of the correlations with psychological distress ranged from  $r = .15$  (Self-Sacrifice) to  $r = .59$  (Negativity/Pessimism) for the individual YSQ-S3 EMS scales,  $r = .10$  (schizoid PD beliefs) to  $r = .54$  (borderline PD beliefs) for the PBQ dysfunctional PD belief scales and  $r = .22$  (histrionic PD) to  $r = .61$  (borderline PD) for the WISPI-IV PD scales. The schizoid PD beliefs scale did obtain a weak positive correlation with distress, however, the correlation failed to reach statistical significance.

Table 3.9

*Correlations between K10, YSQ-S3, PBQ and WISPI-IV Scales*

Scale	Psychological Distress (K10 Total score)
<i>YSQ-S3 EMS Scales</i>	
Emotional Deprivation	.36***
Abandonment/Instability	.53***
Mistrust/Abuse	.44***
Social Isolation/Alienation	.46***
Defectiveness/Shame	.53***
Failure	.47***
Dependence/Incompetence	.48***
Vulnerability to Harm/Illness	.52***
Enmeshment/Undeveloped Self	.43***
Subjugation	.51***
Self-Sacrifice	.15*
Emotional Inhibition	.34***
Unrelenting Standards	.21***
Entitlement/Grandiosity	.18**
Insufficient Self-Control/Self-Discipline	.38***
Approval/Recognition-Seeking	.33***
Negativity/Pessimism	.59***
Punitiveness	.25***
YSQ-S3 Total Score	.63***
<i>PBQ Dysfunctional PD Belief Scales</i>	
Avoidant PD beliefs	.46***
Dependent PD beliefs	.44***
Passive-Aggressive PD beliefs	.26***
Obsessive-Compulsive PD beliefs	.24***
Antisocial PD beliefs	.25***
Narcissistic PD beliefs	.18**
Histrionic PD beliefs	.35***
Schizoid PD beliefs	.10
Paranoid PD beliefs	.42***
Borderline PD beliefs	.54***
<i>WISPI-IV PD Scales</i>	
Paranoid PD	.36***
Schizoid PD	.25***
Schizotypal PD	.41***
Histrionic PD	.22***
Narcissistic PD	.30***
Antisocial PD	.23***
Borderline PD	.61***
Avoidant PD	.53***
Dependent PD	.48***
Obsessive-Compulsive PD	.34***
Passive-Aggressive PD	.34***

Note. \* $p \leq .05$ . \*\* $p \leq .01$ . \*\*\* $p \leq .001$ .

**3.3.5.2 Relationships between EMSs and dysfunctional PD beliefs.** Table 3.10 displays the zero-order correlations and partial correlations between EMSs and



PBQ dysfunctional PD belief scales. The zero-order correlational analyses revealed a large number of statistically significant positive correlations between most EMSs and dysfunctional PD beliefs. However, as hypothesised, the partial correlations revealed that the number and strength of the statistically significant zero-order correlations were greatly reduced once the effects of psychological distress (i.e., K10 Total scale) and general PD symptomology (i.e., all WISPI-IV PD scales) were controlled. In fact, as indicated by the shaded text in the table, the partial correlations revealed that only eight zero-order correlations remained statistically significant at the  $p \leq .001$  level once psychological distress and general PD symptomology were controlled. Specifically, Mistrust/Abuse remained positively correlated with the paranoid PD beliefs scale ( $pr = .42, p < .001$ ) and the borderline PD beliefs subscale ( $pr = .29, p < .001$ ); whereas Unrelenting Standards remained positively correlated with the obsessive-compulsive PD beliefs scale ( $pr = .33, p < .001$ ), as did Punitiveness ( $pr = .22, p = .001$ ). In addition, Entitlement/Grandiosity remained positively correlated with the passive-aggressive PD beliefs scale ( $pr = .20, p = .001$ ); whilst Insufficient Self-Control/Self-Discipline remained positively correlated with the avoidant PD beliefs scale ( $pr = .21, p = .001$ ). Finally, Approval/Recognition-Seeking remained positively correlated with the dependent PD beliefs scale ( $pr = .27, p < .001$ ) and the histrionic PD beliefs scale ( $pr = .26, p < .001$ ).

As indicated by the underlined text in Table 3.10, a further 39 partial correlations are statistically significant at less conservative alpha levels, suggesting the possibility of several additional important relationships amongst the dysfunctional schemas. Some examples include positive partial correlations between Entitlement/Grandiosity and the narcissistic PD beliefs scale ( $pr = .19, p = .002$ ), Social Isolation/Alienation and the borderline PD beliefs subscale ( $pr = .15, p = .018$ ) and Insufficient Self-Control/Self-Discipline and the passive-aggressive PD beliefs scale ( $pr = .19, p = .002$ ). Moreover, the partial correlations were more in line with theoretical expectations in comparison to the zero-order correlations. For instance, as opposed to the statistically significant positive zero-order correlation between the conceptually dissimilar Enmeshment/Undeveloped Self and antisocial PD beliefs scale ( $r = .27, p < .001$ ), the partial correlation revealed that there was no relationship between these dysfunctional schemas once the effects of distress and general PD symptomology were controlled ( $pr = .00, p = .959$ ).

Table 3.10

## Correlations and Partial Correlations between EMSs and PBQ Dysfunctional PD Belief Scales

EMSs	<i>r</i>	Avoidant	Dependent	Passive- Aggressive	Obsessive- Compulsive	Antisocial	Narcissistic	Histrionic	Schizoid	Paranoid	Borderline
		PD beliefs	PD beliefs	PD beliefs	PD beliefs	PD beliefs	PD beliefs	PD beliefs	PD beliefs	PD beliefs	PD beliefs
Emotional Deprivation	<i>r</i>	.38***	.25***	.33***	.27***	.30***	.26***	.25***	.39***	.39***	.46***
Abandonment/Instability	<i>pr</i>	.05	.05	.12	.09	.00	.08	.03	.17**	-.02	.09
Mistrust/Abuse	<i>r</i>	.54***	.61***	.28***	.28***	.32***	.27***	.44***	.07	.43***	.60***
Social Isolation/Alienation	<i>pr</i>	.03	.16**	-.04	.10	.09	.04	.04	.03	-.02	.09
Defectiveness/Shame	<i>r</i>	.51***	.41***	.46***	.46***	.52***	.43***	.43***	.36***	.77***	.71***
Failure	<i>pr</i>	.08	.04	.13*	.16**	.14*	.11	.06	.07	.42***	.29***
Dependence/Incompetence	<i>r</i>	.55***	.44***	.41***	.25***	.25***	.27***	.34***	.27***	.50***	.60***
Vulnerability to Harm/Illness	<i>pr</i>	.12	.06	.13*	-.05	-.07	.09	.07	.07	.09	.15*
Emmeshment/Undeveloped Self	<i>r</i>	.57***	.45***	.31***	.30***	.29***	.20***	.34***	.28***	.44***	.58***
Subjugation	<i>pr</i>	.15*	.04	.02	.08	.03	-.03	.05	.12*	-.02	.10
Self-Sacrifice	<i>r</i>	.51***	.44***	.27***	.11	.21***	.08	.27***	.03	.38***	.49***
Emotional Inhibition	<i>pr</i>	.18**	.05	.12	-.03	.13*	-.02	.04	-.01	.18**	.16*
Unrelenting Standards	<i>r</i>	.10	.55***	.20***	.19**	.31***	.26***	.43***	.12	.43***	.55***
Entitlement/Grandiosity	<i>pr</i>	-.04	.07	.05	-.05	.13*	.11	.15*	.08	.10	.13*
Insufficient Self-Control/Self-Discipline	<i>r</i>	.30***	.23***	.54***	.30***	.35***	.28***	.41***	.20***	.53***	.59***
Approval/Recognition-Seeking	<i>pr</i>	-.03	.09	.16*	.30***	.04	-.02	.04	.13*	.14*	.09
Negativity/Pessimism	<i>r</i>	.52***	.41***	.45***	.48***	.00	.06	.34***	.13*	.37***	.44***
Punitiveness	<i>pr</i>	.21***	.07	.19**	.33***	.00	.06	-.01	-.04	.02	.02
YSQ-S3 Total Score	<i>r</i>	.47***	.56***	.44***	.39***	.25***	.22***	.39***	.07	.47***	.58***
	<i>pr</i>	.07	.48***	.11	.03	.00	-.01	.07	-.06	.10	.07
	<i>r</i>	.52***	.48***	.37***	.20***	.00	.02	.03	.03	.09	.11
	<i>pr</i>	.06	.06	.06	.11	-.06	.01	-.03	-.03	.04	.06
	<i>r</i>	.29***	.25***	.45***	.44***	.30***	.26***	.28***	.38***	.48***	.52***
	<i>pr</i>	.11	.03	.16*	.16*	.12	.03	.06	.15*	.16*	.16**
	<i>r</i>	.67***	.62***	.50***	.48***	.22***	.22***	.08	.27***	.20***	.18**
	<i>pr</i>	.15*	.18**	.19**	.19**	.04	.07	-.08	.00	-.09	-.05
	<i>r</i>	.48***	.47***	.44***	.43***	.54***	.59***	.43***	.35***	.46***	.41***
	<i>pr</i>	.07	.27***	.11	.03	.12	.19**	.06	-.02	.03	.02
	<i>r</i>	.52***	.48***	.37***	.20***	.31***	.30***	.41***	.03	.42***	.47***
	<i>pr</i>	.06	.06	.06	-.05	.06	.06	.07	-.05	.12*	.07
	<i>r</i>	.29***	.25***	.45***	.43***	.45***	.51***	.60***	.07	.42***	.49***
	<i>pr</i>	.11	.03	.16*	.16*	.10	.10	.26***	-.14*	-.04	.02
	<i>r</i>	.67***	.62***	.50***	.48***	.41***	.31***	.42***	.23***	.57***	.63***
	<i>pr</i>	.15*	.18**	.19**	.19**	.14*	.03	.06	.05	.15*	.11
	<i>r</i>	.48***	.47***	.44***	.43***	.23***	.06	.14*	.23***	.30***	.30***
	<i>pr</i>	.07	.27***	.11	.03	.10	.06	-.01	.08	.03	.02
	<i>r</i>	.52***	.48***	.37***	.20***	.47***	.41***	.53***	.30***	.66***	.76***
	<i>pr</i>	.15*	.18**	.19**	.19**	.10	.10	.13*	.06	.15*	.20**

Note. Partial correlations controlled for the effects of psychological distress (i.e., K10 Total scale) and general PD symptomatology (i.e., all WISPI-IV PD scales). Partial correlations that were statistically significant at the  $p \leq .001$  level are shaded, while partial correlations that were statistically significant at less conservative alpha levels are underlined.

\* $p \leq .05$ . \*\* $p \leq .01$ . \*\*\* $p \leq .001$ .

**3.3.5.3 Relationships between EMSs and PD features.** As displayed in Table 3.11, there were a large number of statistically significant positive zero-order correlations between EMSs and the WISPI-IV PD scales. As expected, examination of the partial correlations revealed that the number and strength of these zero-order correlations were significantly diminished when the effects of psychological distress (i.e., K10 Total score) and general PD symptomology (i.e., the non-targeted WISPI-IV PD scales, depending on each analysis) were controlled. Specifically, as indicated by the shaded text in the table, the partial correlations revealed that, except for Self-Sacrifice, each EMS remained correlated with between one to four PD scales, while each PD scale remained correlated with between one to six EMSs, once the effects of distress and general PD symptomology were controlled. Self-Sacrifice did not obtain any partial correlations that were statistically significant at the  $p \leq .001$  level. Some notable partial correlations included positive relationships between the paranoid PD scale and Mistrust/Abuse ( $pr = .51, p < .001$ ), the avoidant PD scale and Emotional Inhibition ( $pr = .42, p < .001$ ), the narcissistic PD scale and Entitlement/Grandiosity ( $pr = .30, p < .001$ ), the schizotypal PD scale and Vulnerability to Harm/Illness ( $pr = .25, p < .001$ ), the dependent PD scale and Subjugation ( $pr = .36, p < .001$ ), the histrionic PD scale and Approval/Recognition-Seeking ( $pr = .27, p < .001$ ) and the obsessive-compulsive PD scale and Unrelenting Standards ( $pr = .49, p < .001$ ).

The underlined text in Table 3.11 illustrates that several other partial correlations were statistically significant at less stringent alpha levels, suggesting the possibility of some additional important relationships between EMSs and PD features. Some examples include positive partial correlations between the obsessive-compulsive PD scale and Punitiveness ( $pr = .19, p = .002$ ), the schizoid PD scale and Emotional Inhibition ( $pr = .18, p = .004$ ), the avoidant PD scale and Subjugation ( $pr = .16, p = .012$ ), the borderline PD scale and Abandonment/Instability ( $pr = .12, p = .050$ ) and the schizotypal PD scale and Mistrust/Abuse ( $pr = .13, p = .035$ ). Furthermore, as was the case in the previous section, the partial correlations in contrast to the zero-order correlations were more in line with theoretical expectations. For example, whereas the schizoid PD scale obtained a positive zero-order correlation with Abandonment/Instability ( $r = .25, p < .001$ ), the partial correlation revealed a negative relationship ( $pr = -.12, p = .046$ ).

Table 3.11

## Correlations and Partial Correlations between EMSs and PD Features

EMSs		Paranoid	Schizoid	Schizotypal	Histrionic	Narcissistic	Antisocial	Borderline	Avoidant	Dependent	Obsessive-Compulsive	Passive-Aggressive
		PD	PD	PD	PD	PD	PD	PD	PD	PD	PD	PD
Emotional Deprivation	<i>r</i>	.39***	.46***	.42***	.13*	.35***	.41***	.41***	.44***	.29***	.25***	.36***
	<i>pr</i>	.07	.16**	.05	-.20***	.10	.24***	.05	.15*	-.11	-.10	-.05
Abandonment/Instability	<i>r</i>	.49***	.25***	.46***	.33***	.40***	.31***	.63***	.61***	.70***	.37***	.46***
	<i>pr</i>	.10	-.12*	-.01	-.05	.01	.12*	.12*	.10	.35***	-.07	.00
Mistrust/Abuse	<i>r</i>	.75***	.41***	.58***	.36***	.60***	.43***	.59***	.59***	.52***	.48***	.58***
	<i>pr</i>	.51***	-.19**	.13*	-.20***	.12*	.06	.05	.13*	-.09	-.08	.02
Social Isolation/Alienation	<i>r</i>	.46***	.44***	.59***	.19**	.41***	.29***	.60***	.70***	.51***	.41***	.48***
	<i>pr</i>	-.02	.00	.24***	-.14*	.00	-.01	.20***	.37***	-.12	-.04	.04
Defectiveness/Shame	<i>r</i>	.42***	.46***	.55***	.15*	.38***	.35***	.58***	.66***	.55***	.41***	.42***
	<i>pr</i>	-.07	.12*	.14*	-.22***	.02	.16**	.10	.24***	.09	.03	-.07
Failure	<i>r</i>	.28***	.26***	.36***	.11	.18**	.21***	.50***	.54***	.53***	.27***	.32***
	<i>pr</i>	-.07	.03	.02	-.09	-.17**	.06	.11	.15*	.20***	.04	.06
Dependence/Incompetence	<i>r</i>	.40***	.30***	.50***	.25***	.32***	.32***	.53***	.57***	.63***	.38***	.46***
	<i>pr</i>	-.05	-.03	.14*	-.05	-.17**	.08	-.05	.08	.30***	.09	.14*
Vulnerability to Harm/Illness	<i>r</i>	.49***	.37***	.60***	.32***	.43***	.37***	.58***	.59***	.55***	.43***	.49***
	<i>pr</i>	.03	-.08	.25***	-.09	-.06	.07	.02	.14*	.05	.04	.06
Enmeshment/Undeveloped Self	<i>r</i>	.38***	.33***	.51***	.29***	.37***	.30***	.42***	.44***	.52***	.42***	.41***
	<i>pr</i>	-.05	.06	.22***	-.03	-.04	.02	-.15*	-.09	.27***	.13*	.08
Subjugation	<i>r</i>	.44***	.32***	.52***	.20***	.38***	.28***	.56***	.67***	.69***	.44***	.43***
	<i>pr</i>	-.03	-.06	.14*	-.19**	-.01	.06	-.02	.16*	.36***	.07	.00
Self-Sacrifice	<i>r</i>	.11	.10	.12	.01	.08	-.04	.06	.09	.14*	.20***	.01
	<i>pr</i>	.05	.10	.06	-.06	.00	-.08	-.10	-.13*	.16**	.15*	-.10
Emotional Inhibition	<i>r</i>	.42***	.51***	.46***	.14*	.41***	.28***	.43***	.66***	.42***	.51***	.40***
	<i>pr</i>	-.05	.18**	.00	-.10	.01	.17**	-.04	.42***	-.11	.22***	-.09
Unrelenting Standards	<i>r</i>	.34***	.26***	.22***	.11	.29***	.04	.16**	.29***	.13*	.55***	.15*
	<i>pr</i>	.21***	.05	-.05	.03	-.08	.01	-.11	.12	-.18**	.49***	-.18**
Entitlement/Grandiosity	<i>r</i>	.53***	.39***	.44***	.51***	.66***	.42***	.44***	.31***	.26***	.46***	.56***
	<i>pr</i>	.03	-.04	.02	.11	.30***	.04	.13*	.04	-.25***	.04	.08
Insufficient Self-Control/Self-Discipline	<i>r</i>	.37***	.23***	.34***	.37***	.39***	.27***	.56***	.47***	.51***	.30***	.54***
	<i>pr</i>	-.09	-.08	-.11	.09	-.01	-.08	.21***	.10	.08	-.09	.29***
Approval/Recognition-Seeking	<i>r</i>	.49***	.18**	.40***	.55***	.62***	.30***	.51***	.49***	.57***	.50***	.51***
	<i>pr</i>	-.06	-.27***	-.12*	.27***	.29***	-.03	.02	.21***	.13*	.08	-.01
Negativity/Pessimism	<i>r</i>	.57***	.36***	.51***	.29***	.48***	.31***	.63***	.64***	.57***	.48***	.46***
	<i>pr</i>	-.09	-.09	.02	-.10	.06	.03	.13*	.18**	.03	.05	-.08
Punitiveness	<i>r</i>	.39***	.31***	.31***	.08	.21***	.13*	.23***	.36***	.32***	.36***	.18**
	<i>pr</i>	.29***	.12*	.06	-.07	-.14*	.00	-.14*	.03	.12	.19**	-.14*
YSQ-S3 Total Score	<i>r</i>	.67***	.51***	.68***	.38***	.60***	.44***	.73***	.78***	.73***	.61***	.62***
	<i>pr</i>	.17**	-.02	.17**	-.13*	.01	.13*	.07	.28***	.17**	.16**	-.01

Note. Partial correlations controlled for the effects of psychological distress (i.e., K10 Total scale) and general PD psychopathology (i.e., all non-targeted WISPIV PDs).

Partial correlations that were statistically significant at the  $p \leq .001$  level are shaded, while partial correlations that were statistically significant at less conservative alpha levels are underlined.

\* $p \leq .05$ . \*\* $p \leq .01$ . \*\*\* $p \leq .001$ .

### 3.3.5.4 Relationships between dysfunctional PD beliefs and PD features.

Table 3.12 shows a large number of positive zero-order intercorrelations between PBQ dysfunctional PD belief scales and WISPI-IV PD scales, as was the case in Study 1. Conversely, the partial correlations in the table indicate that, as hypothesised, the number and strength of these zero-order correlations were substantially reduced when the effects of psychological distress (i.e., K10 Total score) and general PD symptomology (i.e., the non-targeted WISPI-IV PD scales, depending on the relevant analysis) were statistically controlled.

When Table 3.12 is read down each column, the statistically significant partial correlations highlighted in shaded text show that, excluding the schizotypal and borderline PD scales, each PD scale was most strongly positively correlated with its corresponding PBQ scale. Further, these partial correlations reveal that some PD scales obtained statistically significant, though generally weak, partial correlations with non-corresponding dysfunctional PD belief scales. Specifically, the paranoid PD scale remained positively correlated with the borderline PD beliefs subscale ( $pr = .22, p < .001$ ); the histrionic PD scale remained positively correlated with the narcissistic PD beliefs scale ( $pr = .24, p < .001$ ); the narcissistic PD scale remained positively correlated with the obsessive-compulsive PD beliefs scale ( $pr = .25, p < .001$ ) and with the antisocial PD beliefs scale ( $pr = .21, p = .001$ ); the antisocial PD scale remained positively correlated with the narcissistic PD beliefs scale ( $pr = .25, p < .001$ ) and the avoidant PD beliefs scale ( $pr = .22, p < .001$ ); the avoidant PD scale remained positively correlated with the borderline PD beliefs subscale ( $pr = .24, p < .001$ ); and finally the dependent PD scale obtained a negative partial correlation with the schizoid PD beliefs scale ( $pr = -.35, p < .001$ ).

Examination of the statistically significant partial correlations that are highlighted in shaded text along each row of Table 3.12 show that, with the exception of the borderline PD beliefs subscale, the PBQ dysfunctional PD belief scales were most strongly positively correlated with their corresponding WISPI-IV PD scales. In contrast, the borderline PD beliefs subscale obtained statistically significant positive partial correlations with the avoidant ( $pr = .24, p < .001$ ) and paranoid ( $pr = .22, p < .001$ ) PD scales, but not with its corresponding borderline PD scale ( $pr = .07, p = .294$ ).

Table 3.12

## Correlations and Partial Correlations between PD Features and PBQ Dysfunctional PD Belief Scales

PBQ Dysfunctional PD Beliefs Scale		Paranoid	Schizoid	Schizotypal	Histrionic	Narcissistic	Antisocial	Borderline	Avoidant	Dependent	Obsessive-compulsive	Passive-aggressive
		PD	PD	PD	PD	PD	PD	PD	PD	PD	PD	PD
Avoidant PD beliefs	<i>r</i>	<b>.52***</b>	<b>.41***</b>	<b>.56***</b>	<b>.40***</b>	<b>.50***</b>	<b>.49***</b>	<b>.62***</b>	<b>.68***</b>	<b>.67***</b>	<b>.39***</b>	<b>.57***</b>
	<i>pr</i>	<b>-.06</b>	<b>-.02</b>	<b>.02</b>	<b>.05</b>	<b>.03</b>	<b>.22***</b>	<b>.02</b>	<b>.32***</b>	<b>.18**</b>	<b>-.10</b>	<b>.07</b>
Dependent PD beliefs	<i>r</i>	<b>.42***</b>	<b>.20***</b>	<b>.46***</b>	<b>.34***</b>	<b>.39***</b>	<b>.28***</b>	<b>.53***</b>	<b>.59***</b>	<b>.72***</b>	<b>.39***</b>	<b>.42***</b>
	<i>pr</i>	<b>-.04</b>	<b>-.16*</b>	<b>.06</b>	<b>.05</b>	<b>.01</b>	<b>.04</b>	<b>-.06</b>	<b>.15*</b>	<b>.43***</b>	<b>.02</b>	<b>-.03</b>
Passive-aggressive PD beliefs	<i>r</i>	<b>.50***</b>	<b>.43***</b>	<b>.48***</b>	<b>.49***</b>	<b>.59***</b>	<b>.42***</b>	<b>.49***</b>	<b>.43***</b>	<b>.39***</b>	<b>.46***</b>	<b>.63***</b>
	<i>pr</i>	<b>-.06</b>	<b>.04</b>	<b>.02</b>	<b>.13*</b>	<b>.12</b>	<b>.00</b>	<b>.03</b>	<b>.10</b>	<b>-.11</b>	<b>.03</b>	<b>.25***</b>
Obsessive-compulsive PD beliefs	<i>r</i>	<b>.51***</b>	<b>.38***</b>	<b>.40***</b>	<b>.36***</b>	<b>.61***</b>	<b>.26***</b>	<b>.33***</b>	<b>.38***</b>	<b>.32***</b>	<b>.64***</b>	<b>.41***</b>
	<i>pr</i>	<b>.10</b>	<b>.04</b>	<b>-.04</b>	<b>.04</b>	<b>.02</b>	<b>.02</b>	<b>-.13*</b>	<b>.05</b>	<b>-.06</b>	<b>.36***</b>	<b>-.12</b>
Antisocial PD beliefs	<i>r</i>	<b>.62***</b>	<b>.46***</b>	<b>.47***</b>	<b>.56***</b>	<b>.67***</b>	<b>.59***</b>	<b>.44***</b>	<b>.36***</b>	<b>.37***</b>	<b>.45***</b>	<b>.60***</b>
	<i>pr</i>	<b>.16**</b>	<b>.05</b>	<b>-.10</b>	<b>.14*</b>	<b>.21***</b>	<b>.28***</b>	<b>-.09</b>	<b>.04</b>	<b>-.09</b>	<b>.04</b>	<b>.06</b>
Narcissistic PD beliefs	<i>r</i>	<b>.52***</b>	<b>.32***</b>	<b>.45***</b>	<b>.62***</b>	<b>.71***</b>	<b>.53***</b>	<b>.41***</b>	<b>.31***</b>	<b>.36***</b>	<b>.49***</b>	<b>.56***</b>
	<i>pr</i>	<b>-.08</b>	<b>-.14*</b>	<b>-.02</b>	<b>.24***</b>	<b>.38***</b>	<b>.25***</b>	<b>-.04</b>	<b>.06</b>	<b>-.09</b>	<b>.12</b>	<b>.00</b>
Histrionic PD beliefs	<i>r</i>	<b>.52***</b>	<b>.31***</b>	<b>.51***</b>	<b>.65***</b>	<b>.60***</b>	<b>.53***</b>	<b>.58***</b>	<b>.39***</b>	<b>.57***</b>	<b>.44***</b>	<b>.54***</b>
	<i>pr</i>	<b>-.08</b>	<b>-.09</b>	<b>.02</b>	<b>.28***</b>	<b>.16*</b>	<b>.19**</b>	<b>.11</b>	<b>-.04</b>	<b>.18**</b>	<b>.06</b>	<b>-.06</b>
Schizoid PD beliefs	<i>r</i>	<b>.43***</b>	<b>.54***</b>	<b>.41***</b>	<b>.24***</b>	<b>.46***</b>	<b>.35***</b>	<b>.23***</b>	<b>.25***</b>	<b>.04</b>	<b>.39***</b>	<b>.34***</b>
	<i>pr</i>	<b>.14*</b>	<b>.28***</b>	<b>.13*</b>	<b>-.04</b>	<b>.16**</b>	<b>.12</b>	<b>-.01</b>	<b>.08</b>	<b>-.35***</b>	<b>.12</b>	<b>-.10</b>
Paranoid PD beliefs	<i>r</i>	<b>.72***</b>	<b>.46***</b>	<b>.59***</b>	<b>.42***</b>	<b>.65***</b>	<b>.50***</b>	<b>.58***</b>	<b>.59***</b>	<b>.51***</b>	<b>.49***</b>	<b>.63***</b>
	<i>pr</i>	<b>.36***</b>	<b>-.10</b>	<b>.07</b>	<b>-.12*</b>	<b>.19**</b>	<b>.14*</b>	<b>-.01</b>	<b>.17**</b>	<b>-.09</b>	<b>-.08</b>	<b>.08</b>
Borderline PD beliefs	<i>r</i>	<b>.69***</b>	<b>.46***</b>	<b>.66***</b>	<b>.46***</b>	<b>.63***</b>	<b>.52***</b>	<b>.70***</b>	<b>.70***</b>	<b>.68***</b>	<b>.49***</b>	<b>.64***</b>
	<i>pr</i>	<b>.22***</b>	<b>-.10</b>	<b>.13*</b>	<b>-.05</b>	<b>.13*</b>	<b>.16*</b>	<b>.07</b>	<b>.24***</b>	<b>.10</b>	<b>-.13*</b>	<b>.02</b>

Note. Correlations between each PD scale and its corresponding PBQ dysfunctional PD beliefs scale are in boldface. Partial correlations controlled for the effects of psychological distress (i.e., K10 Total scale) and general PD symptomatology (i.e., all non-targeted WISPI-IV PD scales, depending on the specific analysis). Partial correlations that were statistically significant at the  $p \leq .001$  level are shaded, while partial correlations that were statistically significant at less conservative alpha levels are underlined.

\* $p \leq .05$ . \*\* $p \leq .01$ . \*\*\* $p \leq .001$ .

The underlined text in Table 3.12 reveals that several other weak, though theoretically meaningful partial correlations were statistically significant at less conservative alpha levels, suggesting the possibility of further important relationships between dysfunctional PD belief scales and PD features. For example, the schizoid PD scale was negatively correlated with the dependent PD beliefs scale ( $pr = -.16, p = .012$ ), the antisocial PD scale was positively correlated with the paranoid PD beliefs scale ( $pr = .14, p = .027$ ) and the schizotypal PD scale was positively correlated with the borderline PD beliefs subscale ( $pr = .13, p = .035$ ).

### 3.3.6 Predictors of PD Features

In order to examine whether dysfunctional schemas, that is, EMSs and PD-specific dysfunctional PD belief scales, could incrementally add to the prediction of PD features and to determine the most salient predictors of PD features, a series of hierarchical multiple regression analyses were performed with each WISPI-IV PD scale entered as a criterion variable. Calculations using Green's (1991) formulas for determining the minimum acceptable number of predictor variables as a function of sample size revealed that, given the sample size of 269 cases, up to 27 predictors could be entered in each regression analysis in order to test the statistical significance of  $R^2$  and the contribution of individual predictors. This corresponded to a cases-to-predictors ratio of approximately 10:1, which was double the minimum acceptable ratio of 5:1 (Hair et al., 2010).

The order of entry for the predictor variables in each hierarchical regression analyses corresponded to that used in Study 1. That is, personality traits were entered first, followed by separate blocks of EMSs and the dysfunctional PD beliefs scale that corresponded to the given PD scale. Specifically, in each hierarchical regression analysis the SNAP maladaptive traits that were statistically significant ( $p \leq .001$ ) correlates of the given PD scale were simultaneously entered as a class of predictor variables in the first block so as to independently assess their relationship with that PD syndrome. Given that the correlational analyses in Table 3.8 revealed statistically significant and meaningful PD-SNAP trait relationships that Clark (1993a) did not predict, all SNAP traits that were statistically significantly correlated with the given PD scale were entered as predictors, as opposed to just those hypothesised by Clark in her PD-SNAP trait profiles, so as to explore all potential predictive relationships. However, there was one important exception. Where relevant, the Self-Harm scale

rather than its two strongly intercorrelated component subscales of Low Self-Esteem and Suicide Proneness was entered as a predictor variable in order to avoid serious problems with multicollinearity. This resulted in 7 (schizoid PD) to 11 (narcissistic, antisocial, borderline, dependent and passive-aggressive PDs) SNAP trait predictors in each analysis.

In the subsequent block, the same subsets of EMSs that were entered as predictors of specific PD syndromes in the hierarchical regression analyses of Study 1 were again simultaneously entered as a group of predictor variables in the current study so as to examine their incremental validity in predicting PD features over and above SNAP maladaptive traits. This initially resulted in 4 (schizoid PD) to 11 (narcissistic and borderline PDs) EMS predictors in each analysis. However, it was apparent from the partial correlations between EMSs and WISPI-IV PD scales in the current study (see Table 3.11) that there were some EMSs which were not included as predictors of specific PD syndromes despite obtaining statistically significant ( $p \leq .001$ ) partial correlations with the relevant PD scale. These EMSs were: Unrelenting Standards and Punitiveness (paranoid PD); Approval/Recognition-Seeking (schizoid PD); Enmeshment/Undeveloped Self (schizotypal PD); Emotional Deprivation, Mistrust/Abuse and Defectiveness/Shame (histrionic PD); and Entitlement/Grandiosity (dependent PD). Given that the partial correlations demonstrated that these EMSs were important correlates of WISPI-IV PD scales even when the effects of psychological distress and general PD symptomology were controlled, it was therefore necessary to examine whether these EMSs were also salient predictors of these specific PD syndromes. Thus, these EMSs were also included in the block of EMS predictor variables for their respective PD syndromes, resulting in 5 (schizoid PD) to 11 (narcissistic and borderline PDs) EMS predictors in each analysis.

In the final block, the PBQ dysfunctional PD beliefs scale that corresponded to the given PD syndrome was entered as a predictor variable so as to examine the incremental validity of PD-specific dysfunctional beliefs in predicting corresponding PD features over and above SNAP maladaptive traits and EMSs. As per Study 1, no PBQ scale was entered as a predictor of schizotypal PD features.

Overall, the total number of predictor variables in the hierarchical regression analyses ranged from 13 (schizoid PD) to 23 (narcissistic and borderline PDs), which corresponded to a maximum and minimum ratio of cases to predictors of approximately 20:1 and 11:1, respectively. Inspection of the residuals histograms,



scatterplots and normal probability plots for all analyses revealed that the multiple regression assumptions of normality, linearity, homoscedasticity and independence of residuals were upheld. Tolerance values were all above .10 and variance inflation factor values were all less than 10, thereby indicating the absence of multicollinearity and singularity (Hair et al., 2010). Furthermore, the values for Cook's distance were all less than 1, indicating the absence of influential outliers or cases that had any undue influence on the results of the regression models (Tabachnick & Fidell, 2007). Post hoc power analyses using the G\*Power 3 statistical program (Faul et al., 2007) revealed that the regression analyses had at least a 97% chance of detecting medium effect sizes of  $R^2 = .13$  (Cohen, 1988), given the sample size, alpha level and number of predictors. An alpha level of  $p < .05$  was used to determine statistical significance for all analyses.

**3.3.6.1 Predictors of paranoid PD features.** In order to examine whether dysfunctional schemas could incrementally add to the prediction of paranoid PD features over and above subsets of SNAP traits and to determine the most salient predictors of paranoid PD features, a hierarchical multiple regression analysis was performed with the selected SNAP traits, EMSs and paranoid PD beliefs scale entered as predictor variables in successive blocks. The summary statistics of this analysis are presented in Table 3.13.

Table 3.13

*Hierarchical Regression Results Predicting Paranoid PD Features*

Predictor	<i>B</i>	<i>SE B</i>	$\beta$	Partial <i>r</i>	Part <i>r</i>	$\Delta R^2$
Step 1						.50***
(Constant)	-9.34	2.23				
Negative Temperament	0.02	0.01	.14*	.14	.10	
Mistrust	0.05	0.01	.38***	.34	.26	
Manipulativeness	-2.04	1.23	-.13	-.10	-.07	
Aggression	2.70	0.99	.16**	.17	.12	
Self-Harm	-0.01	0.01	-.06	-.06	-.04	
Eccentric Perceptions	0.02	0.01	.14**	.16	.12	
Entitlement	0.02	0.01	.18***	.22	.16	
Detachment	3.42	0.95	.19***	.22	.16	
Disinhibition	0.00	0.01	.03	.02	.02	
Step 2						.19***
(Constant)	-5.03	2.04				
Negative Temperament	0.01	0.01	.07	.08	.04	
Mistrust	0.01	0.01	.06	.06	.04	

Manipulativeness	-1.82	1.04	-.12	-.11	-.06
Aggression	1.58	0.84	.10	.12	.07
Self-Harm	-0.01	0.01	-.05	-.06	-.03
Eccentric Perceptions	0.01	0.01	.10*	.15	.08
Entitlement	0.01	0.01	.11*	.16	.09
Detachment	1.93	0.91	.11*	.13	.08
Disinhibition	0.01	0.01	.10	.10	.06
Emotional Deprivation	0.04	0.07	.03	.04	.02
Mistrust/Abuse	3.49	0.50	.46***	.40	.25
Social Isolation/Alienation	-0.76	0.48	-.10	-.10	-.06
Vulnerability to Harm/Illness	0.39	0.45	.05	.06	.03
Emotional Inhibition	0.05	0.08	.03	.03	.02
Entitlement/Grandiosity	0.33	0.10	.18***	.22	.13
Negativity/Pessimism	-0.04	0.10	-.03	-.03	-.01
Unrelenting Standards	0.00	0.08	.00	.00	.00
Punitiveness	0.31	0.08	.18***	.25	.14
Step 3					.02***
(Constant)	-4.47	1.99			
Negative Temperament	0.01	0.01	.05	.06	.03
Mistrust	0.00	0.01	.01	.01	.01
Manipulativeness	-1.83	1.01	-.12	-.11	-.06
Aggression	1.70	0.82	.10*	.13	.07
Self-Harm	0.00	0.01	-.03	-.04	-.02
Eccentric Perceptions	0.02	0.01	.11*	.16	.09
Entitlement	0.01	0.01	.09*	.13	.07
Detachment	1.59	0.89	.09	.11	.06
Disinhibition	0.01	0.01	.09	.09	.05
Emotional Deprivation	0.05	0.07	.03	.04	.02
Mistrust/Abuse	2.61	0.54	.34***	.29	.17
Social Isolation/Alienation	-0.70	0.47	-.09	-.09	-.05
Vulnerability to Harm/Illness	0.25	0.44	.03	.04	.02
Emotional Inhibition	-0.01	0.08	-.01	-.01	-.01
Entitlement/Grandiosity	0.29	0.09	.15**	.19	.11
Negativity/Pessimism	-0.03	0.09	-.02	-.02	-.01
Unrelenting Standards	0.07	0.08	.04	.05	.03
Punitiveness	0.28	0.08	.16***	.23	.13
Paranoid PD beliefs	0.23	0.06	.24***	.24	.13

Note. Some values for  $B$  and  $SE B$  appear low due to rounding.

\* $p \leq .05$ . \*\* $p \leq .01$ . \*\*\* $p \leq .001$ .

As shown in Table 3.13, at step one, the SNAP traits significantly explained 49.7% of the variance in paranoid PD features,  $F(9, 259) = 28.48, p < .001$ . In this model, Mistrust ( $\beta = .38, t = 5.80, p < .001$ ), Detachment ( $\beta = .19, t = 3.59, p < .001$ ), Entitlement ( $\beta = .18, t = 3.57, p < .001$ ), Aggression ( $\beta = .16, t = 2.72, p =$

.007), Eccentric Perceptions ( $\beta = .14, t = 2.62, p = .009$ ) and Negative Temperament ( $\beta = .14, t = 2.32, p = .021$ ) were significant predictors of paranoid PD features.

After controlling for the SNAP traits at step two, the EMSs significantly explained a further 18.9% of unique variance in paranoid PD features,  $\Delta F(9, 250) = 16.76, p < .001$ , and the regression model was statistically significant,  $R^2 = .69$  (adjusted  $R^2 = .66$ ),  $F(18, 250) = 30.42, p < .001$ . In this second model, Mistrust/Abuse ( $\beta = .46, t = 6.94, p < .001$ ), Punitiveness ( $\beta = .18, t = 4.01, p < .001$ ), Entitlement/Grandiosity ( $\beta = .18, t = 3.52, p = .001$ ), Entitlement ( $\beta = .11, t = 2.47, p = .014$ ), Detachment ( $\beta = .11, t = 2.11, p = .036$ ) and Eccentric Perceptions ( $\beta = .10, t = 2.32, p = .021$ ) were significant predictors of paranoid PD features.

Last, at step three, the addition of the paranoid PD dysfunctional beliefs scale significantly accounted for a further 1.8% of the variance in paranoid PD features,  $\Delta F(1, 249) = 14.73, p < .001$ . Overall, the final model significantly explained 70.4% (68.1% adjusted) of the variance in paranoid PD features,  $R^2 = .70, F(19, 249) = 31.17, p < .001$ . The final model revealed that the most salient predictors of paranoid PD features were Mistrust/Abuse ( $\beta = .34, t = 4.82, p < .001$ ), the paranoid PD beliefs scale ( $\beta = .24, t = 3.84, p < .001$ ), Punitiveness ( $\beta = .16, t = 3.65, p < .001$ ), Entitlement/Grandiosity ( $\beta = .15, t = 3.06, p = .002$ ), Eccentric Perceptions ( $\beta = .11, t = 2.55, p = .012$ ), Aggression ( $\beta = .10, t = 2.07, p = .039$ ) and Entitlement ( $\beta = .09, t = 2.04, p = .043$ ).

Whilst Negative Temperament and Mistrust were significant predictors of paranoid PD features at step one, they were no longer significant predictors at step two when the EMSs were entered into the analysis. This suggests that these SNAP traits may indirectly influence paranoid PD features through their relationships with EMSs. In contrast, when the EMSs were entered into the analysis Aggression was no longer a significant predictor of paranoid PD features at step two but became a significant predictor at step three when the paranoid PD dysfunctional beliefs scale was entered. This suggests that Aggression may have a complex relationship with paranoid PD symptomology that is moderated by the presence of dysfunctional schemas. Moreover, although Detachment was a significant predictor of paranoid PD features at steps one and two, it was no longer a significant predictor in the final model once the paranoid PD dysfunctional beliefs scale was entered. This suggests that the relationship between Detachment and paranoid PD features may be mediated by paranoid PD beliefs.

**3.3.6.2 Predictors of schizoid PD features.** In order to examine whether dysfunctional schemas could incrementally add to the prediction of schizoid PD features over and above subsets of SNAP traits and to determine the most salient predictors of schizoid PD features, a hierarchical multiple regression analysis was performed with the selected SNAP traits, EMSs and the schizoid PD dysfunctional beliefs scale entered as predictor variables in successive blocks. Table 3.14 displays the summary statistics of this analysis.

Table 3.14

*Hierarchical Regression Results Predicting Schizoid PD Features*

Predictor	<i>B</i>	<i>SE B</i>	$\beta$	Partial <i>r</i>	Part <i>r</i>	$\Delta R^2$
Step 1						.37***
(Constant)	-1.89	0.28				
Negative Temperament	0.00	0.00	-.06	-.05	-.04	
Mistrust	0.00	0.00	.14	.12	.10	
Manipulativeness	-0.04	0.12	-.02	-.02	-.02	
Aggression	0.28	0.13	.14*	.13	.11	
Self-Harm	0.00	0.00	-.03	-.03	-.03	
Eccentric Perceptions	0.00	0.00	.14*	.15	.12	
Detachment	1.00	0.12	.46***	.46	.41	
Step 2						.06***
(Constant)	-1.43	0.28				
Negative Temperament	0.00	0.00	-.08	-.07	-.06	
Mistrust	0.00	0.00	.04	.03	.02	
Manipulativeness	0.03	0.12	.02	.02	.01	
Aggression	0.26	0.13	.14*	.13	.10	
Self-Harm	0.00	0.00	-.07	-.07	-.05	
Eccentric Perceptions	0.00	0.00	.14*	.15	.11	
Detachment	0.66	0.14	.31***	.28	.22	
Emotional Deprivation	0.03	0.01	.14*	.14	.11	
Mistrust/Abuse	0.08	0.07	.08	.07	.05	
Social Isolation/Alienation	0.01	0.07	.01	.01	.01	
Emotional Inhibition	0.04	0.01	.20**	.18	.14	
Approval/Recog.-Seeking	-0.01	0.01	-.04	-.04	-.03	
Step 3						.05***
(Constant)	-1.10	0.28				
Negative Temperament	0.00	0.00	.00	.00	.00	
Mistrust	0.00	0.00	.01	.01	.01	
Manipulativeness	-0.02	0.12	-.01	-.01	-.01	
Aggression	0.22	0.12	.12	.11	.08	
Self-Harm	0.00	0.00	-.02	-.02	-.02	
Eccentric Perceptions	0.00	0.00	.10	.11	.08	
Detachment	0.48	0.14	.22***	.21	.15	

Emotional Deprivation	0.02	0.01	.09	.09	.07
Mistrust/Abuse	0.02	0.07	.02	.02	.01
Social Isolation/Alienation	0.04	0.07	.04	.03	.02
Emotional Inhibition	0.03	0.01	.16*	.15	.11
Approval/Recog.-Seeking	0.00	0.01	-.01	-.01	-.01
Schizoid PD beliefs	0.01	0.00	.28***	.29	.22

Note. Some values for  $B$  and  $SE B$  appear low due to rounding.

\* $p \leq .05$ . \*\* $p \leq .01$ . \*\*\* $p \leq .001$ .

As shown in Table 3.14, at step one, the SNAP personality traits significantly explained 37.2% of the variance in schizoid PD features,  $F(7, 261) = 22.05, p < .001$ . In this model, Detachment ( $\beta = .46, t = 8.31, p < .001$ ), Eccentric Perceptions ( $\beta = .14, t = 2.46, p = .015$ ) and Aggression ( $\beta = .14, t = 2.16, p = .032$ ) were significant predictors of schizoid PD features, while Mistrust approached significance ( $\beta = .14, t = 1.97, p = .051$ ).

After controlling for the SNAP traits at step two, the EMSs significantly explained a further 6.1% of unique variance in schizoid PD features,  $\Delta F(5, 256) = 5.46, p < .001$ , and the regression model was significant,  $R^2 = .43$  (adjusted  $R^2 = .41$ ),  $F(12, 256) = 16.24, p < .001$ . In this second model, Detachment ( $\beta = .31, t = 4.69, p < .001$ ), Emotional Inhibition ( $\beta = .20, t = 3.00, p = .003$ ), Eccentric Perceptions ( $\beta = .14, t = 2.35, p = .020$ ), Emotional Deprivation ( $\beta = .14, t = 2.26, p = .025$ ) and Aggression ( $\beta = .14, t = 2.06, p = .041$ ) were significant predictors of schizoid PD symptomology.

Lastly, at step three, the addition of the schizoid PD dysfunctional beliefs scale significantly accounted for a further 4.8% of unique variance in schizoid PD features,  $\Delta F(1, 255) = 23.28, p < .001$ . Overall, this final model significantly explained 48% (45.3% adjusted) of the variance in schizoid PD features,  $R^2 = .48$ ,  $F(13, 255) = 18.08, p < .001$ . The model revealed that the most salient predictors of schizoid PD features were the schizoid PD beliefs scale ( $\beta = .28, t = 4.83, p < .001$ ), Detachment ( $\beta = .22, t = 3.41, p = .001$ ) and Emotional Inhibition ( $\beta = .16, t = 2.48, p = .014$ ).

Interestingly, whilst Aggression and Eccentric Perceptions were significant predictors of schizoid PD features at steps one and two, these traits were no longer significant predictors at step three when the schizoid PD dysfunctional beliefs scale was entered into the analysis. Likewise, Emotional Deprivation was a significant predictor of schizoid PD features at step two but not at step three. These findings

suggest that the schizoid PD dysfunctional beliefs scale could mediate the relationships that Aggression, Eccentric Perceptions and Emotional Deprivation have with schizoid PD symptomatology.

**3.3.6.3 Predictors of schizotypal PD features.** In order to examine whether EMSs could incrementally add to the prediction of schizotypal PD features over and above SNAP traits and to determine the most salient predictors of schizotypal PD symptomatology, a hierarchical multiple regression analysis was performed with the SNAP traits and EMSs thought to be relevant to schizotypal PD features entered as predictor variables in successive blocks. The summary statistics of this analysis are presented in Table 3.15.

Table 3.15

*Hierarchical Regression Results Predicting Schizotypal PD Features*

Predictor	<i>B</i>	<i>SE B</i>	$\beta$	Partial <i>r</i>	Part <i>r</i>	$\Delta R^2$
Step 1						.50***
(Constant)	-1.32	0.30				
Negative Temperament	0.00	0.00	.01	.01	.01	
Mistrust	0.00	0.00	.15*	.14	.10	
Manipulativeness	0.00	0.16	.00	.00	.00	
Aggression	0.11	0.13	.05	.05	.04	
Self-Harm	0.00	0.00	-.02	-.02	-.02	
Eccentric Perceptions	0.01	0.00	.50***	.51	.42	
Dependency	0.00	0.00	.13*	.16	.11	
Detachment	0.45	0.13	.19***	.22	.16	
Disinhibition	0.00	0.00	-.05	-.04	-.03	
Step 2						.17***
(Constant)	-0.38	0.27				
Negative Temperament	0.00	0.00	-.11	-.12	-.07	
Mistrust	0.00	0.00	-.02	-.02	-.01	
Manipulativeness	-0.14	0.14	-.07	-.06	-.04	
Aggression	0.08	0.11	.04	.05	.03	
Self-Harm	0.00	0.00	-.02	-.02	-.01	
Eccentric Perceptions	0.01	0.00	.40***	.49	.32	
Dependency	0.00	0.00	.10*	.14	.08	
Detachment	0.09	0.12	.04	.04	.03	
Disinhibition	0.00	0.00	.02	.02	.01	
Emotional Deprivation	0.01	0.01	.04	.05	.03	
Mistrust/Abuse	0.17	0.07	.17*	.16	.09	
Social Isolation/Alienation	0.09	0.06	.09	.09	.05	
Vulnerability to Harm/Illness	0.24	0.06	.23***	.24	.14	
Enmeshment	0.18	0.05	.17***	.22	.13	
Emotional Inhibition	0.02	0.01	.11*	.12	.07	

Entitlement/Grandiosity	0.04	0.01	.17***	.22	.13
Negativity/Pessimism	-0.03	0.01	-.13*	-.13	-.07

*Note.* Some values for  $B$  and  $SE B$  appear low due to rounding.

\* $p \leq .05$ . \*\*\* $p \leq .001$ .

Table 3.15 shows that at step one the SNAP personality traits significantly explained 50% of the variance in schizotypal PD features,  $F(9, 259) = 28.81, p < .001$ . In this model, Eccentric Perceptions ( $\beta = .50, t = 9.64, p < .001$ ), Detachment ( $\beta = .19, t = 3.57, p < .001$ ), Mistrust ( $\beta = .15, t = 2.26, p = .025$ ) and Dependency ( $\beta = .13, t = 2.53, p = .012$ ) were significant predictors of schizotypal PD symptomology.

After controlling for the personality traits at step two, the EMSs significantly explained a further 17.1% of unique variance in schizotypal PD features,  $\Delta F(8, 251) = 16.31, p < .001$ . Overall, this final model significantly explained 67.1% (64.9% adjusted) of the variance in schizotypal PD features,  $R^2 = .67, F(17, 251) = 30.14, p < .001$ . The model revealed that Eccentric Perceptions ( $\beta = .40, t = 8.93, p < .001$ ), Vulnerability to Harm/Illness ( $\beta = .23, t = 3.89, p < .001$ ), Enmeshment/Undeveloped Self ( $\beta = .17, t = 3.57, p < .001$ ), Entitlement/Grandiosity ( $\beta = .17, t = 3.51, p = .001$ ), Mistrust/Abuse ( $\beta = .17, t = 2.56, p = .011$ ), Emotional Inhibition ( $\beta = .11, t = 1.99, p = .048$ ) and Dependency ( $\beta = .10, t = 2.22, p = .027$ ) were the most salient predictors of schizotypal PD features.

When entered into the hierarchical regression analysis at step two, Negativity/Pessimism was also a significant predictor of schizotypal PD features ( $\beta = -.13, t = -2.06, p = .041$ ). However, comparison of the sign and size of its beta weight with its zero-order correlation coefficient ( $r = .51, p < .001$ ) lead to identifying Negativity/Pessimism as a negative suppressor variable (Cohen & Cohen, 1975). As mentioned in Study 1, a suppressor variable adds to the prediction of the dependent variable and thus increases  $R^2$  by virtue of its correlations with other predictor variables (Tabachnick & Fidell, 2007). A suppressor variable is not actually a unique predictor of the dependent variable; rather its function is to enhance the predictive power of other variables in the regression equation by suppressing or removing error variance from them (Cohen & Cohen, 1975). In order to determine which variables Negativity/Pessimism was suppressing irrelevant variance from in the prediction of schizotypal PD features, a follow-up hierarchical

regression analysis was performed with the SNAP traits and EMSs entered as a block of predictors at step one and Negativity/Pessimism entered as a predictor at step two. Results revealed that Negativity/Pessimism increased the beta weights of Emotional Deprivation, Mistrust/Abuse, Vulnerability to Harm/Illness, Enmeshment/Undeveloped Self, Emotional Inhibition and Entitlement/Grandiosity in the second step and consequently improved  $R^2$  in the prediction of schizotypal PD symptomology,  $\Delta R^2 = .01$ ,  $\Delta F(1, 251) = 4.22$ ,  $p = .041$ .

Whilst Mistrust and Detachment were significant predictors of schizotypal PD features at step one, they were no longer significant predictors at step two when the EMSs were entered into the analysis. This suggests that these SNAP maladaptive personality traits may indirectly influence schizotypal PD features through relationships with EMSs.

**3.3.6.4 Predictors of histrionic PD features.** In order to examine whether dysfunctional schemas could incrementally add to the prediction of histrionic PD features over and above subsets of SNAP traits and to determine the most salient predictors of histrionic PD features, a hierarchical multiple regression analysis was performed with the selected SNAP traits, EMSs and histrionic PD dysfunctional beliefs scale entered as predictor variables in successive blocks. Table 3.16 shows the summary statistics of this analysis.

Table 3.16

*Hierarchical Regression Results Predicting Histrionic PD Features*

Predictor	<i>B</i>	<i>SE B</i>	$\beta$	Partial <i>r</i>	Part <i>r</i>	$\Delta R^2$
Step 1						.56***
(Constant)	-5.41	1.62				
Negative Temperament	0.00	0.01	-.03	-.03	-.02	
Mistrust	0.00	0.01	.04	.04	.03	
Manipulativeness	0.72	0.99	.05	.05	.03	
Aggression	0.93	0.80	.07	.07	.05	
Eccentric Perceptions	0.02	0.01	.16***	.20	.14	
Dependency	0.02	0.01	.16***	.21	.14	
Exhibitionism	0.04	0.01	.39***	.40	.29	
Entitlement	0.02	0.01	.23***	.26	.18	
Disinhibition	0.01	0.01	.12	.07	.05	
Impulsivity	0.00	0.01	-.03	-.03	-.02	
Step 2						.11***
(Constant)	-3.30	1.54				
Negative Temperament	-0.02	0.01	-.16**	-.17	-.10	



Mistrust	-0.01	0.01	-.11	-.11	-.06
Manipulativeness	0.28	0.94	.02	.02	.01
Aggression	0.60	0.76	.04	.05	.03
Eccentric Perceptions	0.02	0.01	.13**	.17	.10
Dependency	0.01	0.01	.14**	.17	.10
Exhibitionism	0.05	0.01	.40***	.43	.27
Entitlement	0.02	0.01	.13**	.17	.10
Disinhibition	0.01	0.01	.12	.07	.04
Impulsivity	0.00	0.01	-.02	-.02	-.01
Abandonment/Instability	0.46	0.37	.07	.08	.05
Social Isolation/Alienation	0.15	0.41	.02	.02	.01
Dependence/Incompetence	-0.03	0.39	.00	.00	.00
Enmeshment	0.81	0.33	.12*	.15	.09
Subjugation	-0.08	0.10	-.05	-.05	-.03
Entitlement/Grandiosity	0.17	0.08	.11*	.13	.07
Insufficient Self-Control	0.08	0.07	.06	.07	.04
Approval/Recog.-Seeking	0.17	0.07	.13*	.15	.09
Emotional Deprivation	-0.02	0.07	-.02	-.03	-.02
Mistrust/Abuse	1.24	0.43	.19**	.18	.11
Defectiveness/Shame	-0.02	0.08	-.02	-.02	-.01
Step 3					.03***
(Constant)	-2.45	1.48			
Negative Temperament	-0.02	0.01	-.14*	-.16	-.09
Mistrust	-0.01	0.01	-.13*	-.14	-.08
Manipulativeness	0.09	0.90	.01	.01	.00
Aggression	0.76	0.73	.05	.07	.04
Eccentric Perceptions	0.01	0.01	.12**	.17	.09
Dependency	0.01	0.01	.11*	.14	.08
Exhibitionism	0.04	0.01	.38***	.42	.26
Entitlement	0.01	0.01	.09	.12	.06
Disinhibition	0.01	0.01	.11	.07	.04
Impulsivity	-0.01	0.01	-.06	-.06	-.03
Abandonment/Instability	0.42	0.36	.07	.08	.04
Social Isolation/Alienation	0.12	0.39	.02	.02	.01
Dependence/Incompetence	-0.29	0.37	-.04	-.05	-.03
Enmeshment	0.74	0.31	.11*	.15	.08
Subjugation	-0.09	0.09	-.06	-.06	-.03
Entitlement/Grandiosity	0.16	0.08	.10	.12	.07
Insufficient Self-Control	0.11	0.07	.09	.10	.06
Approval/Recog.-Seeking	0.06	0.07	.05	.05	.03
Emotional Deprivation	-0.03	0.06	-.02	-.03	-.01
Mistrust/Abuse	1.10	0.41	.17**	.17	.09
Defectiveness/Shame	-0.04	0.08	-.03	-.03	-.02
Histrionic PD beliefs	0.04	0.01	.26***	.31	.18

Note. Some values for  $B$  and  $SE B$  appear low due to rounding.

\* $p \leq .05$ . \*\* $p \leq .01$ . \*\*\* $p \leq .001$ .

As shown in Table 3.16, at step one, the SNAP traits significantly explained 56% of the variance in histrionic PD features,  $F(10, 258) = 32.81, p < .001$ . In this model, Exhibitionism ( $\beta = .39, t = 6.96, p < .001$ ), Entitlement ( $\beta = .23, t = 4.29, p < .001$ ), Dependency ( $\beta = .16, t = 3.36, p = .001$ ) and Eccentric Perceptions ( $\beta = .16, t = 3.33, p = .001$ ) were significant predictors of histrionic PD features.

After controlling for the SNAP traits at step two, the EMSs significantly explained a further 10.7% of unique variance in histrionic PD features,  $\Delta F(11, 247) = 7.22, p < .001$ , and R was significantly different from zero,  $R^2 = .67$  (adjusted  $R^2 = .64$ ),  $F(21, 247) = 23.56, p < .001$ . In this second model, Exhibitionism ( $\beta = .40, t = 7.39, p < .001$ ), Mistrust/Abuse ( $\beta = .19, t = 2.87, p = .004$ ), Dependency ( $\beta = .14, t = 2.76, p = .006$ ), Eccentric Perceptions ( $\beta = .13, t = 2.76, p = .006$ ), Entitlement ( $\beta = .13, t = 2.71, p = .007$ ), Approval/Recognition-Seeking ( $\beta = .13, t = 2.37, p = .019$ ), Enmeshment/Undeveloped Self ( $\beta = .12, t = 2.45, p = .015$ ) and Entitlement/Grandiosity ( $\beta = .11, t = 1.99, p = .048$ ) were significant predictors of histrionic PD features. Whilst Negative Temperament also initially appeared to be a significant predictor of histrionic PD ( $\beta = -.16, t = -2.72, p = .007$ ), inspection of the difference between the sign and size of its beta value and zero-order correlation coefficient ( $r = .24, p < .001$ ) suggested that Negative Temperament was a negative suppressor variable rather than a unique predictor of histrionic PD symptomatology. Indeed, a follow-up hierarchical regression analysis with the SNAP traits and EMSs entered as predictors of histrionic PD features at step one and Negative Temperament entered as a predictor at step two revealed that Negative Temperament slightly increased the beta weights of Aggression, Dependency, Abandonment/Instability, Social Isolation/Alienation, Enmeshment/Undeveloped Self and Insufficient Self-Control/Self-Discipline and slightly improved  $R^2$  in the prediction of histrionic PD features,  $\Delta R^2 = .01, \Delta F(1, 247) = 7.41, p = .007$ .

Lastly, at step three, the addition of the histrionic PD dysfunctional beliefs scale significantly accounted for an incremental 3.1% of unique variance in histrionic PD features,  $\Delta F(1, 246) = 25.44, p < .001$ . Overall, the final model significantly explained 69.8% (67.1% adjusted) of the variance in histrionic PD features,  $R^2 = .70, F(22, 246) = 25.86, p < .001$ . This model revealed that the most salient predictors of histrionic PD features were Exhibitionism ( $\beta = .38, t = 7.27, p < .001$ ), the histrionic PD beliefs scale ( $\beta = .26, t = 5.04, p < .001$ ), Mistrust/Abuse ( $\beta = .17, t = 2.67, p = .008$ ), Eccentric Perceptions ( $\beta = .12, t = 2.69, p = .008$ ),

Enmeshment/Undeveloped Self ( $\beta = .11, t = 2.36, p = .019$ ) and Dependency ( $\beta = .11, t = 2.29, p = .023$ ); whilst Entitlement/Grandiosity approached significance ( $\beta = .10, t = 1.96, p = .051$ ). Furthermore, Negative Temperament ( $\beta = -.14, t = -2.51, p = .013$ ) and Mistrust ( $\beta = -.13, t = -2.16, p = .032$ ) initially also appeared to be significant predictors of histrionic PD features. Yet, inspection of the difference between the sign and size of their beta values and zero-order correlation coefficients ( $r_s = .24$  and  $.31, p_s < .001$ , respectively) indicated that these SNAP traits were negative suppressor variables rather than unique predictors of histrionic PD features. A follow-up hierarchical regression analysis with the SNAP traits, EMSs and histrionic PD beliefs scale entered as predictors of histrionic PD features at step one and Negative Temperament and Mistrust entered as predictors at step two revealed that these traits increased the beta weights of Eccentric Perceptions, Dependency, Exhibitionism, Impulsivity, Abandonment/Instability, Mistrust/Abuse, Social Isolation/Alienation, Defectiveness/Shame, Enmeshment/Undeveloped Self and Insufficient Self-Control/Self-Discipline and slightly improved  $R^2$  in the prediction of histrionic PD symptomatology,  $\Delta R^2 = .02, \Delta F(2, 246) = 7.69, p = .001$ .

Whereas Entitlement was a significant predictor of histrionic PD features at steps one and two, it was no longer a significant predictor at step three when the histrionic PD dysfunctional beliefs scale was entered into the analysis. Likewise, whilst the EMSs of Entitlement/Grandiosity and Approval/Recognition-Seeking were significant predictors at step two, they were no longer significant predictors at step three. This suggests that histrionic PD beliefs may influence the relationships between these variables and histrionic PD symptomatology.

**3.3.6.5 Predictors of narcissistic PD features.** In order to examine whether dysfunctional schemas could incrementally add to the prediction of narcissistic PD features over and above SNAP traits and to determine the most salient predictors of narcissistic PD features, a hierarchical multiple regression analysis was performed with the selected SNAP traits, EMSs and the narcissistic PD dysfunctional beliefs scale entered as predictor variables in successive blocks. The summary statistics of this analysis are presented in Table 3.17.

Table 3.17

*Hierarchical Regression Results Predicting Narcissistic PD Features*

Predictor	<i>B</i>	<i>SE B</i>	$\beta$	Partial <i>r</i>	Part <i>r</i>	$\Delta R^2$
Step 1						.51***
(Constant)	-2.14	0.29				
Negative Temperament	0.00	0.00	.08	.08	.05	
Mistrust	0.00	0.00	.16*	.16	.11	
Manipulativeness	0.26	0.16	.13	.10	.07	
Aggression	0.17	0.13	.08	.08	.06	
Self-Harm	0.00	0.00	-.01	-.01	-.01	
Eccentric Perceptions	0.00	0.00	.12*	.14	.10	
Exhibitionism	0.00	0.00	.13	.12	.08	
Entitlement	0.00	0.00	.26***	.27	.20	
Detachment	0.59	0.13	.25***	.27	.19	
Disinhibition	0.00	0.00	-.02	-.02	-.01	
Propriety	0.00	0.00	.16**	.18	.13	
Step 2						.18***
(Constant)	-1.20	0.27				
Negative Temperament	0.00	0.00	-.01	-.01	.00	
Mistrust	0.00	0.00	.01	.01	.01	
Manipulativeness	0.14	0.14	.07	.07	.04	
Aggression	0.10	0.11	.05	.06	.03	
Self-Harm	0.00	0.00	-.06	-.07	-.04	
Eccentric Perceptions	0.00	0.00	.10*	.14	.08	
Exhibitionism	0.00	0.00	.09	.10	.05	
Entitlement	0.00	0.00	.14**	.18	.10	
Detachment	0.32	0.12	.13*	.16	.09	
Disinhibition	0.00	0.00	-.04	-.03	-.02	
Propriety	0.00	0.00	.11*	.14	.08	
Emotional Deprivation	0.01	0.01	.07	.09	.05	
Mistrust/Abuse	0.25	0.06	.25***	.24	.14	
Social Isolation/Alienation	-0.07	0.06	-.07	-.07	-.04	
Defectiveness/Shame	0.02	0.01	.08	.08	.05	
Failure	-0.04	0.05	-.04	-.05	-.03	
Subjugation	0.01	0.01	.04	.05	.03	
Unrelenting Standards	-0.01	0.01	-.06	-.07	-.04	
Entitlement/Grandiosity	0.06	0.01	.25***	.28	.16	
Insufficient Self-Control	0.00	0.01	-.02	-.03	-.02	
Approval/Recog.-Seeking	0.05	0.01	.23***	.27	.16	
Punitiveness	0.00	0.01	.01	.02	.01	
Step 3						.04***
(Constant)	-1.04	0.26				
Negative Temperament	0.00	0.00	-.03	-.04	-.02	
Mistrust	0.00	0.00	.01	.01	.00	
Manipulativeness	0.13	0.13	.07	.07	.04	
Aggression	0.07	0.11	.03	.04	.02	
Self-Harm	0.00	0.00	.00	.00	.00	

Eccentric Perceptions	0.00	0.00	.10*	.16	.08
Exhibitionism	0.00	0.00	.08	.10	.05
Entitlement	0.00	0.00	-.02	-.02	-.01
Detachment	0.29	0.12	.12*	.16	.08
Disinhibition	0.00	0.00	-.06	-.06	-.03
Propriety	0.00	0.00	.12**	.17	.09
Emotional Deprivation	0.01	0.01	.04	.06	.03
Mistrust/Abuse	0.20	0.06	.20***	.21	.11
Social Isolation/Alienation	-0.08	0.06	-.08	-.09	-.05
Defectiveness/Shame	0.01	0.01	.07	.07	.04
Failure	-0.06	0.05	-.06	-.08	-.04
Subjugation	0.01	0.01	.05	.07	.04
Unrelenting Standards	-0.01	0.01	-.05	-.07	-.03
Entitlement/Grandiosity	0.05	0.01	.20***	.24	.13
Insufficient Self-Control	0.00	0.01	.00	.00	.00
Approval/Recog.-Seeking	0.03	0.07	.17***	.22	.11
Punitiveness	0.00	0.01	.01	.02	.01
Narcissistic PD beliefs	0.05	0.01	.33***	.36	.20

Note. Some values for  $B$  and  $SE B$  appear low due to rounding.

\* $p \leq .05$ . \*\* $p \leq .01$ . \*\*\* $p \leq .001$ .

As shown in Table 3.17, at step one, the SNAP personality traits significantly explained 51.3% of the variance in narcissistic PD features,  $F(11, 257) = 24.57, p < .001$ . In this model, Entitlement ( $\beta = .26, t = 4.49, p < .001$ ), Detachment ( $\beta = .25, t = 4.42, p < .001$ ), Propriety ( $\beta = .16, t = 2.93, p = .004$ ), Mistrust ( $\beta = .16, t = 2.53, p = .012$ ) and Eccentric Perceptions ( $\beta = .12, t = 2.31, p = .022$ ) were significant predictors of narcissistic PD features; while Exhibitionism approached significance ( $\beta = .13, t = 1.93, p = .054$ ).

After controlling for the personality traits at step two, the EMSs significantly explained an incremental 18.1% of unique variance in narcissistic PD features,  $\Delta F(11, 246) = 13.18, p < .001$ , and the regression model was statistically significant,  $R^2 = .69$  (adjusted  $R^2 = .67$ ),  $F(22, 246) = 25.28, p < .001$ . In this second model, Entitlement/Grandiosity ( $\beta = .25, t = 4.63, p < .001$ ), Mistrust/Abuse ( $\beta = .25, t = 3.90, p < .001$ ), Approval/Recognition-Seeking ( $\beta = .23, t = 4.46, p < .001$ ), Entitlement ( $\beta = .14, t = 2.79, p = .006$ ), Detachment ( $\beta = .13, t = 2.56, p = .011$ ), Propriety ( $\beta = .11, t = 2.27, p = .024$ ) and Eccentric Perceptions ( $\beta = .10, t = 2.14, p = .033$ ) were significant predictors of narcissistic PD features.

Lastly, at step three, the addition of the narcissistic PD dysfunctional beliefs scale significantly accounted for a further 3.9% of unique variance in narcissistic PD

features,  $\Delta F(1, 245) = 35.47, p < .001$ . Overall, the final model significantly explained 73.2% (70.7% adjusted) of the variance in narcissistic PD features,  $R^2 = .73, F(23, 245) = 29.11, p < .001$ . This final model revealed that the most salient predictors of narcissistic PD features were the narcissistic PD beliefs scale ( $\beta = .33, t = 5.96, p < .001$ ), Entitlement/Grandiosity ( $\beta = .20, t = 3.82, p < .001$ ), Mistrust/Abuse ( $\beta = .20, t = 3.38, p = .001$ ), Approval/Recognition-Seeking ( $\beta = .17, t = 3.44, p = .001$ ), Propriety ( $\beta = .12, t = 2.67, p = .008$ ), Detachment ( $\beta = .12, t = 2.47, p = .014$ ) and Eccentric Perceptions ( $\beta = .10, t = 2.46, p = .015$ ).

While Mistrust was a significant predictor of narcissistic PD features at step one, it was no longer a significant predictor at step two when the EMSs were entered into the analysis. Further, whilst Entitlement was a significant predictor of narcissistic PD features at steps one and two, it was no longer a significant predictor at step three when the dysfunctional beliefs scale associated with narcissistic PD was entered into the analysis. This pattern of results suggests that Mistrust may indirectly influence narcissistic PD symptomology through relationships with EMSs, whereas Entitlement may indirectly influence narcissistic PD symptomology through a relationship with narcissistic PD dysfunctional beliefs.

**3.3.6.6 Predictors of antisocial PD features.** In order to examine whether dysfunctional schemas could incrementally add to the prediction of antisocial PD features over and above subsets of SNAP traits and to determine the most salient predictors of antisocial PD features, a hierarchical multiple regression analysis was performed with selected SNAP traits, EMSs and the antisocial PD dysfunctional beliefs scale entered as predictor variables in successive blocks. The summary statistics of this analysis are presented in Table 3.18.

Table 3.18

*Hierarchical Regression Results Predicting Antisocial PD Features*

Predictor	<i>B</i>	<i>SE B</i>	$\beta$	Partial <i>r</i>	Part <i>r</i>	$\Delta R^2$
Step 1						.50***
(Constant)	-6.53	1.53				
Negative Temperament	-0.01	0.01	-.12*	-.13	-.09	
Mistrust	0.01	0.01	.09	.09	.06	
Manipulativeness	-0.52	0.81	-.05	-.04	-.03	
Aggression	2.49	0.64	.24***	.24	.17	
Self-Harm	0.01	0.00	.14*	.14	.10	
Eccentric Perceptions	0.01	0.01	.12*	.14	.10	
Exhibitionism	0.00	0.01	.01	.01	.01	
Entitlement	0.02	0.01	.22***	.24	.17	
Detachment	0.93	0.67	.08	.09	.06	
Disinhibition	0.04	0.01	.48***	.25	.18	
Impulsivity	-0.02	0.01	-.18*	-.13	-.09	
Step 2						.08***
(Constant)	-4.16	1.58				
Negative Temperament	-0.02	0.01	-.17**	-.17	-.12	
Mistrust	0.00	0.01	-.04	-.04	-.03	
Manipulativeness	-0.42	0.79	-.04	-.03	-.02	
Aggression	2.07	0.63	.20***	.20	.14	
Self-Harm	0.01	0.00	.07	.07	.05	
Eccentric Perceptions	0.01	0.00	.08	.10	.06	
Exhibitionism	0.01	0.01	.06	.06	.04	
Entitlement	0.02	0.01	.20***	.22	.15	
Detachment	0.05	0.71	.00	.00	.00	
Disinhibition	0.04	0.01	.51***	.28	.19	
Impulsivity	-0.02	0.01	-.21*	-.16	-.10	
Emotional Deprivation	0.15	0.05	.15**	.17	.11	
Mistrust/Abuse	0.98	0.35	.20**	.18	.12	
Social Isolation/Alienation	-0.29	0.36	-.06	-.05	-.03	
Defectiveness/Shame	0.12	0.07	.12	.11	.07	
Dependence/Incompetence	0.73	0.30	.13*	.15	.10	
Entitlement/Grandiosity	0.09	0.07	.08	.08	.05	
Approval/Recog.-Seeking	-0.13	0.06	-.14*	-.15	-.10	
Step 3						.04***
(Constant)	-3.50	1.52				
Negative Temperament	-0.02	0.01	-.16**	-.17	-.11	
Mistrust	-0.01	0.01	-.06	-.06	-.04	
Manipulativeness	-0.60	0.76	-.06	-.05	-.03	
Aggression	1.82	0.60	.17**	.19	.12	
Self-Harm	0.01	0.00	.09	.09	.06	
Eccentric Perceptions	0.01	0.00	.09	.12	.07	
Exhibitionism	0.00	0.01	.05	.05	.03	
Entitlement	0.01	0.00	.16**	.19	.12	
Detachment	-0.03	0.68	.00	.00	.00	

Disinhibition	0.04	0.01	.45***	.26	.17
Impulsivity	-0.01	0.01	-.16*	-.13	-.08
Emotional Deprivation	0.12	0.05	.13*	.15	.09
Mistrust/Abuse	0.63	0.34	.13	.12	.07
Social Isolation/Alienation	-0.07	0.35	-.01	-.01	-.01
Defectiveness/Shame	0.09	0.07	.09	.09	.05
Dependence/Incompetence	0.56	0.29	.10	.12	.08
Entitlement/Grandiosity	0.03	0.07	.02	.02	.01
Approval/Recog.-Seeking	-0.14	0.05	-.15**	-.17	-.10
Antisocial PD beliefs	0.23	0.05	.27***	.29	.19

Note. Some values for  $B$  and  $SE B$  appear low due to rounding.

\* $p \leq .05$ . \*\* $p \leq .01$ . \*\*\* $p \leq .001$ .

Table 3.18 shows that at step one the SNAP personality traits significantly explained 49.% of the variance in antisocial PD features,  $F(11, 257) = 23.20, p < .001$ . In this model, Disinhibition ( $\beta = .48, t = 4.09, p < .001$ ), Aggression ( $\beta = .24, t = 3.88, p < .001$ ), Entitlement ( $\beta = .22, t = 3.90, p < .001$ ), Self-Harm ( $\beta = .14, t = 2.24, p = .026$ ) and Eccentric Perceptions ( $\beta = .12, t = 2.19, p = .029$ ) were significant predictors of antisocial PD features. Initially, Impulsivity ( $\beta = -.18, t = -2.09, p = .037$ ) and Negative Temperament ( $\beta = -.12, t = -2.01, p = .045$ ) also appeared to be significant predictors of antisocial PD features. Yet, inspection of the difference between the sign and size of their beta values and zero-order correlation coefficients ( $r_s = .36$  and  $.27, p_s < .001$ , respectively) indicated that these SNAP traits were negative suppressor variables rather than unique predictors of antisocial PD symptomatology. A follow-up hierarchical regression analysis with the other SNAP traits entered as predictors of antisocial PD features at step one and Negative Temperament and Impulsivity entered as predictors at step two revealed that these two traits increased the beta weights of Mistrust, Aggression, Self-Harm, Eccentric Perceptions and Disinhibition and consequently improved  $R^2$  in the prediction of antisocial PD features,  $\Delta R^2 = .02, \Delta F(2, 257) = 4.11, p = .018$ .

After controlling for the SNAP traits at step two, the EMSs incrementally explained 8% of unique variance in antisocial PD features,  $\Delta F(7, 250) = 6.80, p < .001$ , and the regression model was statistically significant,  $R^2 = .58$  (adjusted  $R^2 = .55$ ),  $F(18, 250) = 19.06, p < .001$ . In this second model, Disinhibition ( $\beta = .51, t = 4.54, p < .001$ ), Entitlement ( $\beta = .20, t = 3.60, p < .001$ ), Aggression ( $\beta = .20, t = 3.30, p = .001$ ), Mistrust/Abuse ( $\beta = .20, t = 2.84, p = .005$ ), Emotional Deprivation ( $\beta = .15, t = 2.68, p = .008$ ) and Dependence/Incompetence ( $\beta = .13, t = 2.42, p =$



.016) were significant predictors of antisocial PD features. Although Impulsivity ( $\beta = -.21, t = -2.51, p = .013$ ), Negative Temperament ( $\beta = -.17, t = -2.72, p = .007$ ), and Approval/Recognition-Seeking ( $\beta = -.14, t = -2.36, p = .019$ ) initially appeared to also be significant predictors of antisocial PD features, inspection of the difference between the sign and size of their beta values and zero-order correlation coefficients ( $r_s = .36, .27$  and  $.30, p_s < .001$ , respectively) indicated that these variables were negative suppressor variables rather than unique predictors of antisocial PD symptomatology. A follow-up hierarchical regression analysis with the other SNAP traits and EMSs entered as predictors of antisocial PD features at step one and Impulsivity, Negative Temperament and Approval/Recognition-Seeking entered as predictors at step two revealed that these suppressor variables increased the beta weights of Aggression, Self-Harm, Exhibitionism, Disinhibition, Mistrust/Abuse, Defectiveness/Shame, Dependence/Incompetence and Entitlement/Grandiosity and therefore improved  $R^2$  in the prediction of antisocial PD symptoms,  $\Delta R^2 = .03, \Delta F(3, 250) = 6.11, p = .001$ .

Lastly, the addition of the antisocial PD dysfunctional beliefs scale at step three significantly accounted for a further 3.5% of unique variance in antisocial PD features,  $\Delta F(1, 249) = 22.50, p < .001$ . Overall, the final model significantly explained 61.3% (58.4% adjusted) of the variance in antisocial PD features,  $R^2 = .61, F(19, 249) = 20.80, p < .001$ . This model revealed that Disinhibition ( $\beta = .45, t = 4.19, p < .001$ ), the antisocial PD beliefs scale ( $\beta = .27, t = 4.74, p < .001$ ), Aggression ( $\beta = .17, t = 3.02, p = .003$ ), Entitlement ( $\beta = .16, t = 3.03, p = .003$ ), Emotional Deprivation ( $\beta = .13, t = 2.36, p = .019$ ) were the most salient predictors of antisocial PD features; whereas Dependence/Incompetence approached significance ( $\beta = .10, t = 1.93, p = .055$ ).

As with step two, Negative Temperament ( $\beta = -.16, t = -2.75, p = .006$ ), Impulsivity ( $\beta = -.16, t = -2.04, p = .043$ ) and Approval/Recognition-Seeking ( $\beta = -.15, t = -2.64, p = .009$ ) initially appeared to also be significant predictors of antisocial PD features; however, inspection of the difference between the sign and size of their beta values and zero-order correlation coefficients indicated that these variables were negative suppressor variables, rather than unique predictors of antisocial PD. A follow-up hierarchical regression analysis with the other SNAP traits, EMSs and the antisocial PD beliefs scale entered as predictors at step one and Negative Temperament, Impulsivity and Approval/Recognition-Seeking entered as

predictors at step two revealed that these suppressor variables increased the beta weights of Aggression, Self-Harm, Exhibitionism, Disinhibition, Mistrust/Abuse, Defectiveness/Shame, Dependence/Incompetence and Entitlement/Grandiosity and consequently improved  $R^2$  in the prediction of antisocial PD symptoms,  $\Delta R^2 = .03$ ,  $\Delta F(3, 249) = 6.01, p = .001$ .

Interestingly, whilst the SNAP traits of Self-Harm and Eccentric Perceptions were significant predictors of antisocial PD features at step one, they were no longer significant predictors at step two when the EMSs were entered into the analysis. Similarly, whilst the EMSs of Mistrust/Abuse and Dependence/Incompetence were significant predictors of antisocial PD features at step two, they were no longer significant predictors at step three when the antisocial PD beliefs scale was included in the analysis. This pattern of results suggests that the SNAP maladaptive personality traits of Self-Harm and Eccentric Perceptions may indirectly influence antisocial PD symptoms through relationships with EMSs, whereas the EMSs of Mistrust/Abuse and Dependence/Incompetence may indirectly influence antisocial PD through relationships with the dysfunctional beliefs specific to antisocial PD.

**3.3.6.7 Predictors of borderline PD features.** In order to examine whether dysfunctional schemas could incrementally add to the prediction of borderline PD features over and above SNAP traits and to determine the most salient predictors of borderline PD features, a hierarchical multiple regression analysis was performed with selected SNAP traits, EMSs and the borderline PD dysfunctional beliefs subscale entered as predictor variables in successive blocks. The summary statistics of this analysis are presented in Table 3.19.

Table 3.19

*Hierarchical Regression Results Predicting Borderline PD Features*

Predictor	<i>B</i>	<i>SE B</i>	$\beta$	Partial <i>r</i>	Part <i>r</i>	$\Delta R^2$
Step 1						.56***
(Constant)	-1.16	0.33				
Negative Temperament	0.01	0.00	.37***	.35	.24	
Mistrust	0.00	0.00	.10	.10	.07	
Manipulativeness	-0.14	0.16	-.07	-.06	-.04	
Aggression	-0.01	0.13	-.01	-.01	.00	
Self-Harm	0.00	0.00	.12	.12	.08	
Eccentric Perceptions	0.00	0.00	.16**	.19	.13	
Dependency	0.00	0.00	.07	.08	.05	
Positive Temperament	0.00	0.00	.07	.07	.05	
Detachment	0.42	0.13	.17**	.20	.13	
Disinhibition	0.00	0.00	.12	.07	.05	
Impulsivity	0.00	0.00	.12	.09	.06	
Step 2						.13***
(Constant)	-0.24	0.33				
Negative Temperament	0.00	0.00	.22***	.23	.13	
Mistrust	0.00	0.00	.02	.02	.01	
Manipulativeness	-0.36	0.15	-.17*	-.15	-.09	
Aggression	-0.03	0.12	-.01	-.02	-.01	
Self-Harm	0.00	0.00	.06	.06	.04	
Eccentric Perceptions	0.00	0.00	.12*	.16	.09	
Dependency	0.00	0.00	.00	.00	.00	
Positive Temperament	0.00	0.00	.06	.08	.04	
Detachment	0.13	0.14	.05	.06	.03	
Disinhibition	0.00	0.00	.21*	.13	.07	
Impulsivity	0.00	0.00	.05	.04	.02	
Emotional Deprivation	0.00	0.01	-.02	-.02	-.01	
Abandonment/Instability	0.13	0.06	.13*	.14	.08	
Mistrust/Abuse	0.06	0.07	.05	.05	.03	
Social Isolation/Alienation	0.09	0.07	.08	.08	.05	
Defectiveness/Shame	0.03	0.01	.14*	.14	.08	
Dependence/Incompetence	0.04	0.06	.03	.04	.02	
Enmeshment	0.01	0.05	.01	.01	.01	
Emotional Inhibition	0.01	0.01	.02	.03	.02	
Entitlement/Grandiosity	0.03	0.01	.12*	.14	.08	
Insufficient Self-Control	0.02	0.01	.10	.12	.07	
Approval/Recog.-Seeking	0.02	0.01	.09	.10	.06	
Step 3						.01***
(Constant)	-0.18	0.32				
Negative Temperament	0.00	0.00	.22***	.23	.13	
Mistrust	0.00	0.00	-.02	-.02	-.01	
Manipulativeness	-0.37	0.14	-.17**	-.16	-.09	
Aggression	-0.01	0.12	-.01	-.01	.00	
Self-Harm	0.00	0.00	.06	.07	.04	

Eccentric Perceptions	0.00	0.00	.10*	.14	.08
Dependency	0.00	0.00	-.03	-.04	-.02
Positive Temperament	0.00	0.00	.06	.08	.05
Detachment	0.13	0.14	.05	.06	.03
Disinhibition	0.00	0.00	.20*	.13	.07
Impulsivity	0.00	0.00	.04	.04	.02
Emotional Deprivation	-0.01	0.01	-.02	-.03	-.02
Abandonment/Instability	0.13	0.06	.12*	.14	.08
Mistrust/Abuse	-0.01	0.07	-.01	-.01	.00
Social Isolation/Alienation	0.08	0.07	.07	.07	.04
Defectiveness/Shame	0.03	0.01	.12*	.13	.07
Dependence/Incompetence	0.01	0.06	.01	.01	.01
Enmeshment	0.01	0.05	.01	.02	.01
Emotional Inhibition	0.00	0.01	.01	.01	.00
Entitlement/Grandiosity	0.03	0.01	.11*	.14	.08
Insufficient Self-Control	0.02	0.01	.10	.12	.07
Approval/Recog.-Seeking	0.02	0.01	.07	.09	.05
Borderline PD beliefs	0.03	0.01	.21***	.20	.11

Note. Some values for  $B$  and  $SE B$  appear low due to rounding.

\* $p \leq .05$ . \*\* $p \leq .01$ . \*\*\* $p \leq .001$ .

As shown in Table 3.19, at step one, the SNAP traits significantly explained 56.1% of the variance in borderline PD features,  $F(11, 257) = 29.81, p < .001$ . In this model, Negative Temperament ( $\beta = .37, t = 5.89, p < .001$ ), Detachment ( $\beta = .17, t = 3.19, p = .002$ ) and Eccentric Perceptions ( $\beta = .16, t = 3.06, p = .002$ ) were significant predictors of borderline PD features, while Self-Harm approached significance ( $\beta = .12, t = 1.95, p = .052$ ).

After controlling for the personality traits at step two, the EMSs significantly explained an additional 12.7% of unique variance in borderline PD features,  $\Delta F(11, 246) = 9.12, p < .001$ , and the regression model was statistically significant,  $R^2 = .69$  (adjusted  $R^2 = .66$ ),  $F(22, 246) = 24.65, p < .001$ . In this second model, Negative Temperament ( $\beta = .22, t = 3.74, p < .001$ ), Disinhibition ( $\beta = .21, t = 2.09, p = .038$ ), Defectiveness/Shame ( $\beta = .14, t = 2.20, p = .029$ ), Abandonment/Instability ( $\beta = .13, t = 2.26, p = .025$ ), Eccentric Perceptions ( $\beta = .12, t = 2.49, p = .013$ ) and Entitlement/Grandiosity ( $\beta = .12, t = 2.27, p = .024$ ) were significant predictors of borderline PD features. Initially, Manipulativeness also appeared to be a significant predictor of borderline PD features ( $\beta = -.17, t = -2.44, p = .015$ ), but inspection of the difference between the sign and size of its beta value and zero-order correlation coefficient ( $r = .43, p < .001$ ) suggested that Manipulativeness was a negative

suppressor variable rather than a unique predictor of borderline PD features. A follow-up hierarchical regression analysis with the other SNAP traits and EMSs entered as predictors at step one and Manipulativeness entered as a predictor at step two revealed that Manipulativeness increased the beta weights of Negative Temperament, Mistrust, Eccentric Perceptions, Detachment, Disinhibition, Defectiveness/Shame, Entitlement/Grandiosity and Insufficient Self-Control/Self-Discipline and consequently improved  $R^2$  in the prediction of borderline PD symptoms,  $\Delta R^2 = .01$ ,  $\Delta F(1, 247) = 6.05$ ,  $p = .015$ .

Lastly, at step three, the addition of the borderline PD dysfunctional beliefs subscale significantly accounted for a further 1.3% of unique variance in borderline PD features,  $\Delta F(1, 245) = 10.56$ ,  $p = .001$ . Overall, this final model significantly explained 70.1% (67.3% adjusted) of the variance in borderline PD features,  $R^2 = .70$ ,  $F(23, 245) = 24.95$ ,  $p < .001$ . The most salient predictors of borderline PD features in the final model were Negative Temperament ( $\beta = .22$ ,  $t = 3.75$ ,  $p < .001$ ), the borderline PD beliefs subscale ( $\beta = .21$ ,  $t = 3.25$ ,  $p = .001$ ), Disinhibition ( $\beta = .20$ ,  $t = 2.09$ ,  $p = .037$ ), Abandonment/Instability ( $\beta = .12$ ,  $t = 2.20$ ,  $p = .029$ ), Defectiveness/Shame ( $\beta = .12$ ,  $t = 1.98$ ,  $p = .049$ ), Entitlement/Grandiosity ( $\beta = .11$ ,  $t = 2.17$ ,  $p = .031$ ) and Eccentric Perceptions ( $\beta = .10$ ,  $t = 2.18$ ,  $p = .030$ ). As with step two, Manipulativeness initially appeared to be a significant predictor of borderline PD features ( $\beta = -.17$ ,  $t = -2.59$ ,  $p = .010$ ), yet was again identified as a negative suppressor variable rather than as a unique predictor. A follow-up hierarchical regression analysis with the SNAP traits, EMSs and the borderline PD beliefs subscale entered as predictors of borderline PD features at step one and Manipulativeness entered as a predictor at step two revealed that Manipulativeness increased the beta weights of Negative Temperament, Eccentric Perceptions, Detachment, Disinhibition, Social Isolation/Alienation, Defectiveness/Shame, Entitlement/Grandiosity, Insufficient Self-Control/Self-Discipline and the borderline PD beliefs subscale and consequently increased  $R^2$  in the prediction of borderline PD features,  $\Delta R^2 = .01$ ,  $\Delta F(1, 246) = 6.81$ ,  $p = .010$ .

Whilst Detachment was a significant predictor of borderline PD features at step one, it was no longer a significant predictor at steps two and three when the dysfunctional schemas were entered into the analysis. In contrast, Disinhibition was not a significant predictor of borderline PD features at step one but became a significant predictor at steps two and three. This pattern of results suggests that the

relationships that the SNAP maladaptive traits of Detachment and Disinhibition have with borderline PD features may be influenced by dysfunctional schemas.

**3.3.6.8 Predictors of avoidant PD features.** In order to examine whether dysfunctional schemas could incrementally add to the prediction of avoidant PD features over and above subsets of SNAP traits and to determine the most salient predictors of avoidant PD features, a hierarchical multiple regression analysis was performed with selected SNAP traits, EMSs and the avoidant PD dysfunctional beliefs scale entered as predictor variables in successive blocks. Table 3.20 contains the summary statistics of this analysis.

Table 3.20

*Hierarchical Regression Results Predicting Avoidant PD Features*

Predictor	<i>B</i>	<i>SE B</i>	$\beta$	Partial <i>r</i>	Part <i>r</i>	$\Delta R^2$
Step 1						.57***
(Constant)	-1.60	0.34				
Negative Temperament	0.01	0.00	.33***	.32	.22	
Mistrust	0.00	0.00	.13*	.13	.09	
Manipulativeness	-0.12	0.14	-.05	-.05	-.03	
Aggression	-0.11	0.14	-.05	-.05	-.03	
Self-Harm	0.00	0.00	.01	.02	.01	
Eccentric Perceptions	0.00	0.00	.00	.01	.00	
Dependency	0.00	0.00	.23***	.28	.19	
Positive Temperament	0.00	0.00	-.01	-.01	-.01	
Exhibitionism	0.00	0.00	-.09	-.10	-.06	
Detachment	1.07	0.15	.38***	.40	.28	
Step 2						.20***
(Constant)	-0.61	0.28				
Negative Temperament	0.00	0.00	.16**	.20	.10	
Mistrust	0.00	0.00	.02	.02	.01	
Manipulativeness	-0.15	0.11	-.06	-.09	-.04	
Aggression	0.05	0.12	.02	.03	.01	
Self-Harm	0.00	0.00	-.08	-.10	-.05	
Eccentric Perceptions	0.00	0.00	-.04	-.07	-.03	
Dependency	0.00	0.00	.11**	.16	.08	
Positive Temperament	0.00	0.00	-.03	-.05	-.02	
Exhibitionism	0.00	0.00	-.10*	-.14	-.07	
Detachment	0.45	0.14	.16**	.20	.10	
Emotional Deprivation	-0.01	0.01	-.05	-.08	-.04	
Abandonment/Instability	0.04	0.06	.04	.05	.02	
Mistrust/Abuse	0.05	0.07	.04	.05	.02	
Social Isolation/Alienation	0.27	0.07	.23***	.26	.13	
Defectiveness/Shame	0.02	0.01	.09	.10	.05	

Failure	0.10	0.05	.08	.12	.06	
Subjugation	0.02	0.01	.08	.10	.05	
Emotional Inhibition	0.04	0.01	.16***	.22	.10	
Approval/Recog.-Seeking	0.04	0.01	.18***	.26	.13	
Negativity/Pessimism	0.01	0.01	.03	.04	.02	
Step 3						.01***
(Constant)	-0.47	0.28				
Negative Temperament	0.00	0.00	.16***	.21	.10	
Mistrust	0.00	0.00	.02	.02	.01	
Manipulativeness	-0.20	0.10	-.08	-.12	-.06	
Aggression	0.02	0.11	.01	.01	.01	
Self-Harm	0.00	0.00	-.08	-.10	-.05	
Eccentric Perceptions	0.00	0.00	-.05	-.09	-.04	
Dependency	0.00	0.00	.08	.12	.06	
Positive Temperament	0.00	0.00	-.02	-.03	-.01	
Exhibitionism	0.00	0.00	-.09*	-.13	-.06	
Detachment	0.44	0.14	.16***	.20	.10	
Emotional Deprivation	-0.01	0.01	-.05	-.07	-.04	
Abandonment/Instability	0.04	0.06	.03	.04	.02	
Mistrust/Abuse	0.03	0.07	.03	.03	.01	
Social Isolation/Alienation	0.25	0.06	.21***	.24	.12	
Defectiveness/Shame	0.02	0.01	.07	.09	.04	
Failure	0.07	0.05	.06	.09	.04	
Subjugation	0.02	0.01	.08	.10	.05	
Emotional Inhibition	0.04	0.01	.14**	.19	.09	
Approval/Recog.-Seeking	0.04	0.01	.16***	.24	.12	
Negativity/Pessimism	0.01	0.01	.04	.04	.02	
Avoidant PD beliefs	0.00	0.00	.16***	.21	.10	

Note. Some values for  $B$  and  $SE B$  appear low due to rounding.

\* $p \leq .05$ . \*\* $p \leq .01$ . \*\*\* $p \leq .001$ .

As shown in Table 3.20, at step one, the SNAP maladaptive personality traits significantly explained 57% of the variance in avoidant PD features,  $F(10, 258) = 34.22$ ,  $p < .001$ . In this model, Detachment ( $\beta = .38$ ,  $t = 6.95$ ,  $p < .001$ ), Negative Temperament ( $\beta = .33$ ,  $t = 5.43$ ,  $p < .001$ ), Dependency ( $\beta = .23$ ,  $t = 4.71$ ,  $p < .001$ ) and Mistrust ( $\beta = .13$ ,  $t = 2.08$ ,  $p = .039$ ) were significant predictors of avoidant PD features.

After controlling for the personality traits at step two, the EMSs significantly explained a further 19.7% of unique variance in avoidant PD features,  $\Delta F(10, 248) = 20.94$ ,  $p < .001$ , and the regression model was statistically significant,  $R^2 = .77$  (adjusted  $R^2 = .75$ ),  $F(20, 248) = 40.81$ ,  $p < .001$ . In this second model, Social Isolation/Alienation ( $\beta = .23$ ,  $t = 4.24$ ,  $p < .001$ ), Approval/Recognition-Seeking ( $\beta =$

.18,  $t = 4.20$ ,  $p < .001$ ), Emotional Inhibition ( $\beta = .16$ ,  $t = 3.47$ ,  $p = .001$ ), Detachment ( $\beta = .16$ ,  $t = 3.20$ ,  $p = .002$ ), Negative Temperament ( $\beta = .16$ ,  $t = 3.15$ ,  $p = .002$ ), Dependency ( $\beta = .11$ ,  $t = 2.58$ ,  $p = .010$ ) and Exhibitionism ( $\beta = -.10$ ,  $t = -2.18$ ,  $p = .030$ ) were significant predictors of avoidant PD features.

Lastly, at step three, the addition of the avoidant PD dysfunctional beliefs scale significantly accounted for a further 1% of the variance in avoidant PD features,  $\Delta F(1, 247) = 11.49$ ,  $p = .001$ . Overall, this final model significantly explained 77.7% (75.8% adjusted) of the variance in avoidant PD features,  $R^2 = .78$ ,  $F(21, 247) = 41.06$ ,  $p < .001$ . The model revealed that the most salient predictors of avoidant PD features were Social Isolation/Alienation ( $\beta = .21$ ,  $t = 3.95$ ,  $p < .001$ ), Approval/Recognition-Seeking ( $\beta = .16$ ,  $t = 3.82$ ,  $p < .001$ ), the avoidant PD dysfunctional beliefs scale ( $\beta = .16$ ,  $t = 3.39$ ,  $p = .001$ ), Negative Temperament ( $\beta = .16$ ,  $t = 3.30$ ,  $p = .001$ ), Detachment ( $\beta = .16$ ,  $t = 3.24$ ,  $p = .001$ ), Emotional Inhibition ( $\beta = .14$ ,  $t = 3.05$ ,  $p = .003$ ) and Exhibitionism ( $\beta = -.09$ ,  $t = -2.01$ ,  $p = .046$ ).

Whereas Mistrust was a significant predictor of avoidant PD features at step one, it was no longer significant at step two when the EMSs were entered into the analysis. Conversely, Exhibitionism was not a significant predictor of avoidant PD features at step one, but became a significant negative predictor at steps two and three. Furthermore, whilst Dependency was a significant predictor of avoidant PD features at steps one and two, it was no longer a significant predictor at step three when the avoidant PD dysfunctional beliefs scale was entered into the analysis. This pattern of results suggests that the SNAP traits of Mistrust and Exhibitionism may indirectly influence avoidant PD symptomology through relationships with EMSs, whereas Dependency may indirectly influence avoidant PD symptoms through a relationship with the set of dysfunctional beliefs central to avoidant PD.

**3.3.6.9 Predictors of dependent PD features.** In order to examine whether dysfunctional schemas could incrementally add to the prediction of dependent PD features over and above subsets of SNAP traits and to determine the most salient predictors of dependent PD features, a hierarchical multiple regression analysis was performed with selected SNAP traits, EMSs and the PBQ dependent PD dysfunctional beliefs scale entered as predictor variables in successive blocks. The summary statistics of this analysis are presented in Table 3.21.



Table 3.21

*Hierarchical Regression Results Predicting Dependent PD Features*

Predictor	<i>B</i>	<i>SE B</i>	$\beta$	Partial <i>r</i>	Part <i>r</i>	$\Delta R^2$
Step 1						.54***
(Constant)	-0.94	0.35				
Negative Temperament	0.01	0.00	.24***	.23	.16	
Mistrust	0.00	0.00	.08	.08	.06	
Manipulativeness	0.01	0.17	.00	.00	.00	
Aggression	0.04	0.14	.02	.02	.01	
Self-Harm	0.00	0.00	-.05	-.05	-.03	
Eccentric Perceptions	0.00	0.00	.15**	.17	.12	
Dependency	0.01	0.00	.46***	.49	.38	
Positive Temperament	0.00	0.00	-.06	-.07	-.05	
Detachment	0.22	0.14	.08	.10	.07	
Disinhibition	0.00	0.00	-.06	-.03	-.02	
Impulsivity	0.00	0.00	.08	.06	.04	
Step 2						.20***
(Constant)	-0.60	0.31				
Negative Temperament	0.00	0.00	.03	.04	.02	
Mistrust	0.00	0.00	-.01	-.01	-.01	
Manipulativeness	-0.05	0.04	-.02	-.02	-.01	
Aggression	0.10	0.11	.04	.06	.03	
Self-Harm	0.00	0.00	-.09	-.11	-.05	
Eccentric Perceptions	0.00	0.00	.09*	.13	.07	
Dependency	0.00	0.00	.26***	.34	.19	
Positive Temperament	0.00	0.00	-.03	-.05	-.02	
Detachment	0.14	0.12	.05	.07	.04	
Disinhibition	0.00	0.00	.03	.02	.01	
Impulsivity	0.00	0.00	.03	.03	.01	
Emotional Deprivation	-0.01	0.01	-.05	-.06	-.03	
Abandonment/Instability	0.28	0.06	.26***	.30	.16	
Defectiveness/Shame	0.02	0.01	.07	.09	.04	
Failure	0.07	0.05	.06	.09	.04	
Dependence/Incompetence	0.11	0.06	.09	.11	.06	
Enmeshment	0.09	0.05	.08	.11	.06	
Subjugation	0.04	0.01	.15**	.17	.09	
Approval/Recog.-Seeking	0.04	0.01	.17***	.22	.12	
Negativity/Pessimism	0.00	0.01	-.01	-.01	-.01	
Entitlement/Grandiosity	-0.01	0.01	-.03	-.04	-.02	
Step 3						.02***
(Constant)	-0.66	0.30				
Negative Temperament	0.00	0.00	.02	.02	.01	
Mistrust	0.00	0.00	.00	.00	.00	
Manipulativeness	-0.03	0.14	-.01	-.01	-.01	
Aggression	0.08	0.11	.03	.05	.02	
Self-Harm	0.00	0.00	-.10	-.12	-.06	
Eccentric Perceptions	0.00	0.00	.07	.11	.05	

Dependency	0.00	0.00	.21***	.27	.14
Positive Temperament	0.00	0.00	-.02	-.03	-.01
Detachment	0.17	0.12	.07	.09	.05
Disinhibition	0.00	0.00	.03	.02	.01
Impulsivity	0.00	0.00	.05	.05	.02
Emotional Deprivation	-0.01	0.01	-.05	-.08	-.04
Abandonment/Instability	0.23	0.06	.22***	.26	.13
Defectiveness/Shame	0.02	0.01	.08	.09	.04
Failure	0.07	0.05	.06	.09	.04
Dependence/Incompetence	0.08	0.06	.07	.09	.04
Enmeshment	0.09	0.05	.08	.11	.06
Subjugation	0.04	0.01	.14*	.16	.08
Approval/Recog.-Seeking	0.02	0.01	.11*	.15	.07
Negativity/Pessimism	0.00	0.01	.00	.00	.00
Entitlement/Grandiosity	-0.01	0.01	-.02	-.03	-.01
Dependent PD beliefs	0.03	0.01	.20***	.24	.12

Note. Some values for  $B$  and  $SE B$  appear low due to rounding.

\* $p \leq .05$ . \*\* $p \leq .01$ . \*\*\* $p \leq .001$ .

As shown in Table 3.21, at step one, the SNAP personality traits significantly explained 53.9% of the variance in dependent PD features,  $F(11, 257) = 27.35, p < .001$ . In this model, Dependency ( $\beta = .46, t = 8.99, p < .001$ ), Negative Temperament ( $\beta = .24, t = 3.75, p < .001$ ) and Eccentric Perceptions ( $\beta = .15, t = 2.80, p = .005$ ) were significant predictors of dependent PD features.

After controlling for the personality traits at step two, the EMSs significantly explained an incremental 19.5% of unique variance in dependent PD features,  $\Delta F(10, 247) = 18.15, p < .001$ , and  $R$  was significantly different from zero,  $R^2 = .73$  (adjusted  $R^2 = .71$ ),  $F(21, 247) = 32.53, p < .001$ . In this second model, Dependency ( $\beta = .26, t = 5.67, p < .001$ ), Abandonment/Instability ( $\beta = .26, t = 4.91, p < .001$ ), Approval/Recognition-Seeking ( $\beta = .17, t = 3.57, p < .001$ ), Subjugation ( $\beta = .15, t = 2.75, p = .006$ ) and Eccentric Perceptions ( $\beta = .09, t = 2.09, p = .038$ ) were significant predictors of dependent PD features.

Lastly, at step three, the inclusion of the dependent PD dysfunctional beliefs scale significantly accounted for a further 1.5% of unique variance in dependent PD features,  $\Delta F(1, 246) = 14.86, p < .001$ . Overall, this final model significantly explained 75% (72.7% adjusted) of the variance in dependent PD features,  $R^2 = .75$ ,  $F(22, 246) = 33.47, p < .001$ . The model revealed that the most salient predictors of dependent PD features were Abandonment/Instability ( $\beta = .22, t = 4.15, p < .001$ ), Dependency ( $\beta = .21, t = 4.45, p < .001$ ), the dependent PD beliefs scale ( $\beta = .20, t =$

3.85,  $p < .001$ ), Subjugation ( $\beta = .14$ ,  $t = 2.54$ ,  $p = .011$ ) and Approval/Recognition-Seeking ( $\beta = .11$ ,  $t = 2.33$ ,  $p = .021$ ).

Whilst Negative Temperament was a significant predictor of dependent PD features at step one it was no longer a significant predictor at steps two or three once the dysfunctional schemas were entered into the analysis. Further, Eccentric Perceptions was a significant predictor of dependent PD features at steps one and two, but was no longer a significant predictor at step three when the dependent PD beliefs scale was entered into the analysis. These results suggest that Negative Temperament may indirectly influence dependent PD through relationships with EMSs, whereas the relationship between Eccentric Perceptions and dependent PD features may be influenced by dependent PD dysfunctional beliefs.

**3.3.6.10 Predictors of obsessive-compulsive PD features.** In order to examine whether dysfunctional schemas could incrementally add to the prediction of obsessive-compulsive PD features over and above SNAP traits and to determine the most salient predictors of obsessive-compulsive PD features, a hierarchical multiple regression analysis was performed with selected SNAP traits, EMSs and the obsessive-compulsive PD dysfunctional beliefs scale entered as predictor variables in successive blocks. Table 3.22 displays the summary statistics of this analysis.

Table 3.22

*Hierarchical Regression Results Predicting Obsessive-Compulsive PD Features*

Predictor	<i>B</i>	<i>SE B</i>	$\beta$	Partial <i>r</i>	Part <i>r</i>	$\Delta R^2$
Step 1						.51***
(Constant)	-10.83	1.92				
Negative Temperament	0.03	0.01	.24***	.23	.16	
Mistrust	0.01	0.01	.05	.04	.03	
Manipulativeness	-0.13	0.86	-.01	-.01	-.01	
Aggression	0.02	0.82	.00	.00	.00	
Eccentric Perceptions	0.01	0.01	.09	.11	.08	
Dependency	0.01	0.01	.08	.10	.07	
Entitlement	0.02	0.01	.22***	.25	.18	
Detachment	4.30	0.77	.28***	.33	.25	
Propriety	0.04	0.01	.26***	.31	.23	
Workaholism	0.03	0.01	.22***	.27	.20	
Step 2						.13***
(Constant)	-6.55	1.99				
Negative Temperament	0.02	0.01	.19**	.19	.12	
Mistrust	0.00	0.01	-.02	-.02	-.01	

Manipulativeness	-0.36	0.82	-.03	-.03	-.02
Aggression	-0.58	0.76	-.04	-.05	-.03
Eccentric Perceptions	0.01	0.01	.11*	.15	.09
Dependency	0.00	0.01	-.01	-.01	-.01
Entitlement	0.02	0.01	.16**	.19	.12
Detachment	2.57	0.85	.17**	.19	.12
Propriety	0.03	0.01	.18***	.24	.15
Workaholism	0.02	0.10	.14**	.17	.10
Mistrust/Abuse	0.41	0.46	.06	.06	.03
Social Isolation/Alienation	-0.61	0.45	-.09	-.09	-.05
Defectiveness/Shame	0.01	0.09	.01	.01	.00
Failure	0.94	0.37	.14*	.16	.10
Emotional Inhibition	0.20	0.08	.15*	.16	.10
Unrelenting Standards	0.28	0.08	.20***	.21	.13
Entitlement/Grandiosity	0.13	0.09	.08	.09	.05
Approval/Recog.-Seeking	0.28	0.07	.21***	.24	.15
Negativity/Pessimism	-0.12	0.08	-.10	-.09	-.06
Punitiveness	0.06	0.07	.04	.05	.03
Step 3					.02***
(Constant)	-5.86	1.94			
Negative Temperament	0.02	0.01	.19**	.20	.12
Mistrust	0.00	0.01	-.02	-.02	-.01
Manipulativeness	-0.44	0.80	-.03	-.04	-.02
Aggression	-0.67	0.74	-.05	-.06	-.03
Eccentric Perceptions	0.01	0.01	.12*	.16	.09
Dependency	0.00	0.01	-.01	-.01	.00
Entitlement	0.01	0.01	.13**	.16	.10
Detachment	2.68	0.83	.17***	.20	.12
Propriety	0.02	0.01	.14**	.20	.12
Workaholism	0.01	0.01	.11*	.14	.08
Mistrust/Abuse	0.21	0.45	.03	.03	.02
Social Isolation/Alienation	-0.34	0.44	-.05	-.05	-.03
Defectiveness/Shame	-0.01	0.08	-.01	-.01	.00
Failure	0.97	0.36	.14**	.17	.10
Emotional Inhibition	0.13	0.08	.10	.11	.06
Unrelenting Standards	0.23	0.08	.16**	.18	.11
Entitlement/Grandiosity	0.05	0.09	.03	.04	.02
Approval/Recog.-Seeking	0.26	0.07	.20***	.24	.14
Negativity/Pessimism	-0.14	0.08	-.11	-.11	-.06
Punitiveness	0.02	0.07	.01	.02	.01
Obs.-Compulsive PD beliefs	0.03	0.01	.22***	.24	.14

Note. Some values for *B* and *SE B* appear low due to rounding.

\* $p \leq .05$ . \*\* $p \leq .01$ . \*\*\* $p \leq .001$ .

Table 3.22 shows that at step one the SNAP maladaptive personality traits significantly explained 50.5% of the variance in obsessive-compulsive PD features,

$F(10, 258) = 26.34, p < .001$ . In this model, Detachment ( $\beta = .28, t = 5.59, p < .001$ ), Propriety ( $\beta = .26, t = 5.16, p < .001$ ), Negative Temperament ( $\beta = .24, t = 3.75, p < .001$ ), Workaholism ( $\beta = .22, t = 4.51, p < .001$ ) and Entitlement ( $\beta = .22, t = 4.13, p < .001$ ) were significant predictors of obsessive-compulsive PD symptomology.

After controlling for the SNAP traits at step two, the EMSs significantly explained a further 13.3% of unique variance in obsessive-compulsive PD features,  $\Delta F(10, 248) = 9.15, p < .001$ , and the regression model was statistically significant,  $R^2 = .64$  (adjusted  $R^2 = .61$ ),  $F(20, 248) = 21.91, p < .001$ . In this second model, Approval/Recognition-Seeking ( $\beta = .21, t = 3.96, p < .001$ ), Unrelenting Standards ( $\beta = .20, t = 3.44, p = .001$ ), Negative Temperament ( $\beta = .19, t = 3.09, p = .002$ ), Propriety ( $\beta = .18, t = 3.87, p < .001$ ), Detachment ( $\beta = .17, t = 3.02, p = .003$ ), Entitlement ( $\beta = .16, t = 3.04, p = .003$ ), Emotional Inhibition ( $\beta = .15, t = 2.49, p = .013$ ), Workaholism ( $\beta = .14, t = 2.74, p = .007$ ), Failure ( $\beta = .14, t = 2.55, p = .011$ ) and Eccentric Perceptions ( $\beta = .11, t = 2.38, p = .018$ ) were significant predictors of obsessive-compulsive PD features.

Lastly, at step three, the addition of the obsessive-compulsive PD dysfunctional beliefs scale significantly accounted for a further 2% of the variance in obsessive-compulsive PD features,  $\Delta F(1, 247) = 14.67, p < .001$ . Overall, the final model significantly explained 65.9% (63% adjusted) of the variance in obsessive-compulsive PD features,  $R^2 = .66, F(21, 247) = 22.71, p < .001$ . This final model revealed that the obsessive-compulsive PD dysfunctional beliefs scale ( $\beta = .22, t = 3.83, p < .001$ ), Approval/Recognition-Seeking ( $\beta = .20, t = 3.87, p < .001$ ), Negative Temperament ( $\beta = .19, t = 3.13, p = .002$ ), Detachment ( $\beta = .17, t = 3.23, p = .001$ ), Unrelenting Standards ( $\beta = .16, t = 2.82, p = .005$ ), Propriety ( $\beta = .14, t = 3.19, p = .002$ ), Failure ( $\beta = .14, t = 2.69, p = .008$ ), Entitlement ( $\beta = .13, t = 2.59, p = .010$ ), Eccentric Perceptions ( $\beta = .12, t = 2.49, p = .014$ ) and Workaholism ( $\beta = .11, t = 2.18, p = .030$ ) were the most salient predictors of obsessive-compulsive PD features.

Whilst the SNAP trait of Eccentric Perceptions was not a significant predictor of obsessive-compulsive PD features at step one, this trait was a significant predictor at steps two and three once the dysfunctional schemas were included into the analysis. In contrast, whilst the EMS of Emotional Inhibition was a significant predictor of obsessive-compulsive PD features at step two, it was no longer a significant predictor at step three when the obsessive-compulsive PD beliefs scale

was entered into the analysis. These results suggest that the relationship between Eccentric Perceptions and obsessive-compulsive PD features may be influenced by EMSs; whereas the relationship between Emotional Inhibition and obsessive-compulsive PD features may be moderated by obsessive-compulsive PD dysfunctional beliefs.

**3.3.6.11 Predictors of passive-aggressive PD features.** In order to examine whether dysfunctional schemas could incrementally add to the prediction of passive-aggressive PD features over and above SNAP traits and to determine the most salient predictors of passive-aggressive PD features, a hierarchical multiple regression analysis was performed with selected SNAP traits, EMSs and the PBQ passive-aggressive PD dysfunctional beliefs scale entered as predictor variables in successive blocks. The summary statistics of this analysis are presented in Table 3.23.

Table 3.23

*Hierarchical Regression Results Predicting Passive-Aggressive PD Features*

Predictor	<i>B</i>	<i>SE B</i>	$\beta$	Partial <i>r</i>	Part <i>r</i>	$\Delta R^2$
Step 1						.47***
(Constant)	-11.25	2.02				
Negative Temperament	0.03	0.01	.21**	.19	.14	
Mistrust	0.01	0.01	.08	.07	.05	
Manipulativeness	0.50	1.07	.04	.03	.02	
Aggression	1.15	0.85	.09	.09	.06	
Self-Harm	-0.01	0.01	-.14*	-.13	-.10	
Eccentric Perceptions	0.01	0.01	.12*	.13	.10	
Dependency	0.00	0.01	.05	.05	.04	
Entitlement	0.02	0.01	.15**	.18	.13	
Detachment	4.25	0.82	.28***	.31	.24	
Disinhibition	0.03	0.01	.30*	.16	.11	
Impulsivity	-0.01	0.01	-.06	-.04	-.03	
Step 2						.12***
(Constant)	-5.96	2.04				
Negative Temperament	0.01	0.01	.08	.08	.05	
Mistrust	0.00	0.01	.03	.03	.02	
Manipulativeness	-0.55	0.97	-.04	-.04	-.02	
Aggression	1.61	0.79	.12*	.13	.08	
Self-Harm	-0.02	0.01	-.19**	-.19	-.12	
Eccentric Perceptions	0.01	0.01	.10*	.13	.08	
Dependency	0.00	0.01	-.05	-.05	-.03	
Entitlement	0.01	0.01	.07	.09	.05	
Detachment	1.79	0.89	.12*	.13	.08	
Disinhibition	0.04	0.01	.34**	.20	.13	

Impulsivity	-0.01	0.01	-.13	-.10	-.06
Social Isolation/Alienation	0.58	0.43	.09	.09	.05
Failure	0.42	0.38	.06	.07	.05
Subjugation	0.19	0.09	.12*	.13	.08
Emotional Inhibition	0.11	0.08	.09	.09	.06
Entitlement/Grandiosity	0.26	0.09	.17**	.18	.12
Insufficient Self-Control	0.17	0.08	.14*	.14	.09
Approval/Recog.-Seeking	0.09	0.07	.07	.08	.05
Step 3					.04***
(Constant)	-4.98	1.96			
Negative Temperament	0.01	0.01	.08	.08	.05
Mistrust	0.00	0.01	.00	.00	.00
Manipulativeness	-0.39	0.93	-.03	-.03	-.02
Aggression	1.27	0.76	.09	.11	.06
Self-Harm	-0.01	0.01	-.12*	-.13	-.08
Eccentric Perceptions	0.01	0.01	.07	.10	.06
Dependency	-0.01	0.01	-.05	-.06	-.04
Entitlement	0.01	0.01	.06	.07	.04
Detachment	1.53	0.86	.10	.11	.07
Disinhibition	0.04	0.01	.36***	.21	.13
Impulsivity	-0.02	0.01	-.17*	-.14	-.08
Social Isolation/Alienation	0.38	0.41	.06	.06	.04
Failure	0.25	0.36	.04	.04	.03
Subjugation	0.19	0.09	.13*	.13	.08
Emotional Inhibition	0.09	0.07	.07	.08	.05
Entitlement/Grandiosity	0.15	0.09	.10	.11	.07
Insufficient Self-Control	0.13	0.07	.11	.12	.07
Approval/Recog.-Seeking	0.06	0.07	.05	.05	.03
Passive-aggressive PD beliefs	0.04	0.01	.25***	.29	.19

Note. Some values for  $B$  and  $SE B$  appear low due to rounding.

\* $p \leq .05$ . \*\* $p \leq .01$ . \*\*\* $p \leq .001$ .

As shown in Table 3.23, at step one, the SNAP maladaptive personality traits significantly explained 47.2% of the variance in passive-aggressive PD features,  $F(11, 257) = 20.88, p < .001$ . In this model, Disinhibition ( $\beta = .30, t = 2.52, p = .012$ ), Detachment ( $\beta = .28, t = 5.20, p < .001$ ), Negative Temperament ( $\beta = .21, t = 3.12, p = .002$ ), Entitlement ( $\beta = .15, t = 2.91, p = .004$ ) and Eccentric Perceptions ( $\beta = .12, t = 2.10, p = .037$ ) were significant predictors of passive-aggressive PD features. Self-Harm initially also appeared to be a significant predictor ( $\beta = -.14, t = -2.14, p = .033$ ); however, inspection of the difference between the sign and size of its beta weight and zero-order correlation coefficient ( $r = .30, p < .001$ ) lead to identifying Self-Harm as a negative suppressor variable, rather than as a unique

predictor of passive-aggressive PD features. A follow-up hierarchical regression analysis with the other SNAP traits entered as predictors of passive-aggressive PD features at step one and Self-Harm entered as a predictor at step two revealed that Self-Harm slightly increased the beta weights of Negative Temperament, Mistrust, Aggression, Eccentric Perceptions, Dependency, Detachment and Disinhibition and consequently increased  $R^2$  in the prediction of passive-aggressive PD features,  $\Delta R^2 = .01$ ,  $\Delta F(1, 257) = 4.59$ ,  $p = .033$ .

After controlling for the SNAP personality traits at step two, the EMSs significantly explained an incremental 12.4% of unique variance in passive-aggressive PD features,  $\Delta F(7, 250) = 10.96$ ,  $p < .001$ , and the regression model was statistically significant,  $R^2 = .60$  (adjusted  $R^2 = .57$ ),  $F(18, 250) = 20.48$ ,  $p < .001$ . In this second model, Disinhibition ( $\beta = .34$ ,  $t = 3.20$ ,  $p = .002$ ), Entitlement/Grandiosity ( $\beta = .17$ ,  $t = 2.91$ ,  $p = .004$ ), Insufficient Self-Control/Self-Discipline ( $\beta = .14$ ,  $t = 2.26$ ,  $p = .024$ ), Detachment ( $\beta = .12$ ,  $t = 2.00$ ,  $p = .046$ ), Subjugation ( $\beta = .12$ ,  $t = 2.00$ ,  $p = .047$ ), Aggression ( $\beta = .12$ ,  $t = 2.04$ ,  $p = .043$ ) and Eccentric Perceptions ( $\beta = .10$ ,  $t = 2.07$ ,  $p = .040$ ) were significant predictors of passive-aggressive PD features. As was the case in step one, Self-Harm ( $\beta = -.19$ ,  $t = -3.09$ ,  $p = .002$ ) was found to be a negative suppressor variable rather than as a unique predictor of passive-aggressive PD, given difference between the sign and size of its beta value and zero-order correlation coefficient. A follow-up hierarchical regression analysis with the other SNAP traits and EMSs entered as predictors of passive-aggressive at step one and Self-Harm entered as a predictor at step two revealed that Self-Harm increased the beta weights of Negative Temperament, Mistrust, Aggression, Eccentric Perceptions, Detachment, Disinhibition, Social Isolation/Alienation and Failure and consequently increased  $R^2$  in the prediction of passive-aggressive PD symptoms,  $\Delta R^2 = .02$ ,  $\Delta F(1, 250) = 9.56$ ,  $p = .002$ .

Lastly, at step three, the inclusion of the passive-aggressive PD dysfunctional beliefs scale significantly accounted for a further 3.5% of unique variance in passive-aggressive PD features,  $\Delta F(1, 249) = 23.46$ ,  $p < .001$ . Overall, this final model significantly explained 63.1% (60.3% adjusted) of the variance in passive-aggressive PD features,  $R^2 = .63$ ,  $F(19, 249) = 22.38$ ,  $p < .001$ . The final model revealed that the most salient predictors of passive-aggressive PD features were Disinhibition ( $\beta = .36$ ,  $t = 3.46$ ,  $p = .001$ ), the passive-aggressive PD dysfunctional beliefs scale ( $\beta = .25$ ,  $t = 4.84$ ,  $p < .001$ ) and Subjugation ( $\beta = .13$ ,  $t = 2.12$ ,  $p = .035$ ). Initially, Self-



Harm ( $\beta = -.12, t = -2.02, p = .045$ ) and Impulsivity ( $\beta = -.17, t = -2.15, p = .033$ ) also appeared to be significant predictors of passive-aggressive PD features at step three. However, inspection of the difference between the sign and size of their respective beta weights and zero-order correlation coefficients ( $r_s = .30$  and  $.27, p_s < .001$ , respectively) lead to identifying these traits as negative suppressor variables, rather than unique predictors of passive-aggressive PD features. A follow-up hierarchical regression analysis with the remaining traits, EMSs and the passive-aggressive PD beliefs scale entered as predictors at step one and Self-Harm and Impulsivity entered as predictors at step two revealed that these suppressor variables increased the beta weights of Negative Temperament, Aggression, Eccentric Perceptions, Disinhibition, Social Isolation/Alienation, Failure and Insufficient Self-Control/Self-Discipline and consequently increased  $R^2$  in the prediction of passive-aggressive PD features,  $\Delta R^2 = .01, \Delta F(2, 249) = 4.83, p = .009$ .

Whilst Negative Temperament and Entitlement were significant predictors of passive-aggressive PD features at step one, they were no longer significant predictors at steps two or three once the dysfunctional schemas were included into the analysis. In contrast, Aggression became a significant predictor of passive-aggressive PD features at step two, but was no longer a significant predictor at step three once the passive-aggressive PD dysfunctional beliefs scale was entered into the analysis. Furthermore, whilst Eccentric Perceptions, Detachment, Entitlement/Grandiosity and Insufficient Self-Control/Self-Discipline were significant predictors of passive-aggressive PD at previous steps, these variables were also no longer significant predictors of passive-aggressive PD features at step three. This overall pattern of results suggests that Negative Temperament and Entitlement may indirectly influence passive-aggressive PD through relationships with EMSs; whereas Eccentric Perceptions, Detachment, Entitlement/Grandiosity and Insufficient Self-Control/Self-Discipline may indirectly influence passive-aggressive PD features through their relationships with the passive-aggressive PD dysfunctional beliefs scale. Moreover, the results suggest that Aggression may have a complex relationship with passive-aggressive PD that is moderated by the presence of dysfunctional schemas.

### 3.4 Discussion

Using the SNAP model of maladaptive personality traits, the overarching objectives of Study 2 were to: (a) examine the relationships between SNAP maladaptive traits, dysfunctional schemas and PD features; and (b) investigate whether dysfunctional schemas added incremental validity to the prediction of PD features over and above SNAP traits. Several research questions were posed and the main findings will be discussed in relation to each research question. The broader implications of the collective findings are discussed in Chapter 5.

#### 3.4.1 Are there Theoretically-Meaningful Relationships between SNAP Traits and Dysfunctional Schemas?

As hypothesised, correlational analyses revealed that, overall, most dysfunctional schemas were positively correlated with Negative Temperament and Disinhibition, yet negatively correlated with Positive Temperament. This general pattern of correlations between dysfunctional schemas and the SNAP's three broad temperament dimensions resembles the pattern of correlations between dysfunctional schemas and the FFM domains of Neuroticism (Negative Temperament), Extraversion (Positive Temperament) and Conscientiousness/Agreeableness (low Disinhibition) in Study 1. Altogether, these results indicate that high Negative Temperament/Neuroticism, low Positive Temperament/Extraversion and high Disinhibition/low Conscientiousness and low Agreeableness are the personality dimension poles that are generally associated with most deeply-rooted, rigid and pervasive maladaptive thinking patterns linked to personality pathology.

There were some noteworthy exceptions to this overall pattern of correlations with the SNAP temperaments, however. First, Self-Sacrifice and the schizoid PD dysfunctional beliefs scale had little relationship with Negative Temperament. These dysfunctional schemas also had little relationship with Neuroticism in Study 1. Taken together, these results suggest that having an excessive cognitive and emotional focus on meeting the needs of others and holding dysfunctional beliefs and assumptions that are characteristic of schizoid PD, respectively, are not as closely associated with a dispositional proneness to experience negative emotions as are other dysfunctional schemas. This is an important finding as Negative Temperament obtained positive correlations with most other dysfunctional schemas, as did Neuroticism in Study 1. Moreover, relative to the other SNAP temperaments,

Negative Temperament also showed stronger correlations with a broader range of dysfunctional schemas, as did Neuroticism relative to the other FFM domains in Study 1. These findings indicate a general link between Negative Temperament/Neuroticism and dysfunctional thinking patterns. They are in line with Watson and colleagues' (1988) characterisation of Negative Temperament/Neuroticism as "a broad and pervasive predisposition to experience negative emotions that has further influences on cognition, self-concept, and world view" (p. 347). However, the lack of a clear positive relationship with Negative Temperament/Neuroticism distinguishes Self-Sacrifice and the schizoid PD dysfunctional beliefs scale from the other dysfunctional schemas. The implication from this finding is that whilst Negative Temperament/Neuroticism may underlie most dysfunctional schemas, other personality dimensions may underpin Self-Sacrifice and the dysfunctional beliefs that characterise schizoid PD.

Second, in contrast to most other dysfunctional schemas, Self-Sacrifice was positively correlated with Positive Temperament, indicating that this EMS is associated with the dispositional tendency to experience positive emotions, a sense of well-being and competence and effective interpersonal engagement (Watson et al., 1988). Self-Sacrifice was weakly positively correlated with Extraversion in Study 1, however this correlation was not statistically significant. Young et al. (2003) posited that the Self-Sacrifice EMS generally develops as a result of "a highly empathic temperament" and is often associated with a sense of over-responsibility for others (p. 246). Thus, this EMS may be reflective of a dispositional prosocial orientation. Indeed, Self-Sacrifice was found to be positively correlated with Agreeableness and its lower-order facet of Altruism in Study 1. Young et al. emphasised that self-sacrificing behaviour is healthy to a certain degree and even valued by society. These authors maintain that the Self-Sacrifice EMS only becomes maladaptive when an individual's self-sacrificing behaviour is extreme and causes problems, such as interpersonal difficulties. Since Self-Sacrifice has no prominent correlation with Negative Temperament/Neuroticism, it is possible that this EMS may be more closely associated with the extreme positive poles of the Positive Temperament/Extraversion and Agreeableness personality dimensions.

Finally, whereas most dysfunctional schemas obtained positive correlations with Disinhibition, the EMSs of Self-Sacrifice and Unrelenting Standards obtained negative correlations with this temperament dimension. This indicates that an

excessive cognitive and emotional focus on meeting the needs of others (Self-Sacrifice) and the sense that one must strive to meet extremely high internalised standards of performance (Unrelenting Standards) are associated with the dispositional tendency to behave in a conventional and constrained or over-controlled manner (Clark et al., in press). The finding that Self-Sacrifice was negatively correlated with Disinhibition in this study but had a weak nonsignificant correlation with Conscientiousness in Study 1 suggests that Self-Sacrifice could be more closely (negatively) related to the low Agreeableness component of Disinhibition as opposed to the Conscientiousness component. In contrast, Unrelenting Standards was positively correlated with Conscientiousness in Study 1 and has also been shown to be positively correlated with Conscientiousness in at least one previous study (Muris, 2006), indicating that this EMS is more closely (negatively) related to the low Conscientiousness component of the Disinhibition personality dimension.

Better discrimination between the dysfunctional schemas was achieved by the SNAP's lower-order maladaptive traits, particularly traits associated with Positive Temperament and Disinhibition. For example, most dysfunctional schemas obtained little or a negative correlation with Exhibitionism, yet Entitlement/Grandiosity, Approval/Recognition-Seeking and the antisocial, narcissistic and histrionic PD belief scales from the PBQ obtained positive correlations, indicating that these dysfunctional schemas are associated with a maladaptive tendency towards overt attention-seeking as opposed to withdrawal from attention (Clark et al., in press). Furthermore, whereas Workaholism had little relationship with most dysfunctional schemas it was positively correlated with Self-Sacrifice, Unrelenting Standards, Punitiveness and the PBQ's obsessive-compulsive and schizoid PD belief scales, indicating that these dysfunctional schemas are associated with a maladaptive tendency towards perfectionism and achievement. Conversely, Insufficient Self-Control/Self-Discipline was negatively correlated with Workaholism, indicating that a cognitive and emotional focus on discomfort avoidance and low frustration tolerance is associated with a tendency towards a lax and carefree approach to tasks rather than maladaptive perfectionism (Clark et al., in press).

Overall, nuanced and theoretically-meaningful correlations between the SNAP traits and dysfunctional schemas emerged and each dysfunctional schema

could be understood in terms of a specific profile of SNAP traits. For example, the SNAP trait profile for the Punitiveness EMS was characterised by positive correlations with Negative Temperament, Mistrust, Self-Harm, Suicide Proneness, Detachment and Workaholism. In other words, a dispositional proneness to experience negative emotions and to overreact to minor stresses coupled with a basic sense of mistrust and cynicism about the world and the tendencies towards self-destructive thoughts and behaviours, emotional and interpersonal distance and perfectionism are associated with the cognitive and emotional theme that oneself and others should be harshly punished for making mistakes. The SNAP profile for the Unrelenting Standards EMS was also characterised by positive correlations with Negative Temperament, Mistrust, Detachment and Workaholism, yet had an additional positive correlation with Propriety and negative correlations with Disinhibition and Impulsivity. That is, the maladaptive tendencies towards traditional and conservative morality and cautious, over-controlled behaviour are associated with the cognitive and emotional theme that one should strive to meet extremely high internalised standards of behaviour and performance. Such findings provide some support for the schema theory proposition that specific temperament/personality dispositions are associated with specific EMSs (Young et al., 2003).

### **3.4.2 Are there Theoretically-Meaningful Relationships between PD Features and SNAP Traits?**

Consistent with previous studies that have used other measures of PDs (Clark et al., in press; Hurt & Oltmanns, 2002; J. D. Miller, Maples, et al., 2010; Morey et al., 2003), the correlational analyses in this study revealed that, with a few exceptions, the WISPI-IV PD scales obtained a similar pattern of correlations with the three higher-order SNAP temperaments. That is, most PD scales were positively correlated with Negative Temperament and Disinhibition, but had little or a negative correlation with Positive Temperament. In other words, the temperamental tendencies towards chronic emotional maladjustment, an under-controlled or impulsive behavioural style and the absence of positive emotions and pleasurable engagement in activities and interpersonal interactions (Clark et al., in press) appear to be the personality pathology features that are common amongst most DSM-IV-TR PDs. Interestingly, this temperament description of PD features is broadly consistent

with the DSM-IV-TR's (APA, 2000) general definition of the PD construct as an enduring pattern of inner experience and behaviour that is characterised by inflexible and maladaptive cognition, affectivity, interpersonal functioning and impulse control.

There were two notable exceptions to this overall pattern of correlations between WISPI-IV PD scales and the three SNAP temperaments. Specifically, in contrast to the other PD scales, the histrionic PD scale obtained a weak positive correlation with Positive Temperament while the obsessive-compulsive PD scale obtained a weak negative correlation with Disinhibition. However, these correlations failed to reach statistical significance, which is in line with some previous studies (Clark et al., in press; Hurt & Oltmanns, 2002; J. D. Miller et al., 2004; Wolf et al., 2011). However, the studies by Morey et al. (2003) and J. D. Miller, Maples, et al. (2010) did find statistically significant, though generally weak, positive correlations between histrionic PD and Positive Temperament and negative correlations between obsessive-compulsive PD and Disinhibition. One explanation for the divergent findings is that the studies by Morey et al. and Miller, Maples, et al. involved relatively larger clinical samples ( $N = 529$  and  $N = 130$ , respectively) where more variance in PD features was likely sampled in comparison to the clinical studies by Clark et al. (in press), J. D. Miller et al. (2004) and Wolf et al. (2011) which involved relatively smaller clinical samples ( $N = 94$ ,  $N = 94$  and  $N = 86$ , respectively). Further, the study by Hurt and Oltmanns (2002) used a self-report measure of PDs that was based on DSM-III-R criteria, rather than DSM-IV-TR. Additional research involving large clinical samples is required to further clarify these relationships.

As was the case with the FFM facet traits in Study 1, the lower-order SNAP traits provided better discrimination between PD scales. For example, consistent with previous research (Clark et al., in press; Hurt & Oltmanns, 2002; J. D. Miller, Maples, et al., 2010; J. D. Miller et al., 2004), the dependent PD scale was strongly positively correlated with Dependency, whereas the schizoid PD scale obtained a near-zero correlation with this trait. That is, the dependent PD syndrome is associated with the maladaptive tendency towards seeking direction and approval from others for decision-making, whereas schizoid PD features are associated with the tendency towards self-reliance and independence (Clark et al., in press). Furthermore, the obsessive-compulsive PD scale was positively correlated with

Workaholism, whereas the remaining PD scales had little relationship with this maladaptive trait. Previous work has consistently demonstrated a positive correlation between obsessive-compulsive PD and Workaholism (Clark et al., in press; Hurt & Oltmanns, 2002; J. D. Miller, Maples, et al., 2010; J. D. Miller et al., 2004; Morey et al., 2003), indicating that obsessive-compulsive PD is associated with a tendency towards maladaptive perfectionism (Clark et al., in press). This finding can be contrasted with the mixed findings regarding the relationships between obsessive-compulsive PD and Conscientiousness and its facets (Samuel & Widiger, 2008). Specifically, the finding that the WISPI-IV obsessive-compulsive PD scale was positively correlated with Workaholism in this study, but obtained near-zero correlations with the conceptually similar Conscientiousness facets in Study 1 provides some support for the suggestion that Conscientiousness as measured by the NEO-PI-R may not capture sufficiently maladaptive expressions of Conscientiousness and its facets that are relevant to personality pathology (Haigler & Widiger, 2001). However, Samuel and Widiger (2011) recently found that NEO-PI-R Conscientiousness and all of its facets were positively correlated with SNAP Workaholism. Thus, as these authors suggested, it is possible that Conscientiousness traits may be more closely related to specific maladaptive components of the obsessive-compulsive PD construct (i.e., Workaholism) as opposed to the full syndrome which includes features that are not anchored in Conscientiousness.

Each WISPI-IV PD scale obtained a unique pattern of correlations with the SNAP traits and the trait profiles were largely consistent with the hypothesised PD-SNAP trait relationships proposed by Clark (1993a). As expected, greater than 50% of Clark's predicted PD-SNAP trait relationships were confirmed using the WISPI-IV as the measure of PD features. In fact, 35 out of 36 or 97% of Clark's hypothesised PD-SNAP trait relationships were confirmed, indicating a strong convergence between maladaptive personality trait dimensions and conceptually-matched PD syndromes. The sole predicted relationship that was not confirmed, that is, a positive correlation between Positive Temperament and the histrionic PD scale, was in the correct direction and could have been possibly confirmed if a less conservative alpha level was used. In addition, the correlational analyses revealed several strong PD-SNAP trait correlations that Clark did not predict. For example, whereas Clark identified Manipulativeness as a dimension of personality pathology fundamental to the antisocial, narcissistic and passive-aggressive PD categories, the

results of the current study revealed that the WISPI-IV histrionic PD scale was also strongly positively correlated with this maladaptive trait. This indicates a link between histrionic PD features and the maladaptive tendency towards exploiting or manipulating others for personal gain. Overall, the findings revealed theoretically-meaningful relationships between WISPI-IV PD scales and SNAP traits. The key implication is that DSM-IV-TR PD syndromes as measured by the WISPI-IV in this study can be described and understood in terms of specific combinations of SNAP pathological trait dimensions.

### **3.4.3 Would Controlling for Psychological Distress and General PD Symptomology Influence the Relationships between EMSs, Dysfunctional PD Beliefs and PD Features?**

Study 1 revealed a large number of positive correlations between EMSs, PBQ dysfunctional PD belief scales and the WISPI-IV PD scales and it was suggested that psychological distress or general PD symptomology could have inflated the correlations. Thus, the third research question of the current study investigated whether controlling for the effects of psychological distress and general PD symptomology would influence the correlations between: (a) EMSs and the PBQ dysfunctional PD belief scales; (b) EMSs and WISPI-IV PD scales; and (c) PBQ dysfunctional PD belief scales and WISPI-IV PD scales? As a first step, it was necessary to establish that the dysfunctional schema and PD scales in the current study were indeed correlated with a psychological distress construct that was measured in its own right. In this study, psychological distress was measured by the K10 scale.

**3.4.3.1 Relationships with psychological distress.** Consistent with previous studies that have used other measures or proxies of psychological distress (Butler et al., 2007; Glaser et al., 2002; Nordahl et al., 2005; Noren et al., 2007; N. B. Schmidt et al., 1995; Welburn et al., 2002), the correlational analyses in this study revealed that the majority of the dysfunctional schema and PD scales obtained statistically significant positive correlations with psychological distress as measured by the K10 scale. However, there was one exception: the PBQ's schizoid PD dysfunctional beliefs scale had a weak positive, but nonsignificant relationship with psychological distress. This finding is in contrast to the positive correlation between the WISPI-IV schizoid PD scale and psychological distress. The implication from these findings is



that whilst the full-blown criterion symptoms of schizoid PD may be associated with the subjective experience of psychological distress (APA, 2000), merely holding the specific dysfunctional beliefs that are characteristic of schizoid PD may not necessarily be associated with distress. All other PBQ dysfunctional PD belief scales were positively correlated with psychological distress and the magnitude of the correlations ranged from weak (narcissistic PD beliefs scale) to strong (borderline PD beliefs subscale). The finding that some dysfunctional PD belief scales (e.g., the borderline PD beliefs subscale) had a stronger relationship with psychological distress in contrast to other dysfunctional PD belief scales suggests that some PD-related beliefs could be more dysfunctional than others. This is an important avenue to explore in future research. Furthermore, a noteworthy observation was that the YSQ-S3 Total score had the strongest correlation with psychological distress overall. The implication from this finding is that the presence of multiple EMSs, rather than a single EMS, is associated with higher levels of psychological distress and this accords with schema theory (Young et al., 2003).

#### **3.4.3.2 Relationships between EMSs and dysfunctional PD beliefs.**

Similar to Study 1, the correlational analyses in this study revealed a large number of positive zero-order correlations between most EMSs and PBQ dysfunctional PD belief scales. This suggests that these dysfunctional schemas lack discriminant validity and share largely overlapping variance. However, as expected, the partial correlations revealed that the number and strength of these zero-order correlations were substantially reduced once the effects of psychological distress (i.e., K10 Total scale) and general PD symptomology (i.e., all WISPI-IV PD scales) were controlled. The resulting partial correlations revealed more interpretable relationships between the dysfunctional schemas that were theoretically-meaningful. For example, Mistrust/Abuse had statistically significant positive zero-order correlations with all dysfunctional PD belief scales, suggesting little specificity between the dysfunctional schemas. However, partial correlations revealed that only the correlations with the paranoid PD beliefs scale and the borderline PD beliefs subscale remained statistically significant when psychological distress and general PD symptomology were controlled. That is, this broad EMS concerning themes about being hurt, abused, manipulated or deceived by others has unique relationships with the narrowly-defined dysfunctional beliefs that are characteristic of the paranoid and borderline PD syndromes and these relationships are independent of the effects of

psychological distress and general PD symptomology. Hence, the results do suggest that the large number of positive zero-order correlations between dysfunctional schemas that were observed in this study and in Study 1 were due to the confounding effects of distress and general PD symptomology, which obscured meaningful relationships between conceptually-related dysfunctional schemas. These results can be interpreted as providing some support for the construct validity of some EMSs (Young et al., 2003) and dysfunctional PD belief scales (Beck et al., 2004). On the other hand, the results also indicate that the scales that assess these dysfunctional schemas largely share overlapping variance with each other and with psychological distress and general PD symptomology and, therefore, may not be as distinct as is proposed by theory. This issue will be further discussed in Chapter 5.

**3.4.3.3 Relationships between EMSs and PD features.** As was the case in Study 1, the correlational analyses in the current study revealed a large number of positive zero-order correlations between EMSs and WISPI-IV PD scales. However, as hypothesised, partial correlations revealed that these zero-order correlations were substantially reduced once the influences of psychological distress and general PD symptomology (i.e., the non-targeted WISPI-IV PD scales, depending on the specific analysis) were removed. This finding provides evidence for the proposal in Study 1 that distress and general PD symptomology inflated the zero-order correlations between EMSs and PD scales and suggests that the results of previous studies that explored relationships between EMSs and PDs solely using zero-order correlations (e.g., Nordahl et al., 2005) should be interpreted with some caution.

The partial correlations revealed several salient findings. First, the partial correlations revealed that, except for Self-Sacrifice, each EMS had statistically significant relationships with just one to four PD scales, while each PD scale had statistically significant relationships with just one to six EMSs, once the effects of distress and general PD symptomology were controlled. Most importantly, the partial correlations revealed salient relationships between PD scales and EMSs that were more easily interpretable and theoretically-meaningful in comparison to the myriad of positive zero-order correlations. For example, whereas the zero-order correlations suggested that both the narcissistic and schizoid PD scales were positively correlated with the Approval/Recognition-Seeking EMS, the partial correlations revealed that the schizoid PD scale was actually negatively correlated with this EMS once the effects of distress and general PD symptomology were

partialled out. Thus, by removing the confounding effects of distress and general PD symptomology, the partial correlations refined the relationships between conceptually-related PD scales and EMSs, and minimised the relationships between conceptually-unrelated PD scales and EMSs.

Another noteworthy finding was that the partial correlations were largely consistent with the predictive relationships between specific EMSs and PD scales that were obtained in Study 1. For example, even when distress and general PD symptomology were controlled, the positive correlations between Unrelenting Standards and the obsessive-compulsive PD scale, Emotional Inhibition and the avoidant PD scale, Mistrust/Abuse and the paranoid PD scale, Entitlement/Grandiosity and the narcissistic PD scale, Vulnerability to Harm/Illness and the schizotypal PD scale, Approval/Recognition-Seeking and the histrionic PD scale, and Subjugation and the dependent PD scale remained statistically significant. Moreover, the partial correlations revealed several other weak, but theoretically-meaningful relationships between EMSs and PD scales that were statistically significant at less stringent alpha levels. These findings suggest the possibility of additional salient relationships between EMSs and PD features that are independent of the effects of distress and general PD symptomology. Overall, the findings suggest that whilst EMSs are dimensions that cut across diagnostic categories, specific EMSs nevertheless have stronger relationships with theoretically-relevant PD syndromes (Young et al., 2003). If PD syndromes have common relationships with underlying EMS dimensions, then this could be one explanation for the overlap in PD diagnostic criteria and PD comorbidity.

Whilst previous research reviewed in section 1.4.4 has established that EMSs are related with PDs, the results of the partial correlations in the present study expand on this knowledge because they revealed that EMSs share unique variance with theoretically-relevant PD features even when the confounding effects of psychological distress and general PD symptomology were removed. Thus, these results provide further evidence of the construct validity of EMSs as dimensions that are central to understanding PDs (Young, 1999).

#### **3.4.3.4 Relationships between dysfunctional PD beliefs and PD features.**

Consistent with the findings of Study 1, correlational analyses in the current study revealed a large number of positive zero-order correlations between the PBQ dysfunctional PD belief scales and the WISPI-IV PD scales, suggesting little

discriminant validity among the scales. Yet, as predicted, partial correlations revealed that the number and strength of these zero-order correlations were substantially reduced when the effects of psychological distress and general PD symptomology (i.e., the non-targeted WISPI-IV PD scales, depending on the relevant analysis) were statistically controlled. Specifically, the partial correlations revealed that, with the exception of the PBQ's borderline PD beliefs subscale, each dysfunctional PD beliefs scale was most strongly positively correlated with its corresponding WISPI-IV PD scale. Likewise, excluding the WISPI-IV's schizotypal and borderline PD scales, each PD scale was most strongly positively correlated with its corresponding PBQ dysfunctional PD beliefs scale. These findings suggest a convergence between PD features and theoretically related dysfunctional beliefs. Accordingly, these results not only support Beck and colleagues' (2004) assertion that each PD syndrome is associated with a unique set of dysfunctional beliefs, but they also provide evidence of the construct validity of the dysfunctional belief scales and demonstrate that relationships between dysfunctional beliefs and relevant PD syndromes exist independent of the confounding effects of psychological distress and general PD symptomology.

The PBQ's borderline PD beliefs subscale obtained statistically significant positive correlations with the WISPI-IV's avoidant and paranoid PD scales, but only a weak nonsignificant positive correlation with its corresponding borderline PD scale. On the other hand, the WISPI-IV's borderline PD scale obtained no statistically significant correlations, but did obtain weak nonsignificant positive correlations with the PBQ's borderline and histrionic dysfunctional PD belief scales. According to Beck et al. (2004), individuals with a borderline PD diagnosis typically hold an array of dysfunctional beliefs that are associated with different PDs. Since the PBQ's borderline PD beliefs scale is a composite subscale that is comprised of items from other PBQ scales, including the avoidant and paranoid PD dysfunctional belief scales, it is perhaps not surprising that the borderline PD beliefs subscale obtained positive correlations with PD scales from which its composite items were drawn. Further, since emotional dysregulation is a central feature of borderline PD (APA, 2000), it is therefore plausible that the PBQ borderline PD beliefs subscale and the WISPI-IV borderline PD scale could be more likely to share variance with psychological distress and general PD symptomology than other PBQ or WISPI-IV scales, respectively. Accordingly, it may be difficult to untangle the relationships

between borderline PD features and general PD symptomology or subjective distress.

The partial correlations further revealed that some WISPI-IV PD scales obtained statistically significant, though generally weak, relationships with non-corresponding dysfunctional PD belief scales and these relationships were theoretically-meaningful. For example, the histrionic PD scale was positively correlated with the narcissistic PD beliefs scale, while the narcissistic PD scale was positively correlated with the obsessive-compulsive and antisocial PD belief scales. Such correlations reflect the idea that PD comorbidity is likely to occur to the extent that an individual holds dysfunctional beliefs that are characteristic of multiple PDs (Beck et al., 2004; Pretzer & Beck, 2005). However, the discriminant correlations were lower than the convergent correlations between WISPI-IV PD scales and their corresponding PBQ dysfunctional PD belief scales. Overall, these results suggest that while PD syndromes are generally more strongly associated with a characteristic set of dysfunctional beliefs, these dysfunctional beliefs could nonetheless also be relevant to understanding other PDs that share similar features, symptoms and behaviours (Beck et al., 2001; Beck et al., 2004). These findings expand on previous published research which to date has only explored the relationships between corresponding PDs and PBQ dysfunctional belief scales using zero-order correlations (Beck et al., 2001; Trull et al., 1993).

#### **3.4.4 Can Dysfunctional Schemas Incrementally Add to the Prediction of PD Features Over and Above SNAP Traits? What are the Most Salient Predictors?**

**3.4.4.1 SNAP traits.** Collectively, the blocks of selected SNAP traits significantly explained between 37% (schizoid PD) to 57% (avoidant PD) of the variance in scores on the WISPI-IV PD scales. The results also showed that the percentage of variance in scores for all PD scales that was explained by the blocks of SNAP traits was larger than the percentages of variance explained by the consecutive blocks of EMSs or PD-specific dysfunctional belief scales. Altogether, these results highlight the important predictive relationships between SNAP maladaptive personality traits and PD features and suggest that each PD syndrome can be understood in terms of a combination of SNAP maladaptive trait dimensions (Clark et al., in press).

The amount of variance in the scores on the PD scales accounted for by selected subsets of SNAP traits in the current study compares favourably to those of previous studies that have used different sets of SNAP traits as predictor variables (Morey et al., 2003; Reynolds & Clark, 2001; Stepp et al., 2005; Wolf et al., 2011). For example, Wolf et al. (2011) entered all 15 SNAP traits as predictors and found that the SNAP traits collectively only explained 24% (obsessive-compulsive PD) to 46% (schizoid PD) of the variance in scores on PD scales. As mentioned previously in section 3.4.2, Wolf and colleagues' small sample size ( $N = 86$ ) and consequent lower ratio of cases-to-predictor variables could be one explanation for their lower percentages of explained variance in PD features in comparison to those obtained in the current study.

Furthermore, whereas several SNAP traits obtained statistically significant correlations with the PD scales, only a small number of these trait correlates were actually significant predictors of PD features. For example, of the 11 SNAP traits entered as potential predictor variables in the first step of the regression analysis predicting dependent PD features, only the traits of Dependency, Negative Temperament and Eccentric Perceptions were statistically significant predictors. Although Self-Harm was positively correlated with the dependent PD scale and is listed as having a salient relationship with dependent PD in Clark's (1993a) hypothesised PD-SNAP trait profile, this maladaptive personality trait was not a predictor of dependent PD features in the current study. It is difficult to compare and contrast this pattern of findings with previous research given the lack of published studies that have directly examined the relationships between PDs and SNAP traits in the first instance, let alone listed the statistically significant SNAP trait predictors of each PD that was studied. Nevertheless, the study by Stepp et al. (2005) is an exception and these researchers too found that only a few SNAP traits from a larger subset of those entered as potential predictors into regression analyses were statistically significant predictors of borderline, histrionic and antisocial PDs. Thus, as was the case with FFM traits in Study 1, these results suggest that while several SNAP traits may be correlated with a given PD scale, some of these traits may not necessarily have predictive relationships with that specific PD scale when the effects of other traits are taken into account. These findings further underscore the importance of using the more powerful regression analyses, as opposed to correlation analyses, to clarify the relationships between measures of PD features and

personality trait dimensions. Another implication from these findings is that it could have been a statistical disadvantage for previous studies with small sample sizes (e.g., Reynolds & Clark, 2001; Wolf et al., 2011) to enter all 15 SNAP traits as potential predictors of PDs in regression analyses if some of these SNAP traits were not also statistically significant correlates of the relevant PD scale in their sample. As such, the methodology used in the current study, that is, entering only SNAP traits that were statistically significant correlates of the relevant PD scale into the regression analysis, as opposed to all SNAP traits or only those traits listed in Clark's (1993a) PD-SNAP trait profiles, is a strength of the current research.

**3.4.4.2 EMSs.** As hypothesised, the findings showed that the blocks of selected EMSs significantly explained between 6% (schizoid PD) to 20% (avoidant and dependent PDs) of unique incremental variance in PD features, over and above the amounts of variance explained by the SNAP traits. Though small to medium in effect size according to Cohen's (1988)  $R^2$  conventions, the incremental contribution of variance that was explained by EMSs in the prediction of all PD syndromes suggests that EMSs capture some variance in PD features that is not accounted for by SNAP maladaptive personality traits. This finding further illustrates the importance of EMSs for the conceptualisation of PDs. However, the range of incremental variance in PD features that was explained by EMSs in the current study was lower than the range that was obtained in Study 1. In contrast to the FFM, the SNAP appears to capture a sizeable proportion of variance in personality pathology, perhaps due to its close relationship with DSM PD constructs, and this likely reduces the amount of remaining variance in PD features that can be explained by EMSs. The key implication that can be drawn from this difference is that EMSs can account for variance in personality pathology that is not captured by the FFM, but have lesser incremental validity in the prediction of PD features over and above SNAP traits.

Similar to the SNAP traits, only a small number of EMSs were actually statistically significant predictors of PD features. This finding is consistent with the findings of Study 1 and previous research (Carr & Francis, 2010; Reeves & Taylor, 2007). Moreover, this finding is also in line with the partial correlations in the current study which revealed that zero-order correlations between EMSs and PD scales were substantially reduced once the effects of psychological distress and general PD symptomology were controlled. Altogether, these findings suggest that whereas EMSs may appear to be significant correlates of PD features, they may not

necessarily be predictors of PD features once the effects of other variables such as personality traits, other EMSs, psychological distress or general PD symptomology are taken into account. Studies that utilised only correlational analyses to explore the relationships between EMSs and PDs (e.g., Ball & Cecero, 2001; Nordahl et al., 2005) possibly overlooked such confounding effects. More research using regression analyses and large sample sizes is required in order to fully assess the relationships between EMSs and PD features.

Generally, most EMSs that were significant predictors of specific PD syndromes in Study 1 were also significant predictors of the same PD syndromes in the current study. The results of this study provided further confirmation of some key PD-EMS relationships that have consistently been identified in the literature, such as between paranoid PD and Mistrust/Abuse, schizoid PD and Emotional Inhibition, narcissistic PD and Entitlement/Grandiosity, and obsessive-compulsive PD and Unrelenting Standards (Carr & Francis, 2010; Reeves & Taylor, 2007; Thimm, 2011). However, the current study also demonstrated some theoretically-meaningful PD-EMS relationships that have not been identified in previous research. For example, whereas Subjugation obtained a weak positive but nonsignificant predictive relationship with passive-aggressive PD features in Study 1, this EMS was a significant predictor of passive-aggressive PD features in the current study. This finding has not been observed in previous published work primarily due to the lack of research attention given to passive-aggressive PD. Yet this finding is theoretically meaningful because, as Young and colleagues (2003) explained, the excessive suppression of needs, desires and emotions that is central to this EMS typically leads to a build-up of anger, which may be expressed through various maladaptive symptoms such as passive-aggressive behaviour.

It should be noted that for the majority of the PD syndromes the subsets of EMSs that were entered as potential predictors were the same as those used in Study 1. However, as explained previously in section 3.3.6, the PD syndromes of paranoid, schizoid, schizotypal, histrionic and dependent PDs had an additional one to three EMSs entered as potential predictors based on the results of the partial correlations. Of these additional EMSs, only three were statistically significant predictors of the relevant PD syndrome. That is, Punitiveness was a positive predictor of paranoid PD features, Enmeshment/Undeveloped Self was a positive predictor of schizotypal PD features and Mistrust/Abuse was a positive predictor of histrionic PD features. These



relationships are theoretically consistent given the DSM-IV-TR descriptions of these PDs (APA, 2000) and the descriptions of these EMSs by Young et al. (2003).

**3.4.4.3 Dysfunctional PD beliefs.** As hypothesised, each PD-specific dysfunctional beliefs scale contributed incrementally to the prediction of its corresponding PD syndrome. Specifically, the dysfunctional PD belief scales explained between 1% (borderline and avoidant PDs) to 5% (schizoid PD) of additional variance in their corresponding PD features, over and above the amounts of variance already accounted for by the blocks of SNAP traits and EMSs, respectively. However, the range of incremental variance in PD features that was explained by the dysfunctional PD belief scales was lower than the range that was obtained in Study 1. As with the case of the EMSs, this discrepancy in the amount of variance in PD features that was accounted for by the dysfunctional PD belief scales across Studies 1 and 2 may be due to the personality traits that were examined as predictors in previous steps of the regression analyses. That is, the NEO-PI-R measure of the FFM was not designed to assess personality pathology (Costa & McCrae, 1992), whereas the SNAP is a measure of pathological personality traits (Clark et al., in press). As such, it is likely that EMSs and the dysfunctional PD belief scales were able to account for greater incremental variance in PD features that could not be explained by the FFM traits in Study 1, while the use of the SNAP traits in Study 2 reduced the amount of incremental variance in PD features that could have been accounted for by these dysfunctional schemas.

Although the dysfunctional PD belief scales accounted for the smallest percentage of unique variance in PD features when compared with the blocks of SNAP traits or EMSs, each dysfunctional PD beliefs scale was nonetheless a statistically significant predictor of its corresponding PD syndrome. In fact, the PD-specific dysfunctional belief scales for the schizoid, narcissistic and obsessive-compulsive PDs obtained the largest beta values in the final regression models predicting their respective PD syndromes. Altogether, these findings indicate that even in the context of SNAP maladaptive traits and EMSs, the dysfunctional beliefs and assumptions that characterise each PD have salient relationships with their corresponding PD syndrome and this could have implications for theory and the treatment of PDs (Weishaar & Beck, 2006).

**3.4.4.4 Total variance explained.** The hierarchical regression analyses revealed that, overall, SNAP maladaptive personality traits, EMSs and dysfunctional

PD beliefs collectively explained between 48% (schizoid PD) to 78% (avoidant PD) of the total variance in individual PD syndromes. This range of explained variance is generally similar to that which was obtained in Study 1. Moreover, the range of explained variance in PD syndromes in the current study was higher than those of previous studies wherein only SNAP traits were examined in the prediction of PD features (Morey et al., 2003; Reynolds & Clark, 2001; Stepp et al., 2005; Wolf et al., 2011). It can be therefore argued that the amalgam of overlapping features, symptoms and behaviours that constitute the diagnostic criteria for the DSM-IV-TR's discrete PD syndromes, as measured by the WISPI-IV PD scales in the current study, can be described in terms of combinations of maladaptive personality trait and dysfunctional schema dimensions.

**3.4.4.5 Relative importance of predictors.** As was the case in Study 1, the hierarchical regression analyses of the present study revealed some noteworthy patterns concerning the relative importance of individual predictor variables. First, notwithstanding suppression effects, most SNAP traits that were statistically significant predictors of PD features at the initial step of the regression models had either reduced beta values or were no longer statistically significant predictors of the relevant PD syndrome at the second and third steps when EMSs and dysfunctional PD beliefs, respectively, were included into the analyses. Given the relationships between SNAP traits and dysfunctional schemas (see Tables 3.6-3.7), these findings suggest that relationships between some SNAP maladaptive traits and PD features could be mediated by dysfunctional schemas. As was the case in Study 1 using FFM traits, it appears that some SNAP traits may have distal relationships with PD features in comparison to the more proximal relationships between dysfunctional schemas and PD features. This issue is further discussed in Chapter 5.

Similarly, most EMSs that were statistically significant predictors of PD features in the second step of the regression analyses had either reduced beta values or no longer had significant predictive relationships with that PD syndrome at step three when the index dysfunctional PD beliefs scale was entered into the analysis. However, partial correlations revealed that most of these EMSs were nonetheless positively correlated with the PD-specific dysfunctional beliefs scale that was a statistically significant predictor of the relevant PD syndrome. For example, the Approval/Recognition-Seeking EMS was a statistically significant predictor of histrionic PD features at step two, but was no longer a significant predictor at step

three when the histrionic PD beliefs scale was entered into the analysis. However, the partial correlation revealed that Approval/Recognition-Seeking was positively correlated with the histrionic PD beliefs scale, even when the effects of psychological distress and general PD symptomology were controlled. Altogether, the pattern of findings suggests that some EMSs could have indirect relationships with specific PD syndromes which could be partially or fully mediated by dysfunctional PD beliefs. As suggested in Study 1, the implication from this finding is that PD-specific dysfunctional beliefs and assumptions appear to be more closely related with corresponding PD features than are the broader themes that are encapsulated by EMSs.

Another key pattern that emerged from the hierarchical regression results was that several SNAP traits that were not significant predictors of a given PD syndrome at any step of the relevant regression analysis nonetheless obtained statistically significant correlations with the dysfunctional schemas that were significant predictors of that PD syndrome. For example, Manipulativeness was never a statistically significant predictor of narcissistic PD features. Yet, Manipulativeness obtained statistically significant positive correlations with all of the dysfunctional schemas that were predictors of narcissistic PD features, namely Mistrust/Abuse, Entitlement/Grandiosity, Approval/Recognition-Seeking and the narcissistic PD beliefs scale. As was the case with some FFM traits, these findings suggest that some SNAP traits may be more closely related to dysfunctional schemas in contrast to full-blown PD symptomology. This issue will be further discussed in Chapter 5.

Finally, examination of the beta values in the final regression models revealed that SNAP traits were the most salient predictors of schizotypal, histrionic, antisocial, borderline and passive-aggressive PD features. Conversely, EMSs were the most salient predictors of paranoid, avoidant and dependent PD features; whilst the index dysfunctional PD beliefs scale was the most salient predictor of schizoid, narcissistic and obsessive-compulsive PD features. Overall, these results suggest that whereas most PD features are best described in terms of maladaptive personality traits, dysfunctional schemas may be more important for the understanding of other PD features (Thimm, 2011).

### 3.4.5 PD “Type” Profiles

The statistically significant predictors of each PD syndrome at each step of the hierarchical regression analyses are summarised in Table 3.24. Direct predictors, which are variables that were significant predictors of a given PD syndrome in the final regression model, are highlighted with an asterisk because they have most salient relationships with the relevant PD features. Indirect predictors, which are variables that were significant predictors of a given PD syndrome at earlier steps but not in the final regression model, are also displayed because these variables are also important for describing and understanding PD features.

Table 3.24

#### *Direct and Indirect Predictors of PD Features*

PD	SNAP Traits	EMSs	Dysfunctional PD Beliefs Scale
<i>Cluster A</i>			
Paranoid	(+) Negative Temperament, Mistrust, Aggression*, Eccentric Perceptions*, Entitlement*, Detachment	(+) Mistrust/Abuse*, Entitlement/Grandiosity*, Punitiveness*	(+) Paranoid PD beliefs*
Schizoid	(+) Aggression, Eccentric Perceptions, Detachment*	(+) Emotional Deprivation, Emotional Inhibition*	(+) Schizoid PD beliefs*
Schizotypal	(+) Mistrust, Eccentric Perceptions*, Dependency*, Detachment	(+) Mistrust/Abuse*, Vulnerability to Harm/Illness*, Enmeshment/Undeveloped Self*, Emotional Inhibition*, Entitlement/Grandiosity*	N/A
<i>Cluster B</i>			
Histrionic	(+) Eccentric Perceptions*, Dependency*, Exhibitionism*, Entitlement	(+) Enmeshment/Undeveloped Self*, Entitlement/Grandiosity, Approval/Recognition–Seeking, Mistrust/Abuse*	(+) Histrionic PD beliefs*
Narcissistic	(+) Mistrust, Eccentric Perceptions*, Entitlement, Detachment*, Propriety*	(+) Mistrust/Abuse*, Entitlement/Grandiosity*, Approval/Recognition–Seeking*	(+) Narcissistic PD beliefs*
Antisocial	(+) Aggression*, Self-Harm, Eccentric Perceptions, Entitlement*, Disinhibition*	(+) Emotional Deprivation*, Mistrust/Abuse, Dependence/Incompetence	(+) Antisocial PD beliefs*

Borderline	(+) Negative Temperament*, Eccentric Perceptions*, Detachment, Disinhibition*	(+) Abandonment/Instability*, Defectiveness/Shame*, Entitlement/Grandiosity*	(+) Borderline PD beliefs*
<i>Cluster C</i>			
Avoidant	(+) Negative Temperament*, Mistrust, Dependency, Detachment* (-) Exhibitionism*	(+) Social Isolation/Alienation*, Emotional Inhibition*, Approval/Recognition–Seeking*	(+) Avoidant PD beliefs*
Dependent	(+) Negative Temperament, Eccentric Perceptions, Dependency*	(+) Abandonment/Instability*, Subjugation*, Approval/Recognition–Seeking*	(+) Dependent PD beliefs*
Obsessive-Compulsive	(+) Negative Temperament*, Entitlement*, Detachment*, Propriety*, Workaholism*, Eccentric Perceptions*	(+) Failure*, Emotional Inhibition, Unrelenting Standards*, Approval/Recognition–Seeking*	(+) Obsessive-compulsive PD beliefs*
<i>DSM-IV-TR Appendix</i>			
Passive-Aggressive	(+) Negative Temperament, Eccentric Perceptions, Entitlement, Detachment, Disinhibition*, Aggression	(+) Subjugation*, Entitlement/Grandiosity, Insufficient Self-Control/Self-Discipline	(+) Passive-aggressive PD beliefs*

*Note.* N/A = Not applicable. \*Indicates that the variable was a significant predictor of the relevant PD syndrome in the final regression model for that PD; (+) indicates a positive predictive relationship; (–) indicates a negative predictive relationship.

As shown in Table 3.24, each PD syndrome was associated with a unique combination of SNAP maladaptive traits, EMSs and dysfunctional PD beliefs. These unique combinations of dimensional constructs collectively may be considered to constitute a prototypic PD “type” profile of PD features. As will be discussed in Chapter 5, these PD type profiles can be compared with those obtained in Study 1 and with the trait profiles in the dimensional trait model proposed for DSM-5 (APA, 2011).

**3.4.5.1 The role of Eccentric Perceptions.** Similar to the prominent role of the Values facet in the PD type profiles of Study 1, the SNAP trait of Eccentric Perceptions is a salient maladaptive trait in the PD type profiles of the current study. As indicated by the asterisks in Table 3.24 above, Eccentric Perceptions was actually a significant direct predictor in the final models predicting paranoid, schizotypal,

histrionic, narcissistic, borderline and obsessive-compulsive PD features, indicating that it had a salient relationship with these PD features even once the effects of other SNAP traits, EMSs and the PD-specific dysfunctional belief scales were considered. As mentioned previously, given the lack of published studies that have explored the predictive relationships between SNAP traits and PDs it is difficult to compare and contrast these findings. However, correlational analyses in this study and in previous research have found positive correlations between Eccentric Perceptions and other PDs besides schizotypal PD, particularly borderline and paranoid PDs (Hurt & Oltmanns, 2002; J. D. Miller et al., 2004; Morey et al., 2003). Taken together, these findings challenge Clark's (1993a) hypothesis that Eccentric Perceptions is salient for only schizotypal PD. Rather, the findings suggest that the personality pathology features that comprise the Eccentric Perceptions trait dimension, such as having unusual perceptual experiences (e.g., depersonalisation, derealisation, extrasensory perception, etc) and an atypical view of the world (Clark et al., in press), may be associated with other PD syndromes too. Indeed, there are explicit references to odd or eccentric behaviour, peculiar thoughts and unusual perceptual experiences in the DSM-IV-TR's descriptions for paranoid, schizotypal and borderline PDs (APA, 2000).

Eccentric Perceptions has been shown to have a positive relationship with the broader FFM domain of Openness (Clark et al., 2002; Markon et al., 2005). Furthermore, Piedmont, Sherman, Sherman, Dy-Liacco, and Williams (2009) found weak to moderate positive correlations between the Odd and Eccentric subscale of their measure of the maladaptive features of Openness and most PDs, as well as a moderate positive correlation between the Odd and Eccentric subscale and the SNAP's Eccentric Perceptions scale. In light of the finding that the Openness facet of Values was a significant negative predictor of many PD features in Study 1, these results suggest that the high and low poles of traits linked to the Openness dimension could be important for the conceptualisation of PDs. This is in contrast to previous studies that have suggested that Openness may not be relevant to the domain of personality pathology (Saulsman & Page, 2004). The implication from these findings is that Openness could well be relevant to understanding the links between normal and abnormal personality structure (Samuel & Widiger, 2008; Widiger, 2011).

### **3.4.6 Limitations**

The main limitation of the current study concerned sample characteristics. Although the study involved a moderately-sized sample, there was a gender imbalance in that the participants were predominantly women. As such, the results may not be entirely generalisable to men. Nevertheless, any potential gender-related effects are likely to be minimal as previous studies in this field have found that personality traits (Stepp et al., 2005; Thimm, 2011) and EMSs (Carr & Francis, 2010), rather than gender were the most salient predictors of PD features. In addition, the sample was homogenous in that the participants were mostly university students with relatively high levels of education. Future studies should examine the relationships between the SNAP personality traits, dysfunctional schemas and PD features in more heterogeneous samples or clinical samples, so as to ensure the wider generalisability of results. Finally, although the use of a non-clinical analogue sample is consistent with the dimensional approach to understanding personality pathology, non-clinical samples are most likely characterised by lower levels of personality pathology. The reduced variability in scores on measures related to personality pathology in turn could result in a number of positively skewed variables. Thus, recruiting clinical samples may help to ensure that adequate variance is sampled for all variables.

### **3.4.7 Conclusion**

Using the SNAP model of maladaptive personality traits, this study found meaningful relationships between SNAP traits, dysfunctional schemas and PD features in a non-clinical sample. Building on from Study 1, partial correlations in this study revealed that the large number of zero-order correlations between dysfunctional schemas and PD scales were substantially reduced and more in line with theoretical expectations once psychological distress and general PD symptomology were controlled. Further, hierarchical multiple regression analyses revealed that dysfunctional schemas added incremental validity to the prediction of PD features over and above SNAP traits. Most importantly, this study found that each PD syndrome was associated with a dimensional “type” profile consisting of a unique combination of SNAP trait and dysfunctional schema predictors which collectively explained a substantial amount of variance in PD features as measured by the WISPI-IV PD scales.

## **Chapter 4: Personality Traits and Dysfunctional Schemas in Clinical and Non-Clinical Groups: An Exploratory Australian Study (Study 3)**

### **4.1 Introduction**

In the literature on dimensional approaches to PD conceptualisation, the existing research, which also includes Studies 1 and 2 of this thesis, have typically used either clinical or non-clinical samples to explore the relationships between personality traits or dysfunctional schemas and PD features. The assumption is that results found with one sample may be extrapolated to the other because of the presumed continuity between normal and abnormal personality characteristics in dimensional approaches (Krueger, Eaton, Clark, et al., 2011). For example, if a particular trait is found to be predictive of particular PD features in a non-clinical sample, it is then assumed that the same result would likely be obtained with a clinical sample. This is because individuals in clinical samples are supposed to have “more extreme” levels of traits which results in personality pathology. As reviewed in Chapter 1, one key assumption in both trait and cognitive-behavioural models of PDs is that personality dysfunction is associated with having extremely low or extremely high levels of a given set of dimensional personality traits or trait-like cognitive constructs, such as dysfunctional schemas, respectively. Further, in both models, traits or dysfunctional schemas are presumed to be inflexible, pervasive and enduring, and lead to distress and PD-related features, symptoms and behaviours.

However, there appears to be limited published research in the literature on dimensional PD models that has compared directly the scores of clinical and non-clinical groups on personality traits or dysfunctional schemas. It is important to empirically explore and ascertain the similarities and differences between clinical and non-clinical groups on such dimensions, rather than simply assume differences (Strack, 2006). Specifically, it is important to examine the level of variation on these dimensions in groups with differing degrees of psychopathology (Clark et al., 1993). Between-groups differences could provide evidence, albeit indirectly, that personality pathology exists on a continuum and is related to the severity or strength of personality traits and dysfunctional schemas.

The general lack of research in this field is compounded by the fact that existing studies have typically used homogenous clinical samples or disorder groups as the statistical comparison, thus limiting the generalisability of findings. For



example, in terms of higher-order personality traits from the FFM or Big Three models, the meta-analysis by Kotov et al. (2010) found that several specific anxiety, depressive and substance disorder groups could be differentiated from control groups by a general pattern of higher scores on Neuroticism and lower scores on Conscientiousness. Lower Extraversion and higher Disinhibition scores also differentiated specific disorder groups from control groups. Bienvenu et al. (2004) found that scores on FFM facets primarily from the Neuroticism and Extraversion domains could differentiate specific anxiety and depressive disorder groups from a no-disorder control group. Further, Clark et al. (1993) used a preliminary version of the SNAP and found that normal college students, college students seeking counselling and inpatients from a substance use and PD treatment unit scored progressively higher on traits associated with Negative Temperament and progressively lower on traits linked to Positive Temperament. With regards to dysfunctional schemas, Rijkeboer and van den Bergh (2006) found that an inpatient group obtained significantly higher scores on all EMSs, as measured by an early Dutch version of the YSQ, in comparison to a student group even after gender, educational level and age were controlled. Moreover, the literature reviewed in section 1.4.4 revealed that specific PD groups had higher scores than no-disorder control groups or Axis I disorder groups on most EMSs. Likewise, the literature reviewed in section 1.4.2 revealed specific PD groups had higher scores on index PBQ dysfunctional PD belief scales in comparison to either Axis I disorder-, other-PD or no-PD groups.

Since personality traits and dysfunctional schemas theoretically are dimensional constructs that cut across diagnostic categories, employing a heterogeneous clinical sample as the comparison group would be more useful because this would be more representative of clients seen in everyday clinical settings. A heterogeneous clinical sample would also have the advantage of including disorder groups that have not yet been studied with regards to levels of personality pathology. In addition, a heterogeneous clinical sample would arguably be a better statistical comparison group because more variance in personality pathology is likely to be captured in contrast to a specific disorder group (e.g., only anxiety disorders) and this in turn would permit greater generalisability of results. Furthermore, there has been little Australian research in this field, thus limiting the cross-cultural applicability of existing work. Identification of the traits and

dysfunctional schemas on which clinical and non-clinical groups differ could help to further understand the differences between normal and abnormal personality. In turn, this could have implications for theory as well as practical implications for case conceptualisation, assessment and treatment (Beck et al., 2004; T. R. Miller, 1991; Piedmont, 1998; Sanderson & Clarkin, 2002; Young et al., 2003).

Thus, the aim of this small exploratory study was to examine the differences between Australian clinical and non-clinical groups on personality trait (FFM and SNAP traits) and dysfunctional schema (EMSs and dysfunctional PD beliefs) dimensions. Between-groups differences on the K10 and WISPI-IV PD scales were also investigated to ascertain the level of psychological distress (a proxy for psychopathology) and PD features present in the groups.

On the basis of previous research outlined above, four hypotheses were made. The first hypothesis was that the clinical group would obtain higher Neuroticism and Negative Temperament scores than the index non-clinical group. The second hypothesis was that the clinical group would have lower Extraversion and Positive Temperament scores than the index non-clinical group. The third hypothesis was that the clinical group would obtain a lower Conscientiousness score and a higher Disinhibition score than the index non-clinical group. The fourth hypothesis was that the clinical group would obtain a higher YSQ-S3 Total score, reflecting a greater severity of dysfunctional schemas, in comparison to the index non-clinical group.

## **4.2 Method**

### **4.2.1 Participants**

In total, 21 participants took part in this study. The participants comprised three small groups: one clinical group and two non-clinical groups. The sociodemographic characteristics of the participants in each group are displayed in Table 4.1. Information about each group will be described next.

Table 4.1

*Sociodemographic Characteristics of the Participants in Each Group*

Characteristic	Group		
	Clinical (n = 7)	Non-clinical 1 (n = 7)	Non-clinical 2 (n = 7)
<i>Age (in years)</i>			
Mean (SD)	32.14 (10.79)	32.14 (10.79)	32.43 (11.03)
Range	23 – 50	23 – 50	23 – 50
<i>Gender</i>			
Man	1 (14%)	1 (14%)	1 (14%)
Woman	6 (86%)	6 (86%)	6 (86%)
<i>Education level (in years)</i>			
Mean (SD)	14.14 (4.10)	15.29 (1.98)	16.00 (3.37)
Range	9 – 19	12 – 18	10 – 20
<i>Currently attending university</i>			
Yes	2 (29%)	3 (43%)	5 (71%)
No	5 (71%)	4 (57%)	2 (29%)
<i>Ethnic or cultural background</i>			
Australian or New Zealander	5 (71%)	3 (43%)	2 (29%)
European	2 (29%)	1 (14%)	2 (29%)
Asian	-	1 (14%)	-
Middle Eastern	-	2 (29%)	2 (29%)
South American	-	-	1 (14%)
<i>Employment status</i>			
Full-time student	1 (14%)	-	2 (29%)
Full-time student & employed	-	3 (43%)	1 (14%)
Part-time student & employed	1 (14%)	-	2 (29%)
Employed full-time	-	3 (43%)	1 (14%)
Employed part-time	2 (29%)	-	-
Not employed	3 (43%)	1 (14%)	1 (14%)
<i>Relationship status</i>			
Single	5 (71%)	2 (29%)	3 (43%)
Attached	2 (29%)	4 (57%)	2 (29%)
Married	-	1 (14%)	2 (29%)

**4.2.1.1 Clinical group.** The clinical group consisted of seven participants who were currently receiving mental health treatment. These participants were recruited from two mental health services in Melbourne, Victoria. Specifically, four participants (one man and three women) were recruited from an outpatient dual-diagnosis counselling and outreach service that specialised in providing mental health treatment and support to young adults experiencing co-occurring mental health and substance use issues. The remaining three participants (all women) were recruited from the inpatient and outpatient services of a private psychiatric hospital.

The clinical participants were recruited using several methods. Flyers advertising the study were displayed in prominent locations throughout the counselling/outreach service and the private psychiatric hospital. In addition, staff at

the two services were provided with copies of the flyer and information letters about the study which they could distribute to potential participants. The onus was on those interested in participating in the study to contact the researcher either directly via telephone/email or indirectly through their counsellor/clinician so as to organise their participation in the study. In addition, the researcher was permitted to attend some inpatient and outpatient group programs at the private psychiatric hospital in order to provide a brief announcement about the study and to distribute an expression of interest sign-up sheet. Those interested in participating in the study were asked to provide their contact details on the sign-up sheet and the researcher subsequently contacted these individuals via telephone in order to organise their participation in the study. Each clinical participant received two cinema vouchers to thank them for their time and involvement in the research.

Given that a heterogeneous clinical group was desired, minimal exclusion criteria for the clinical sample were applied. Specifically, individuals with an active diagnosis of learning/intellectual disability or psychotic disorder were excluded from taking part in the study. It was thought that individuals with such diagnoses would experience difficulties with completing the measures and with the lengthy assessment process.

The self-reported diagnostic characteristics of the clinical group are displayed in Table 4.2. It can be seen in this table that the clinical participants generally had multiple psychiatric diagnoses within the mood-anxiety and PD spectrum and had been receiving mental health treatment at their respective service for an average of 18 months. Four out of seven participants self-reported having a PD diagnosis in addition to an Axis I disorder.

Table 4.2

*Self-Reported Diagnostic Characteristics of the Clinical Group*

<b>Characteristic</b>	<b>Frequency</b>
<i>Treatment length (in months)</i>	
Mean (SD)	18.86 (14.83)
Range	2 – 42
<i>Number of self-reported diagnoses (per person)</i>	
Mean (SD)	2.86 (1.57)
Range	1 – 5
<i>Self-reported diagnoses<sup>a</sup></i>	
Anxiety Disorder (Unspecified)	2
Avoidant Personality Disorder	2
Bipolar Disorder	1
Bipolar II Disorder	1
Generalised Anxiety Disorder	2
Major Depressive Disorder	6
Personality Disorder (Unspecified)	2
Post-Traumatic Stress Disorder	3
Social Anxiety Disorder	1

*N* = 7. <sup>a</sup>Multiple self-reported diagnoses per person were permitted.

Table 4.3 contains a breakdown of each clinical participant's self-reported reasons for seeking treatment. It can be seen from this table that most participants sought out their respective mental health service in order to receive treatment for distressing mood-anxiety symptoms.

Table 4.3

*Clinical Participants' Self-Reported Reasons for Seeking Treatment*

<b>Participant ID</b>	<b>Reasons for Seeking Treatment:</b>
#3301 Woman, outpatient <sup>a</sup>	<i>“Counselling [sic]—parole conditions; drug and alcohol counselling [sic].”</i>
#3302 Man, outpatient <sup>a</sup>	<i>“I have social anxiety and depression and am very interested in art and [program] is the perfect environment that suits my needs and lets me work on my creative skills.”</i>
#3303 Woman, outpatient <sup>a</sup>	<i>“Realised that there might be another way of being and that I very much required assistance.”</i>
#3304 Woman, outpatient <sup>a</sup>	<i>“PTSD—anxiety [sic], depression, suicidulation [sic—suicidal ideation], self-harm tendencies, psychotic break [sic]”</i>
#4401 Woman, inpatient <sup>b</sup>	<i>“Treatment resistant depression—inpatient”</i>
#4402 Woman, outpatient <sup>b</sup>	<i>“Have Type 2 Bipolar, severe depression and general anxiety disorder. Only diagnosed 3 years ago—coping with this especially negative impact of anxiety and low self-esteem. Outpatient treatment.”</i>
#4403 Woman, outpatient <sup>b</sup>	<i>“Group therapy. Bipolar depression. Psychiatric help. Psychological services. Outpatient.”</i>

*Note.* <sup>a</sup>Recruited from the counselling/outreach service; <sup>b</sup>recruited from the private psychiatric hospital.

**4.2.1.2 Non-clinical groups.** The two non-clinical groups each consisted of seven participants who were randomly selected from the Study 1 and Study 2 datasets after being matched to the clinical participants on the key sociodemographic variables of gender, age (within one year) and education level (within three years). Some non-clinical participants could not be precisely matched to their clinical counterparts on education level. In this instance, gender- and age-matched non-clinical participants who were closest to their clinical counterparts on education level were randomly selected. A Kruskal-Wallis test revealed that there were no statistically significant differences between the three groups on education level,  $\chi^2(2) = 0.84, p = .658$ .

The procedures for recruiting the non-clinical participants have been described in sections 2.2.1 and 3.2.1. Since different measures were employed in Study 1 and Study 2 (i.e., the NEO-PI-R was used in Study 1, but not in Study 2; whereas the SNAP-2 and K10 were used in Study 2, but not in Study 1) two non-clinical groups of participants from the Study 1 (“Study 1 non-clinical group”) and Study 2 (“Study 2 non-clinical group”) datasets were sourced to allow for

comparisons to be made between clinical and non-clinical groups on all relevant study variables.

#### **4.2.2 Materials**

The following descriptions of the materials that were used in this study apply only to the clinical group as descriptions of the materials used for the non-clinical groups were previously described (see sections 2.2.2 and 3.2.2).

In addition to an information letter and consent forms (see Appendix E), participants were also given a questionnaire pack that contained questions pertaining to sociodemographic characteristics and the paper measures used in the study. The measures in the questionnaire pack were counterbalanced and each participant randomly received one of two predetermined versions of the questionnaire pack. A small laptop computer with a mouse was used to administer the computerised measures.

**4.2.2.1 Sociodemographic questions.** The same sociodemographic questions that were asked in Study 1 (see section 2.2.2.1) were also asked in the current study in order to obtain some basic information about the characteristics of the clinical group and to match the clinical and non-clinical participants on key sociodemographic characteristics. In addition, it was necessary to establish some basic information about the diagnostic characteristics of the heterogeneous sample of clinical participants because psychiatric diagnoses were not formally assessed in this study. Thus, the clinical participants were asked to respond to three additional questions: (a) the length of time (in months) that they had been a client at their current mental health service; (b) their general reasons for seeking help from their mental health service; and (c) whether or not they were aware of having any diagnosis relating to their mental health that was made by a mental health professional, such as a psychiatrist, psychologist or general practitioner, and to list any such diagnoses. The sociodemographic and diagnostic questions comprised the cover page of the questionnaire pack.

**4.2.2.2 PD features.** PD features were measured by the computerised version of the WISPI-IV (Klein & Benjamin, 1996; Norton, 2003), which is identical to the paper version that was used in Studies 1 and 2 (see section 2.2.2.2 for a description). In the computerised administration, participants first read the instructions page onscreen and then move on to the test items. Each item is presented individually and

participants use the mouse to click on the box that corresponds to their response on the 10-point Likert-type scale.

**4.2.2.3 SNAP maladaptive personality traits.** SNAP traits were measured by the computerised version of the SNAP-2 (Clark et al., in press; Simms, 2007). See section 3.2.2.1 for a description of this measure.

**4.2.2.4 FFM personality traits.** FFM traits were measured by the NEO-PI-R (Costa & McCrae, 1992). For a description of this measure see section 2.2.2.3. As will be described later, the clinical participants recruited from the counselling/outreach service received a brief descriptive summary of their FFM profile through the provision of a “Your NEO Summary” sheet. This feedback sheet is included in the NEO-PI-R test kit and requires the examiner to simply check the boxes that describe a respondent’s key personality traits based on their FFM domain *T* scores.

**4.2.2.5 EMSs.** EMSs were measured by the YSQ-S3 (Young, 2005b). Section 2.2.2.4 contains a description of this measure.

**4.2.2.6 Dysfunctional PD beliefs.** Dysfunctional PD beliefs were measured by the PBQ (Beck & Beck, 1995). For a description of this measure, see section 2.2.2.5.

**4.2.2.7 Psychological distress.** Psychological distress was measured by the K10 (Kessler et al., 2002). See section 3.2.2.6 for a description of this measure.

### **4.2.3 Procedure**

Approval to conduct this study was obtained from the Human Research Ethics Committee of the Australian Catholic University, the Jesuit Social Services Connexions Program and The Melbourne Clinic Research Ethics Committee (see Appendix F). The following description of the data collection procedures applies only to the clinical group as the procedures employed for the non-clinical groups were described in sections 2.2.3 and 3.2.3. The data collection procedures for the clinical group depended on which mental health service the clinical participants were recruited from, as detailed next.

**4.2.3.1 Clinical participants recruited from the counselling/outreach service.** After contacting the researcher, the participants from the counselling/outreach service were provided with a description of the general aims of the study and the requirements of participation. Participants were informed that they



could complete the measures during either two 2-hour testing sessions or one 4-hour testing session and could take as many short breaks as they required during the testing. Two participants opted to attend two 2-hour testing sessions held one week apart and the remaining two participants opted for one 4-hour testing session. All participants were tested individually and the testing sessions were held in a quiet room at the counselling/outreach service.

At the beginning of the testing session, the researcher again provided each participant with an explanation of the general aims of the study and the participation requirements, and provided each participant with an information letter to read and consent forms to sign. In addition, all participants were informed that they could receive some general feedback about their FFM traits through their counsellor, as requested by the counselling/outreach service. Written consent was required from each participant interested in receiving feedback about their FFM traits to allow the researcher to provide this feedback to his or her counsellor. All participants consented to receiving this feedback.

Each participant was provided with instructions on how to complete all self-report measures. Participants completed the self-report measures in a counterbalanced order; that is, some participants completed the computerised measures first, while others completed the paper-based measures first. The researcher remained in the room with each participant for the duration of the testing session(s) to answer any questions and also encouraged each participant to take short breaks if needed. Upon completion of all measures, participants were provided with an opportunity to debrief with the researcher about their experience and ask any questions. Finally, participants were thanked for their time and provided with two cinema vouchers. Approximately one week after each participant's testing session, the researcher provided his or her counsellor with the participant's "Your NEO Summary" feedback sheet and a verbal explanation of the feedback to relay back to their client.

**4.2.3.2 Clinical participants recruited from the private psychiatric hospital.** The procedures used with the three participants recruited from the private psychiatric hospital were generally similar to those employed with participants recruited from the counselling/outreach service as described above. However, in addition to obtaining the participant's written consent, it was a requirement of the private psychiatric hospital that each participant's consultant psychiatrist provide

written consent for their patient to participate in the study. Thus, the researcher provided each individual interested in participating in the study with an explanation about the study's aims and participation requirements and also asked them for the name of their consultant psychiatrist to provide him or her with the consent form to sign. Once this form was returned by the consultant psychiatrist, the researcher then contacted the participant to organise a testing session. All three participants opted to complete the measures in one 4-hour testing session and were tested individually in a quiet room at the hospital following the same procedures described in the previous section.

## 4.3 Results

### 4.3.1 Overview

All analyses were performed using SPSS Statistics Version 17.0. Given the small overall sample size ( $N = 21$ ) and number of participants in each group ( $ns = 7$ ), nonparametric between-subjects tests were used in order to compare the scores of the clinical and non-clinical groups on the personality trait and dysfunctional schema variables. Nonparametric tests are not constrained by the stringent assumptions of parametric tests and are suitable for use with small samples, including those with less than five participants in each group (Pett, 1997).

Two types of nonparametric tests were used depending on the availability of pairwise data between groups. The Mann-Whitney  $U$  test is the nonparametric equivalent of the independent samples  $t$ -test and was used to compare the scores between two groups, that is, the clinical group and the index non-clinical group. The Kruskal-Wallis test is the nonparametric counterpart of the one-way analysis of variance and was used to compare the scores amongst all three groups. In the event of a statistically significant omnibus Kruskal-Wallis test, post hoc Mann-Whitney  $U$  tests were performed to determine where the significant differences were between the three groups (Pett, 1997; Sheskin, 2004). Unlike their parametric counterparts, the Mann-Whitney  $U$  and Kruskal-Wallis tests compare median scores between the groups as opposed to mean scores because the median is a less biased measure of central tendency, especially with small samples (Pett, 1997).

An alpha level of  $p < .05$  was used for all tests except the post hoc Mann-Whitney  $U$  tests. Pett (1997) points out that whilst multiple post hoc comparisons increase the chance of Type I errors, using stringent alpha levels for post hoc tests

makes it harder to detect differences between the groups, particularly with small sample sizes. Thus, Pett recommends that a more liberal alpha level be applied to post hoc tests once the omnibus Kruskal-Wallis test indicates that there is a difference somewhere amongst the groups. Accordingly, the alpha level for the post hoc tests was determined following the advice of Pett. That is, an initial liberal alpha level of  $p < .10$  was set to allow for the detection of significant differences between the groups and then a Bonferroni adjustment was made (i.e.,  $.10/3 = .033$ ) to protect against inflated Type I error. The resultant alpha level of  $p < .033$  was used for all post hoc tests only. Furthermore, one-tailed tests were used to determine the statistical significance of directional hypotheses (Pett, 1997). Effect sizes ( $r$ ) for Mann-Whitney  $U$  tests were interpreted using Cohen's (1988) conventions for small ( $r = .10$ ), medium ( $r = .30$ ) and large ( $r = .50$ ) effects.

#### 4.3.2 Between-Groups Differences on PD Features and Psychological Distress

The WISPI-IV PD scale profiles of all three groups are displayed in Figure 4.1. The figure shows that the clinical group obtained higher scores than the non-clinical groups on most PD scales, suggesting a greater presence of PD features in the clinical group. The clinical group obtained a prominent score on the avoidant PD scale.

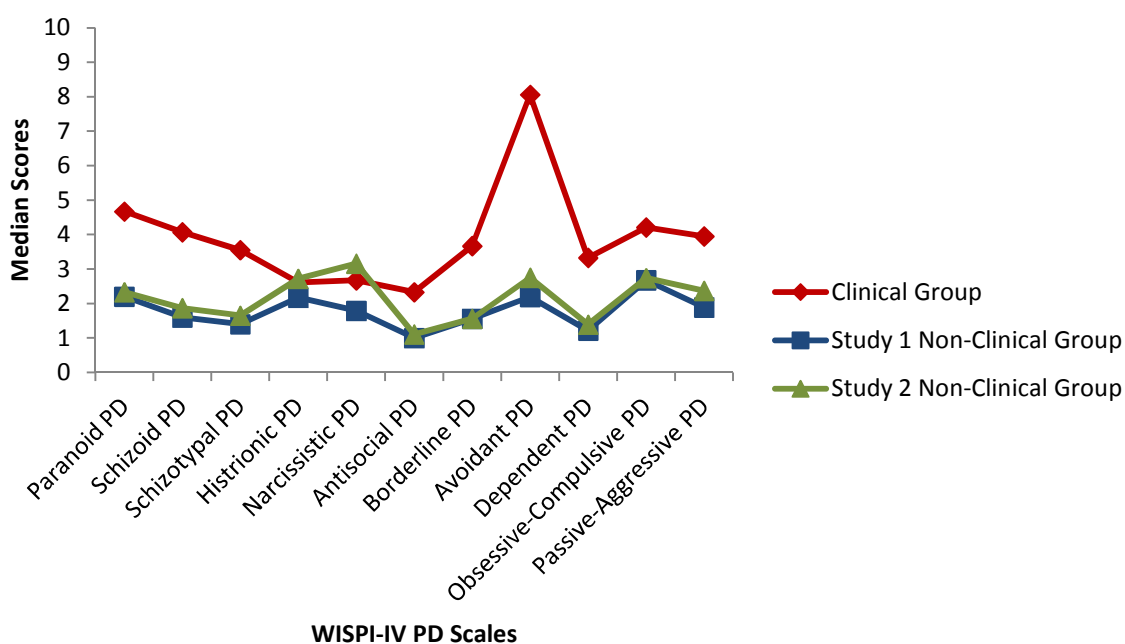


Figure 4.1. WISPI-IV PD scale profiles of the clinical and non-clinical groups.

As shown in Table 4.4, Kruskal-Wallis tests revealed statistically significant differences between the clinical and non-clinical groups on scores for the paranoid ( $\chi^2 = 9.66, p = .008$ ), schizoid ( $\chi^2 = 6.86, p = .032$ ), schizotypal ( $\chi^2 = 7.32, p = .026$ ), borderline ( $\chi^2 = 8.64, p = .013$ ), avoidant ( $\chi^2 = 8.28, p = .016$ ), dependent ( $\chi^2 = 11.33, p = .003$ ), obsessive-compulsive ( $\chi^2 = 9.14, p = .010$ ) and passive-aggressive ( $\chi^2 = 8.78, p = .012$ ) PD scales.

Table 4.4

*Between-Groups Differences on WISPI-IV PD Scales*

WISPI-IV PD Scale	Group						Kruskal-Wallis Test
	Clinical ( <i>n</i> = 7)		Study 1 Non-Clinical ( <i>n</i> = 7)		Study 2 Non-Clinical ( <i>n</i> = 7)		$\chi^2$ ( <i>df</i> = 2)
	Median	SD	Median	SD	Median	SD	
Paranoid PD	4.67	1.56	2.20	0.50	2.33	1.37	9.66**
Schizoid PD	4.07	1.23	1.60	0.67	1.87	1.26	6.86*
Schizotypal PD	3.55	1.11	1.40	0.38	1.65	0.64	7.32*
Histrionic PD	2.61	0.55	2.17	0.65	2.72	1.17	0.94
Narcissistic PD	2.68	1.19	1.79	0.35	3.16	1.21	5.58
Antisocial PD	2.33	1.25	1.00	0.21	1.11	0.28	5.83
Borderline PD	3.67	1.41	1.56	1.00	1.56	1.02	8.64*
Avoidant PD	8.06	2.62	2.19	0.52	2.75	1.23	8.28*
Dependent PD	3.33	1.30	1.22	0.56	1.39	0.53	11.33**
Obsessive-Compulsive PD	4.21	1.47	2.68	0.62	2.74	1.09	9.14**
Passive-Aggressive PD	3.95	1.67	1.89	0.55	2.37	0.84	8.78*

Note. \* $p \leq .05$ . \*\* $p \leq .01$ .

Post hoc Mann-Whitney *U* tests revealed no statistically significant differences between the two non-clinical groups on scores for any PD scales (all  $ps > .033$ ). Rather, the significant differences were between the clinical and non-clinical groups. Specifically, Mann-Whitney *U* tests revealed statistically significant differences between the scores of the clinical group and the Study 1 non-clinical group on all of the aforementioned PD scales, that is, paranoid ( $U = 1.00, Z = -3.01, p = .001, r = .80$ ), schizoid ( $U = 5.00, Z = -2.49, p = .011, r = .67$ ), schizotypal ( $U = 5.00, Z = -2.50, p = .011, r = .67$ ), borderline ( $U = 4.00, Z = -2.62, p = .007, r = .70$ ), avoidant ( $U = 5.50, Z = -2.43, p = .011, r = .65$ ), dependent ( $U = 2.00, Z = -2.88, p = .002, r = .77$ ), obsessive-compulsive ( $U = 1.50, Z = -2.95, p = .001, r = .79$ ) and passive-aggressive ( $U = 3.00, Z = -2.75, p = .004, r = .73$ ).

Furthermore, there were statistically significant differences between the scores of the clinical group and the Study 2 non-clinical group on the borderline ( $U = 6.00$ ,  $Z = -2.37$ ,  $p = .017$ ,  $r = .63$ ), avoidant ( $U = 6.00$ ,  $Z = -2.36$ ,  $p = .017$ ,  $r = .63$ ) and dependent ( $U = 2.00$ ,  $Z = -2.89$ ,  $p = .002$ ,  $r = .77$ ) PD scales. However, in contrast to the Study 1 non-clinical group, the differences between the clinical group and the Study 2 non-clinical group did not reach the adjusted alpha level for statistical significance on the paranoid ( $U = 8.00$ ,  $Z = -2.11$ ,  $p = .038$ ,  $r = .56$ ), schizoid ( $U = 10.00$ ,  $Z = -1.86$ ,  $p = .073$ ,  $r = .50$ ), schizotypal ( $U = 8.50$ ,  $Z = -2.05$ ,  $p = .038$ ,  $r = .55$ ), obsessive-compulsive ( $U = 8.00$ ,  $Z = -2.11$ ,  $p = .038$ ,  $r = .56$ ) and passive-aggressive ( $U = 9.00$ ,  $Z = -1.98$ ,  $p = .053$ ,  $r = .53$ ) PD scales.

A Mann-Whitney  $U$  test revealed statistically significant differences between the scores of the clinical group and the index Study 2 non-clinical group on psychological distress as measured by the K10 ( $U = 2.00$ ,  $Z = -.288$ ,  $p = .001$  one-tailed,  $r = .77$ ). The clinical group obtained a higher K10 Total score ( $Mdn = 33$ ,  $SD = 7.83$ ) in comparison to the Study 2 non-clinical group ( $Mdn = 17$ ,  $SD = 5.19$ ). According to the Victorian Population Health Survey's (Department of Health, 2011) cut-off scores, the K10 Total score for the clinical group was in the maximum Very High range for psychological distress; whereas the score for the Study 2 non-clinical group was in the Moderate distress range.

### 4.3.3 Between-Groups Differences on Personality Traits

**4.3.3.1 Between-groups differences on FFM traits.** Figure 4.2 depicts the FFM trait profiles of the clinical group and the Study 1 non-clinical group which was tested on the NEO-PI-R. As shown in this figure,  $T$ -scores for the clinical group on several traits, such as Neuroticism and Extraversion, were in the Very High and Very Low ranges, respectively (Costa & McCrae, 1992). Conversely,  $T$ -scores for the Study 1 non-clinical group were predominantly within the Average range.

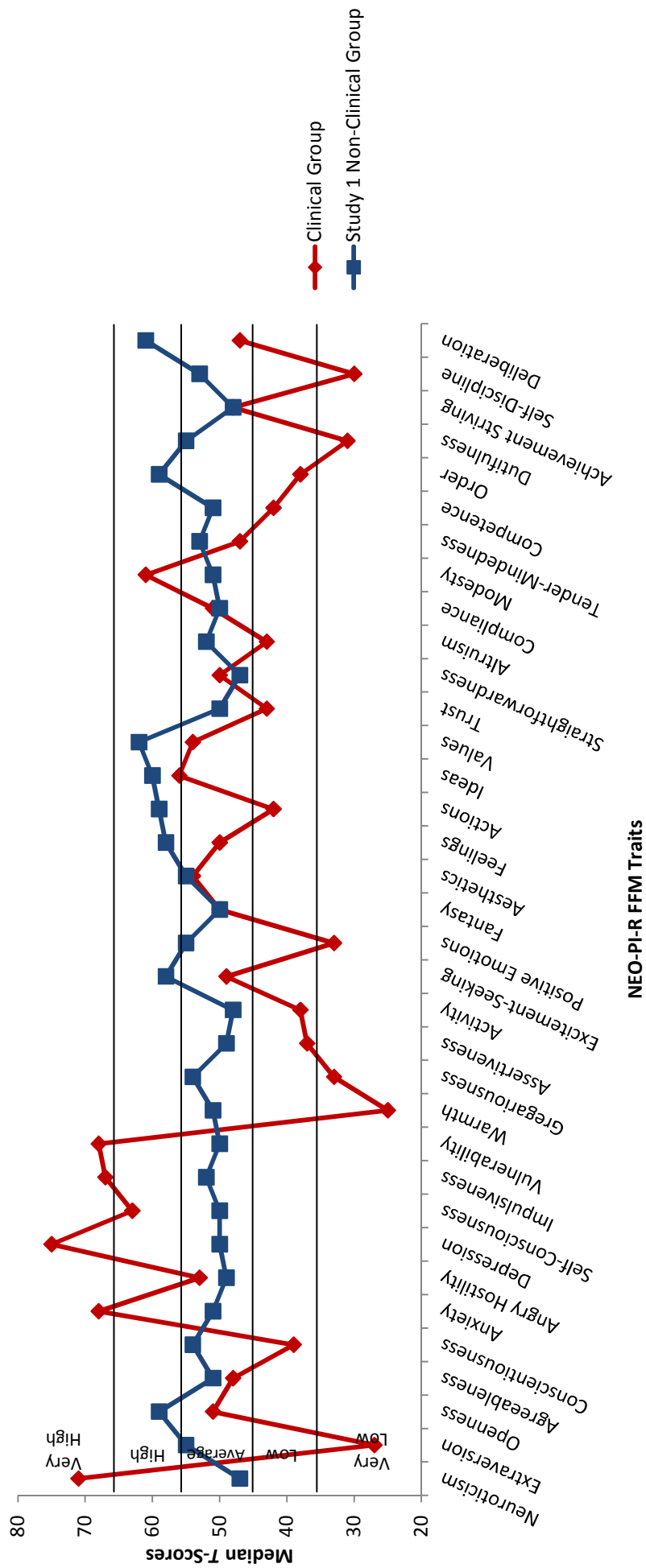


Figure 4.2. FFM trait profiles of the clinical group and the Study 1 non-clinical group.

Mann-Whitney  $U$  tests revealed statistically significant differences between  $T$ -scores of the clinical group and the Study 1 non-clinical group on Neuroticism ( $U = 2.50, p = .001$  one-tailed), Anxiety ( $U = 0.00, p = .001$ ), Depression ( $U = 3.00, p = .004$ ), Self-Consciousness ( $U = 8.50, p = .038$ ), Vulnerability ( $U = 0.00, p = .001$ ), Extraversion ( $U = 10.00, p = .037$  one-tailed), Gregariousness ( $U = 5.00, p = .011$ ), Actions ( $U = 7.00, p = .026$ ), Conscientiousness ( $U = 5.00, p = .006$  one-tailed), Order ( $U = 8.50, p = .038$ ) and Self-Discipline ( $U = 7.50, p = .026$ ). As shown in Table 4.5, the clinical group obtained higher Neuroticism, Anxiety, Depression, Self-Consciousness and Vulnerability scores, but lower Extraversion, Gregariousness, Actions, Conscientiousness, Order and Self-Discipline scores in comparison to the Study 1 non-clinical group and the differences were all large in effect size.

Table 4.5  
*Between-Groups Differences on FFM Traits*

FFM Traits	Group				Mann-Whitney $U$ Test	Effect Size
	Clinical ( $n = 7$ )		Study 1 Non-Clinical ( $n = 7$ )		$Z$	$r$
	Median	$SD$	Median	$SD$		
<b>Neuroticism</b>	<b>71.00</b>	<b>6.75</b>	<b>47.00</b>	<b>10.77</b>	<b>-2.82***<sup>a</sup></b>	<b>.75</b>
Anxiety	68.00	8.06	51.00	6.63	-3.13***	.84
Angry Hostility	53.00	13.23	49.00	11.20	-1.48	.40
Depression	75.00	7.38	50.00	10.89	-2.76**	.74
Self-Consciousness	63.00	8.96	50.00	8.86	-2.06*	.55
Impulsiveness	67.00	8.73	52.00	15.56	-1.22	.33
Vulnerability	68.00	6.91	50.00	5.35	-3.13***	.84
<b>Extraversion</b>	<b>27.00</b>	<b>18.01</b>	<b>55.00</b>	<b>7.78</b>	<b>-1.86*<sup>a</sup></b>	<b>.50</b>
Warmth	25.00	16.93	51.00	7.13	-1.74	.47
Gregariousness	33.00	13.41	54.00	11.34	-2.49*	.67
Assertiveness	37.00	14.71	49.00	5.59	-0.77	.21
Activity	38.00	11.04	48.00	10.29	-1.36	.36
Excitement-Seeking	49.00	13.40	58.00	9.19	-0.96	.26
Positive Emotions	33.00	17.75	55.00	5.38	-1.74	.47
<b>Openness</b>	<b>51.00</b>	<b>11.43</b>	<b>59.00</b>	<b>10.94</b>	<b>-1.09</b>	<b>.29</b>
Fantasy	50.00	12.54	50.00	9.00	-0.19	.05
Aesthetics	54.00	12.92	55.00	10.56	-0.06	.02
Feelings	50.00	10.64	58.00	7.57	-1.87	.50
Actions	42.00	11.61	59.00	8.68	-2.25*	.60
Ideas	56.00	11.14	60.00	9.62	-0.70	.19
Values	54.00	7.65	62.00	7.99	-1.87	.50
<b>Agreeableness</b>	<b>48.00</b>	<b>19.64</b>	<b>51.00</b>	<b>12.23</b>	<b>-0.32<sup>a</sup></b>	<b>.09</b>
Trust	43.00	13.21	50.00	8.50	-1.75	.47
Straightforwardness	50.00	15.59	47.00	11.13	-0.06	.02
Altruism	43.00	18.18	52.00	9.25	-0.83	.22
Compliance	51.00	18.43	50.00	14.89	-0.19	.05
Modesty	61.00	14.74	51.00	7.90	-1.54	.41
Tender-Mindedness	47.00	12.07	53.00	8.69	-1.22	.33
<b>Conscientiousness</b>	<b>39.00</b>	<b>9.73</b>	<b>54.00</b>	<b>8.98</b>	<b>-2.50***<sup>a</sup></b>	<b>.67</b>

Competence	42.00	7.43	51.00	6.02	-1.88	.50
Order	38.00	11.73	59.00	9.57	-2.06*	.55
Dutifulness	31.00	15.06	55.00	9.16	-1.74	.47
Achievement Striving	48.00	12.32	48.00	6.95	-0.99	.26
Self-Discipline	30.00	8.70	53.00	13.04	-2.19*	.59
Deliberation	47.00	7.36	61.00	10.03	-1.60	.43

Note. <sup>a</sup>One-tailed test.

\* $p \leq .05$ . \*\* $p \leq .01$ . \*\*\* $p \leq .001$ .

**4.3.3.2 Between-groups differences on SNAP traits.** Figure 4.3 displays the SNAP trait profiles of the clinical group and the Study 2 non-clinical group which was tested on the SNAP-2. As shown in this figure, the clinical group had several  $T$ -scores in the clinically significant extreme ranges (Clark et al., in press). In contrast,  $T$ -scores for the Study 2 non-clinical group were all within normal limits.

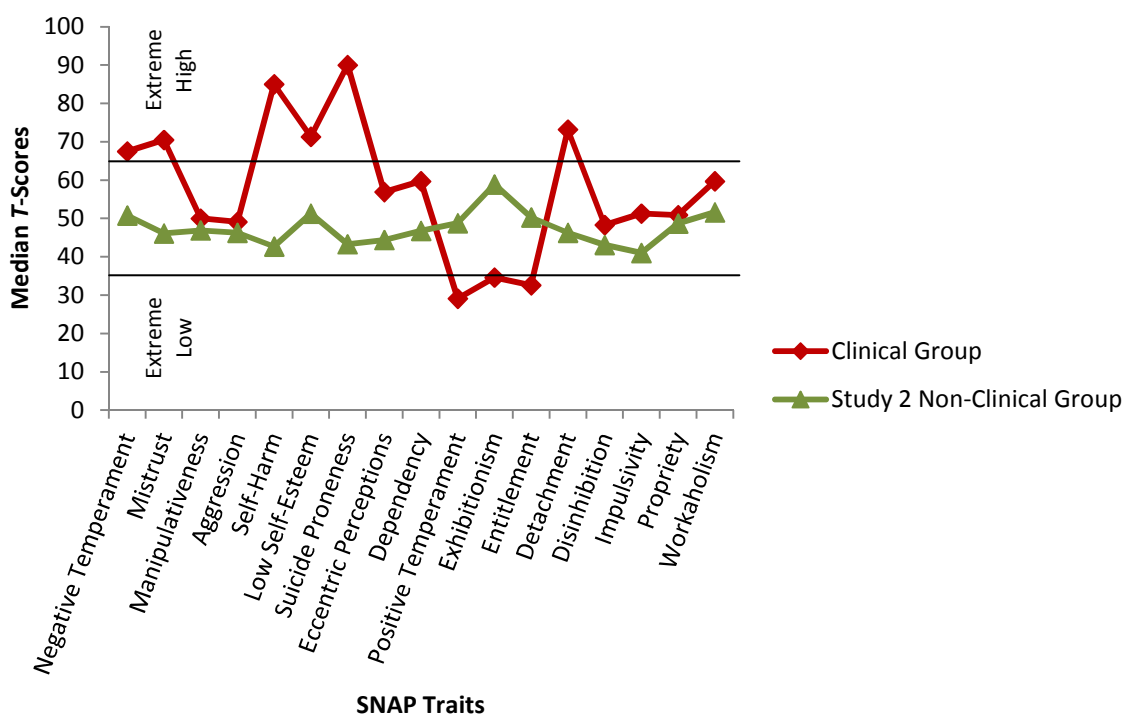


Figure 4.3. SNAP trait profiles of the clinical group and the Study 2 non-clinical group.

Mann-Whitney  $U$  tests revealed statistically significant differences between the scores of the clinical group and the Study 2 non-clinical group on Negative Temperament ( $U = 5.00$ ,  $p = .006$  one-tailed), Mistrust ( $U = 9.00$ ,  $p = .047$ ), Self-Harm ( $U = 2.00$ ,  $p = .002$ ), Low Self-Esteem ( $U = 1.00$ ,  $p = .001$ ), Suicide Proneness



( $U = 6.00$ ,  $p = .017$ ), Eccentric Perceptions ( $U = 8.00$ ,  $p = .038$ ), Positive Temperament ( $U = 5.00$ ,  $p = .006$  one-tailed), Detachment ( $U = 5.00$ ,  $p = .011$ ) and Impulsivity ( $U = 7.50$ ,  $p = .026$ ). As shown in Table 4.6, the clinical group obtained higher Negative Temperament, Mistrust, Self-Harm, Low Self-Esteem, Suicide Proneness, Detachment and Impulsivity scores, but a lower Positive Temperament score in comparison to the Study 2 non-clinical group and the differences were all large in effect size. Contrary to prediction, there were no between-groups differences on Disinhibition ( $U = 16.50$ ,  $p = .159$  one-tailed).

Table 4.6

*Between-Groups Differences on SNAP Traits*

SNAP Traits	Group				Mann-Whitney $U$ Test	Effect Size
	Clinical ( $n = 7$ )		Study 2 Non-Clinical ( $n = 7$ )			
	Median	SD	Median	SD	$Z$	$r$
<b>Negative Temperament</b>	<b>67.50</b>	<b>4.21</b>	<b>50.80</b>	<b>12.35</b>	<b>-2.50**<sup>a</sup></b>	<b>.67</b>
Mistrust	70.50	11.07	46.10	15.99	-1.98*	.53
Manipulativeness	50.00	15.73	46.90	8.20	-0.85	.23
Aggression	49.10	23.16	46.30	6.78	-0.19	.05
Self-Harm	85.00	16.46	42.70	10.84	-2.95**	.79
Low Self-Esteem	71.30	8.49	51.30	5.27	-3.09***	.83
Suicide Proneness	90.00	22.59	43.30	11.56	-2.47*	.66
Eccentric Perceptions	56.90	13.19	44.40	3.80	-2.16*	.58
Dependency	59.70	12.00	46.80	10.34	-1.86	.50
<b>Positive Temperament</b>	<b>29.10</b>	<b>13.52</b>	<b>48.80</b>	<b>9.67</b>	<b>-2.50**<sup>a</sup></b>	<b>.67</b>
Exhibitionism	34.60	10.21	58.90	13.32	-1.88	.50
Entitlement	32.60	10.30	50.30	9.43	-1.88	.50
Detachment	73.20	11.86	46.30	9.25	-2.51*	.67
<b>Disinhibition</b>	<b>48.30</b>	<b>11.55</b>	<b>43.10</b>	<b>7.82</b>	<b>-1.03<sup>a</sup></b>	<b>.28</b>
Impulsivity	51.30	5.86	41.00	8.79	-2.18*	.58
Propriety	50.90	11.63	48.70	9.65	-0.26	.07
Workaholism	59.70	12.05	51.60	14.66	-1.22	.33

Note. <sup>a</sup>One-tailed test.

\* $p \leq .05$ . \*\* $p \leq .01$ . \*\*\* $p \leq .001$ .

#### 4.3.4 Between-Groups Differences on Dysfunctional Schemas

**4.3.4.1 Between-groups differences on EMSs.** Figure 4.4 reveals that the clinical group had higher scores than both non-clinical groups on most EMSs.

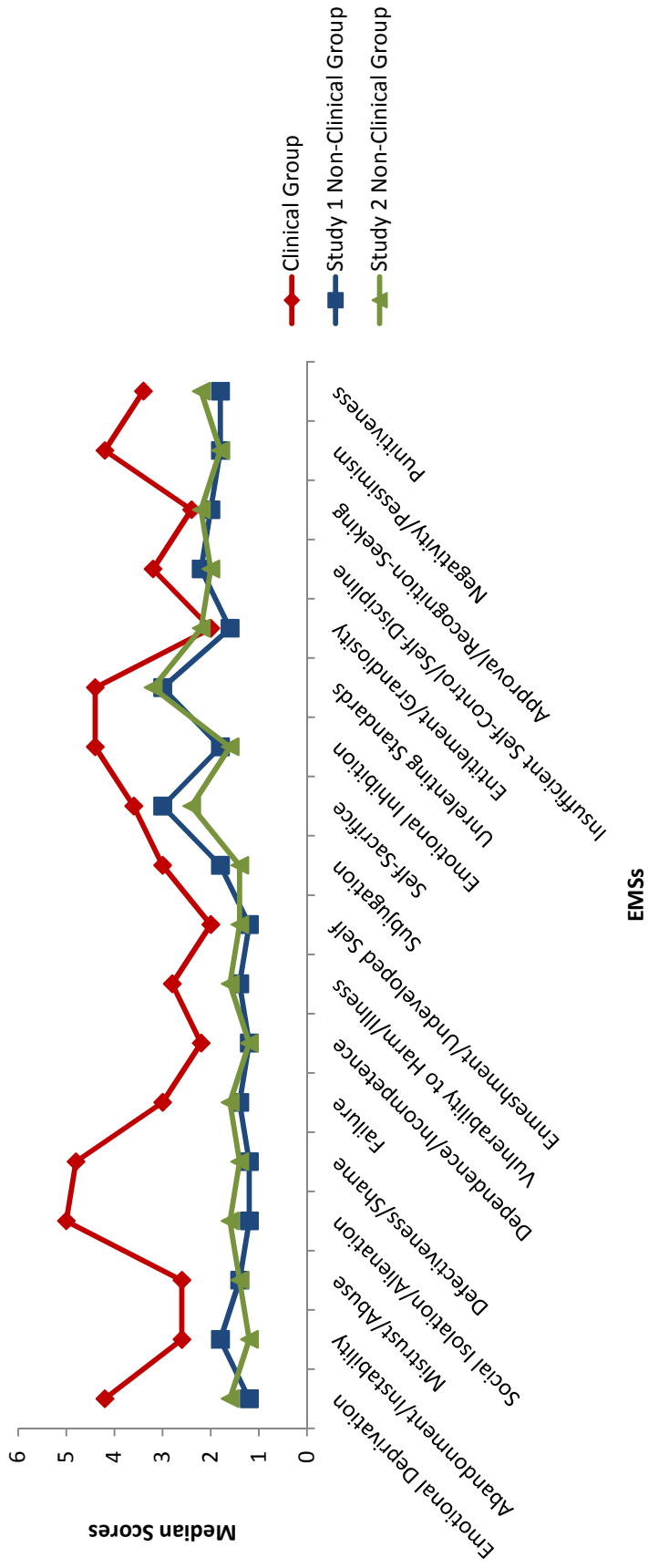


Figure 4.4. EMS profiles of the clinical and non-clinical groups.

As shown in Table 4.7, Kruskal-Wallis tests revealed statistically significant differences between the scores of the clinical group and the two non-clinical groups on Emotional Deprivation ( $\chi^2 = 12.00, p = .002$ ), Abandonment/Instability ( $\chi^2 = 8.50, p = .014$ ), Mistrust/Abuse ( $\chi^2 = 7.99, p = .018$ ), Social Isolation/Alienation ( $\chi^2 = 10.47, p = .005$ ), Defectiveness/Shame ( $\chi^2 = 7.28, p = .026$ ), Failure ( $\chi^2 = 11.58, p = .003$ ), Dependence/Incompetence ( $\chi^2 = 8.02, p = .018$ ), Vulnerability to Harm/Illness ( $\chi^2 = 6.72, p = .035$ ), Subjugation ( $\chi^2 = 9.49, p = .009$ ), Emotional Inhibition ( $\chi^2 = 8.96, p = .011$ ), Insufficient Self-Control/Self-Discipline ( $\chi^2 = 9.65, p = .008$ ), Negativity/Pessimism ( $\chi^2 = 9.01, p = .011$ ), Punitiveness ( $\chi^2 = 8.77, p = .011$ ) and the YSQ-S3 Total scale ( $\chi^2 = 10.15, p = .003$  one-tailed).

Table 4.7

*Between-Groups Differences on EMSs*

EMSs	Group						Kruskal-Wallis Test
	Clinical ( <i>n</i> = 7)		Study 1 Non-Clinical ( <i>n</i> = 7)		Study 2 Non-Clinical ( <i>n</i> = 7)		
	Median	SD	Median	SD	Median	SD	$\chi^2$ ( <i>df</i> = 2)
Emotional Deprivation	4.20	1.46	1.20	0.34	1.60	1.04	12.00**
Abandonment/Instability	2.60	1.31	1.80	0.54	1.20	0.86	8.50*
Mistrust/Abuse	2.60	1.55	1.40	0.53	1.40	1.46	7.99*
Social Isolation/Alienation	5.00	1.72	1.20	0.49	1.60	0.49	10.47**
Defectiveness/Shame	4.80	1.85	1.20	0.16	1.40	1.08	7.28*
Failure	3.00	0.85	1.40	0.53	1.60	0.86	11.58**
Dependence/Incompetence	2.20	0.73	1.20	0.41	1.20	0.62	8.02*
Vulnerability to Harm/Illness	2.80	1.12	1.40	0.35	1.60	0.60	6.72*
Enmeshment	2.00	1.59	1.20	0.88	1.40	1.18	1.32
Subjugation	3.00	0.85	1.80	0.62	1.40	0.90	9.49**
Self-Sacrifice	3.60	1.46	3.00	0.91	2.40	1.33	0.93
Emotional Inhibition	4.40	1.29	1.80	0.68	1.60	0.63	8.96*
Unrelenting Standards	4.40	1.30	3.00	0.77	3.20	1.08	1.85
Entitlement/Grandiosity	2.00	0.92	1.60	0.82	2.20	0.50	1.29
Insufficient Self-Control	3.20	0.84	2.20	0.46	2.00	0.94	9.65**
Approval/Recog.-Seeking	2.40	0.90	2.00	0.28	2.20	1.04	0.48
Negativity/Pessimism	4.20	1.03	1.80	0.47	1.80	1.38	9.01*
Punitiveness	3.40	1.03	1.80	0.69	2.20	0.54	8.77*
YSQ-S3 Total	294.00	60.84	152.00	29.47	172.00	57.80	10.15** <sup>a</sup>

Note. <sup>a</sup>One-tailed test.

\* $p \leq .05$ . \*\* $p \leq .01$ .

Post hoc Mann-Whitney  $U$  tests revealed no significant differences between the two non-clinical groups on scores for any of these EMSs (all  $ps > .033$ ). In contrast, statistically significant differences were observed between clinical and non-clinical groups. Specifically, there were significant differences between the clinical group and the Study 1 non-clinical group scores for all of these EMSs, that is, Emotional Deprivation ( $U = 0.50, Z = -3.08, p = .001, r = .82$ ), Abandonment/Instability ( $U = 5.00, Z = -2.51, p = .011, r = .67$ ), Mistrust/Abuse ( $U = 3.50, Z = -2.70, p = .004, r = .72$ ), Social Isolation/Alienation ( $U = 4.00, Z = -2.63, p = .007, r = .70$ ), Defectiveness/Shame ( $U = 6.00, Z = -2.39, p = .017, r = .64$ ), Failure ( $U = 0.00, Z = -3.15, p = .001, r = .84$ ), Dependence/Incompetence ( $U = 2.50, Z = -2.84, p = .002, r = .76$ ), Vulnerability to Harm/Illness ( $U = 7.00, Z = -2.25, p = .026, r = .60$ ), Subjugation ( $U = 2.00, Z = -2.88, p = .002, r = .77$ ), Emotional Inhibition ( $U = 6.50, Z = -2.31, p = .017, r = .62$ ), Insufficient Self-Control/Self-Discipline ( $U = 1.00, Z = -3.02, p = .001, r = .81$ ), Negativity/Pessimism ( $U = 0.50, Z = -3.08, p = .001, r = .82$ ), Punitiveness ( $U = 5.00, Z = -2.51, p = .011, r = .67$ ) and the YSQ-S3 Total scale ( $U = 2.00, Z = -2.88, p = .001$  one-tailed,  $r = .77$ ). Additionally, there were significant differences between the clinical group and the Study 2 non-clinical group scores for Emotional Deprivation ( $U = 3.00, Z = -2.76, p = .004, r = .74$ ), Abandonment/Instability ( $U = 5.50, Z = -2.44, p = .011, r = .65$ ), Social Isolation/Alienation ( $U = 2.00, Z = -2.90, p = .002, r = .78$ ), Defectiveness/Shame ( $U = 8.00, Z = -2.14, p = .032, r = .57$ ), Failure ( $U = 4.50, Z = -2.57, p = .007, r = .69$ ), Subjugation ( $U = 6.00, Z = -2.38, p = .017, r = .64$ ), Emotional Inhibition ( $U = 3.00, Z = -2.77, p = .004, r = .74$ ), Insufficient Self-Control/Self-Discipline ( $U = 6.50, Z = -2.31, p = .017, r = .62$ ), Punitiveness ( $U = 6.00, Z = -2.42, p = .017, r = .65$ ) and the YSQ-S3 Total scale ( $U = 5.00, Z = -2.49, p = .006$  one-tailed,  $r = .67$ ). In all instances, the clinical group had higher scores on the EMSs in comparison to the non-clinical groups and the differences were large in effect size.

However, the differences between the clinical group and the Study 2 non-clinical group scores did not reach the adjusted alpha level for statistical significance for Mistrust/Abuse ( $U = 10.00, Z = -1.86, p = .073, r = .50$ ), Dependence/Incompetence ( $U = 10.50, Z = -1.82, p = .073, r = .49$ ), Vulnerability to Harm/Illness ( $U = 8.50, Z = -2.05, p = .038, r = .55$ ) and Negativity/Pessimism ( $U = 11.00, Z = -1.73, p = .097, r = .46$ ).

**4.3.4.2 Between-groups differences on dysfunctional PD beliefs.** Figure 4.4 shows that the clinical group obtained higher scores than the non-clinical groups on most PBQ dysfunctional PD belief scales.

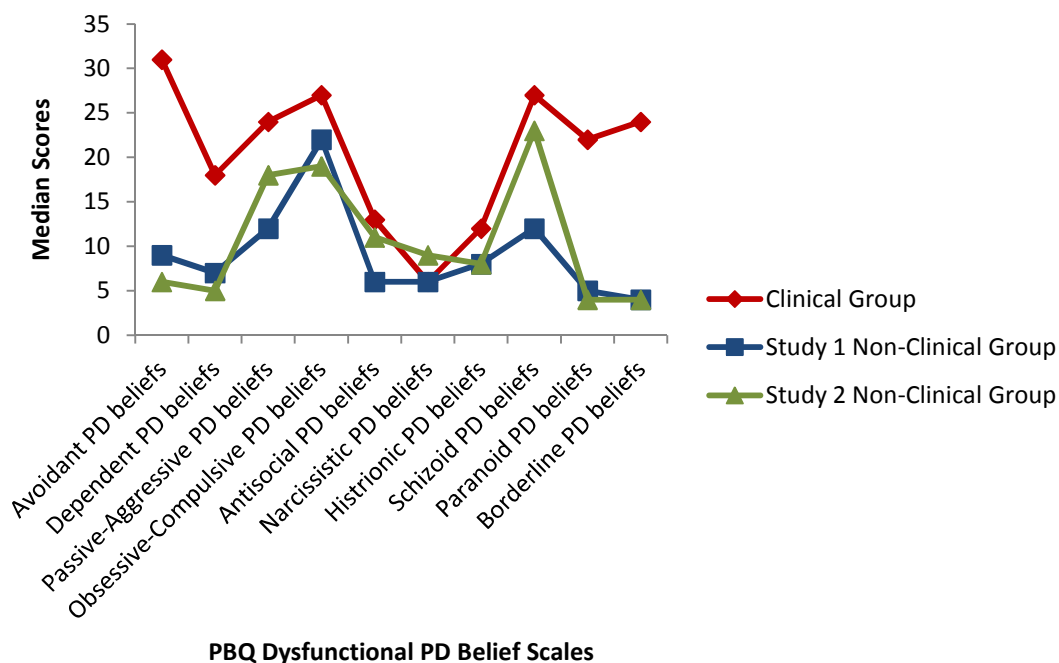


Figure 4.5. Dysfunctional PD belief profiles of the clinical and non-clinical groups.

As displayed in Table 4.8, Kruskal-Wallis tests revealed statistically significant differences between the clinical group and the two non-clinical groups on scores for the following PBQ dysfunctional PD belief scales: avoidant PD beliefs ( $\chi^2 = 13.33, p = .001$ ), dependent PD beliefs ( $\chi^2 = 7.53, p = .023$ ), schizoid PD beliefs ( $\chi^2 = 8.00, p = .018$ ), paranoid PD beliefs ( $\chi^2 = 6.84, p = .033$ ) and borderline PD beliefs ( $\chi^2 = 8.60, p = .014$ ).

Table 4.8

*Between-Groups Differences on PBQ Dysfunctional PD Belief Scales*

PBQ Scale	Group						Kruskal-Wallis Test
	Clinical ( <i>n</i> = 7)		Study 1 Non-Clinical ( <i>n</i> = 7)		Study 2 Non-Clinical ( <i>n</i> = 7)		
	Median	SD	Median	SD	Median	SD	$\chi^2$ ( <i>df</i> = 2)
Avoidant PD Beliefs	31.00	10.21	9.00	3.59	6.00	1.98	13.33***
Dependent PD Beliefs	18.00	9.69	7.00	7.23	5.00	5.21	7.53*
Pass.-Aggressive PD Beliefs	24.00	7.14	12.00	7.90	18.00	6.92	3.24
Obs.-Compulsive PD Beliefs	27.00	14.66	22.00	7.46	19.00	13.31	1.41
Antisocial PD Beliefs	13.00	7.71	6.00	4.14	11.00	10.60	2.78
Narcissistic PD Beliefs	6.00	5.77	6.00	5.13	9.00	5.62	3.85
Histrionic PD Beliefs	12.00	7.50	8.00	4.26	8.00	6.24	1.59
Schizoid PD Beliefs	27.00	5.29	12.00	5.46	23.00	9.59	8.00*
Paranoid PD Beliefs	22.00	13.96	5.00	5.25	4.00	15.62	6.84*
Borderline PD Beliefs	24.00	11.56	4.00	5.03	4.00	9.44	8.60*

Note. \* $p \leq .05$ . \*\*\* $p \leq .001$ .

Follow-up Mann-Whitney  $U$  tests revealed no statistically significant differences between the two non-clinical groups on any of these dysfunctional PD belief scales (all  $ps > .033$ ). Rather, the significant differences were between the clinical and non-clinical groups and all were large in effect size. Specifically, Mann-Whitney  $U$  tests revealed significant differences between the scores of the clinical group and the Study 1 non-clinical group on the following PBQ scales: avoidant PD beliefs ( $U = 1.50$ ,  $Z = -2.94$ ,  $p = .001$ ,  $r = .79$ ), schizoid PD beliefs ( $U = 3.00$ ,  $Z = -2.76$ ,  $p = .004$ ,  $r = .74$ ), paranoid PD beliefs ( $U = 4.50$ ,  $Z = -2.56$ ,  $p = .007$ ,  $r = .68$ ) and borderline PD beliefs ( $U = 4.00$ ,  $Z = -2.63$ ,  $p = .007$ ,  $r = .70$ ). Between-groups differences on the dependent PD beliefs scale did not reach the adjusted alpha level for statistical significance ( $U = 10.00$ ,  $Z = -1.86$ ,  $p = .073$ ,  $r = .50$ ).

Moreover, there were significant differences between the scores of the clinical group and the Study 2 non-clinical group on these PBQ scales: avoidant PD beliefs ( $U = 0.00$ ,  $Z = -3.15$ ,  $p = .001$ ,  $r = .84$ ), dependent PD beliefs ( $U = 4.00$ ,  $Z = -2.62$ ,  $p = .007$ ,  $r = .70$ ), and borderline PD beliefs ( $U = 6.00$ ,  $Z = -2.37$ ,  $p = .017$ ,  $r = .63$ ). Between-groups differences on the schizoid PD beliefs scale ( $U = 16.00$ ,  $Z = -1.09$ ,  $p = .318$ ,  $r = .29$ ) and paranoid PD beliefs scale ( $U = 10.50$ ,  $Z = -1.80$ ,  $p = .073$ ,  $r = .48$ ) did not reach statistical significance.

## **4.4 Discussion**

The aim of this small exploratory study was to investigate the differences between clinical and non-clinical groups on personality trait and dysfunctional schema scores in an Australian context. Although a small study, some clear results did emerge. There was a general trend whereby the clinical group obtained higher scores than the non-clinical groups on most traits and dysfunctional schemas. Yet, the non-clinical groups also scored on these variables and this result can be interpreted as providing some support for the idea that personality pathology can be understood using a dimensional approach. The findings revealed several meaningful between-groups differences, which are discussed next. A more in-depth analysis of the broader implications of the findings is found in Chapter 5.

### **4.4.1 Characteristics of the Clinical Group**

The heterogeneous clinical group in this study obtained significantly higher scores than at least one of the index non-clinical groups on the paranoid, schizoid, schizotypal, borderline, avoidant, dependent, obsessive-compulsive and passive-aggressive WISPI-IV PD scales. This suggests a greater presence of PD features in the clinical group in contrast to the non-clinical groups. Notably, the WISPI-IV PD scale profile for the clinical group was characterised by a prominent score on the avoidant PD scale, indicating the stronger presence of avoidant PD features relative to other PD features. These findings are in line with the self-reported diagnostic characteristics of the clinical group, wherein at least four participants self-reported having a PD diagnosis, with two of these participants self-reporting having an avoidant PD diagnosis. Furthermore, the clinical group obtained a significantly higher K10 Total score in comparison to the index non-clinical group that completed the K10, indicating a higher level of psychological distress in the clinical group. In fact, the K10 Total score for the clinical group was in the maximum Very High range (Department of Health, 2011). Altogether, these results indicate that the clinical group experienced a higher level of PD symptomology and psychological dysfunction than the comparison non-clinical groups.

### **4.4.2 Between-Groups Differences on Personality Traits**

The first hypothesis, that the clinical group would obtain higher Neuroticism and Negative Temperament scores than the index non-clinical group, was supported. Similarly, the second hypothesis, that the clinical group would obtain lower

Extraversion and Positive Temperament scores than the index non-clinical group, was also supported. That is, the clinical participants tended to experience higher levels of emotional maladjustment and lower levels of sociability and positive affect than the participants in the respective non-clinical groups. These findings parallel previous work on specific disorder groups (Kotov et al., 2010) and provide further support for the idea that higher Neuroticism/Negative Temperament (i.e., proneness towards negative affectivity, irrational beliefs and difficulties coping with stress) and lower Extraversion/Positive Temperament (i.e., a proneness towards sociability, positive affect and pleasurable engagement with the environment) are the personality dimensions that are linked to PD features and psychopathology in general (Malouff et al., 2005; Saulsman & Page, 2004; Watson et al., 1988; Watson et al., 2006).

However, the third hypothesis, that the clinical group would obtain a lower Conscientiousness score and a higher Disinhibition score than the index non-clinical group, was only partially supported. Specifically, the clinical group did obtain a lower Conscientiousness score in comparison to the index non-clinical group, however, the between-groups difference on Disinhibition was not statistically significant. The Disinhibition scores for the clinical group and the comparison non-clinical group that completed the SNAP-2 were both within normal limits. Whilst the clinical group obtained a Low range Conscientiousness score, their score on Agreeableness was in the Average range. In fact, there were no between-groups differences on Agreeableness. Thus, one explanation for the nonsignificant difference on Disinhibition could be that the scores on the disagreeableness component of Disinhibition offset scores on the unconscientiousness component, resulting in an overall normal-range Disinhibition score for the clinical group.

As will be discussed next, statistically and clinically significant between-groups differences were also observed for lower-order traits, with the clinical group obtaining several trait scores in the extreme ranges. Few studies in the literature on dimensional approaches to PD conceptualisation have directly compared the differences between heterogeneous clinical and non-clinical groups on lower-order FFM or SNAP traits. Thus, these findings represent a noteworthy extension to the existing literature.

**4.4.2.1 Between-groups differences on FFM traits.** There were statistically significant between-groups differences on several facets from the Neuroticism, Extraversion, Openness and Conscientiousness domains. In terms of the Neuroticism



facets, the clinical group obtained higher scores than the non-clinical group on Anxiety, Depression, Self-Consciousness and Vulnerability. That is, the clinical participants had a tendency to experience higher levels of various negative emotions, namely anxiety, sadness, hopelessness, shame, guilt and embarrassment and found it more difficult to cope with stress in comparison to the non-clinical participants who completed the NEO-PI-R (Costa & McCrae, 1992). Bienvenu et al. (2004) found that various anxiety and depressive disorder groups obtained higher scores on these facets in comparison to the no-disorder group. Moreover, these facets have been linked to a broad range of PDs (Samuel & Widiger, 2008). Taken together, the results suggest that these specific facets may be relevant to general psychopathology.

With respect to the Extraversion and Openness facets, the clinical group obtained significantly lower scores on Gregariousness and Actions, respectively, in comparison to the non-clinical group. That is, in contrast to the non-clinical participants who also completed the NEO-PI-R, the clinical participants tended to prefer solitary activities and familiarity or routine, rather than social activities and novelty or change, respectively (Costa & McCrae, 1992). Bienvenu et al. (2004) found that social phobia, agoraphobia and dysthymia groups obtained significantly lower Gregariousness scores in comparison to the no-disorder group. Low Gregariousness has also been linked to a range of PDs (Samuel & Widiger, 2008). Collectively, the results suggest that low Gregariousness may be specifically associated with PD features and general psychopathology. Conversely, Bienvenu et al. did not find any significant differences on Actions scores between specific anxiety or depressive disorder groups and the control group. The key low Actions features of a preference for familiarity and routine and the unwillingness to try new things could be notable personality characteristics of specific mental disorders, such as obsessive-compulsive PD (Samuel & Widiger, 2004). To that end, the clinical group did obtain a significantly higher score on the WISPI-IV obsessive-compulsive PD scale, suggesting a greater presence of obsessive-compulsive PD features in the clinical group in contrast to the comparison non-clinical groups.

Lastly, in terms of the Conscientiousness facets, the clinical group obtained significantly lower scores on Order and Self-Discipline in comparison to the index non-clinical group who completed the NEO-PI-R. In other words, the clinical participants tended to be disorganised, distractible, easily discouraged and lacking in motivation to complete tasks in comparison to the non-clinical participants (Costa &

McCrae, 1992). The clinical group's low-range Order score is puzzling in light of the significant presence of obsessive-compulsive PD features in the clinical group. While high Order has been theoretically linked to obsessive-compulsive PD (Widiger, Trull, et al., 2002), the empirical research has found mixed results (Samuel & Widiger, 2008). Moreover, Bienvenu et al. (2004) observed a nonsignificant trend whereby all anxiety and depressive disorder groups, including Axis I obsessive-compulsive disorder, tended to have lower Order scores in comparison to the no-disorder groups. Clearly, further research is needed to clarify between-groups differences on Order. On the other hand, Bienvenu et al. found significant differences on Self-Discipline scores between the simple phobia, social phobia, agoraphobia, generalised anxiety disorder and major depressive disorder groups in comparison to the no-disorder group, with all disorder groups obtaining significantly lower Self-Discipline scores than the no-disorder group. In light of this finding, the current results suggest that low Self-Discipline may be associated with psychopathology in general.

**4.4.2.2 Between-groups differences on SNAP traits.** There were statistically significant between-groups differences on traits associated with all three SNAP temperaments. In terms of traits associated with Negative Temperament, the clinical group obtained significantly higher scores than the non-clinical participants who completed the SNAP-2 on Mistrust, Self-Harm, Low Self-Esteem, Suicide Proneness and Eccentric Perceptions. That is, the clinical participants were more prone to mistrusting others, engaging in self-harm in the context of self-loathing and experiencing unusual somatosensory perceptions, cognitions and beliefs in contrast to the non-clinical participants (Clark et al., in press). The clinical group also obtained a significantly higher score on the (low) Positive Temperament trait of Detachment and the Disinhibition trait of Impulsivity. In other words, the clinical participants tended to be more emotionally and interpersonally detached and tended to have more trouble controlling their impulses in comparison to the non-clinical participants.

Likewise, Clark et al. (1993) found that inpatients obtained significantly higher scores on Self-Harm and Detachment than students seeking counselling, who in turn scored higher on these traits in comparison to normal college students. Clark et al. also observed that inpatients scored higher than both student groups on Mistrust and Eccentric Perceptions, but these researchers found no significant

between-groups differences on Impulsivity. When the results of this study are interpreted in light of those of Clark et al., they collectively suggest a progressive increase in the level of most maladaptive personality traits among groups with different levels of psychopathology and personality pathology. Clearly, this pattern is in line with the dimensional approach assumption that clinical groups have elevated levels of personality pathology in comparison to non-clinical groups.

#### **4.4.3 Between-Groups Differences on Dysfunctional Schemas**

The fourth hypothesis, that the clinical group would obtain a higher YSQ-S3 Total score, reflecting a greater severity of dysfunctional schemas, in comparison to the index non-clinical group, was supported. In fact, the clinical group obtained a significantly higher YSQ-S3 Total score than both non-clinical groups, suggesting a robust relationship between dysfunctional schemas and psychopathology (Young et al., 2003). There were also statistically significant between-groups differences on several specific dysfunctional schemas, which are discussed next.

**4.4.3.1 Between-groups differences on EMSs.** There were statistically significant between-groups differences on 13 out of 18 EMSs, with the clinical group obtaining statistically significant higher scores in comparison to at least one of the index non-clinical groups on these EMSs. These results are broadly consistent with those of previous studies that found that various clinical groups obtained higher scores on a range of EMSs in contrast to the control or comparison groups (Nilsson et al., 2010; Rijkeboer & van den Bergh, 2006). The results confirm that clinical participants do have stronger scores on a wider range of EMSs in comparison to non-clinical participants and these findings could have implications for the assessment and treatment of a range of Axis I and Axis II disorders. Interestingly, the clinical group obtained significantly higher scores than at least one index non-clinical group on all EMSs from the Disconnection and Rejection domain (i.e., Emotional Deprivation, Abandonment/Instability, Mistrust/Abuse, Social Isolation/Alienation and Defectiveness/Shame). This indicates that difficulties in forming secure and satisfying relationships with others were common personality pathology features of individuals in the clinical group. Young et al. (2003) propose that individuals with EMSs from this domain “are often the most damaged” (p. 13) due to their typically traumatic childhoods and tendency as adults to either rush into self-destructive relationships or avoid intimate relationships altogether. Some aspects of this

proposal generally accord with particular characteristics of the clinical group. For example, the clinical group obtained significantly higher scores than at least one index non-clinical group on the schizoid and avoidant PD scales of the WISPI-IV and on the corresponding PBQ dysfunctional PD belief scales for these PDs. This suggests the greater presence of schizoid and avoidant PD features (e.g., avoidance of intimate relationships) in the clinical group in comparison to the non-clinical groups. Moreover, 71% of the clinical group identified their relationship status as “single” and several clinical participants self-reported having a diagnosis of avoidant PD. The clinical group also scored significantly lower on Gregariousness, which is theoretically linked to avoidant and schizoid PDs (Widiger, Trull, et al., 2002). The overall conclusion that can be drawn from these results is that specific dysfunctional schemas are strongly associated with theoretically-relevant personality pathology.

**4.4.3.2 Between-groups differences on dysfunctional PD beliefs.** The clinical group obtained statistically significantly higher scores than at least one index non-clinical group on the avoidant, dependent, schizoid, paranoid and borderline PBQ dysfunctional PD belief scales. In other words, the participants in the clinical group endorsed holding stronger dysfunctional beliefs that were characteristic of several specific PDs in comparison to the participants in the non-clinical groups. Previous studies have shown that clinical participants with specific PD diagnoses scored higher on the corresponding PBQ dysfunctional beliefs scale than participants with alternative PDs or no PD (Beck et al., 2001; Butler et al., 2007). The current study builds on this work as the results showed that a heterogeneous clinical group also scored higher than non-clinical groups on some of these dysfunctional PD belief scales. Collectively, the results point to a gradual increase in the strength of the endorsement of dysfunctional PD beliefs across non-clinical and clinical groups, whereby holding stronger dysfunctional beliefs is associated with having higher levels of personality pathology.

#### **4.4.4 Traits, Dysfunctional Schemas and PD Features**

Table 4.9 lists the statistically significant trait and dysfunctional schema dimensions that differentiated the clinical and non-clinical groups. What is important to highlight about these results is that the between-groups differences predominantly occurred on the combinations of trait and dysfunctional schema dimensions that were predictors in either Study 1 or Study 2 of the prominent types of PD features

that were present in the clinical group, specifically paranoid, schizoid, schizotypal, borderline, avoidant, dependent, obsessive-compulsive and passive-aggressive PD features as measured by the WISPI-IV (see Table 4.4). These findings provide further support for the idea that particular combinations of personality traits and dysfunctional schema dimensions are associated with theoretically-relevant PD features. The implications of these findings are discussed in Chapter 5.

Table 4.9

*Personality Trait and Dysfunctional Schema Dimensions that Differentiated Clinical and Non-Clinical Groups*

Dimension	Directly or indirectly predicted these PD features in either Study 1 or Study 2:
<b>FFM Traits</b>	
Neuroticism	—
Anxiety	—
Depression	Avoidant, dependent, schizotypal, borderline, antisocial
Self-Consciousness	Avoidant, dependent, paranoid, narcissistic, obsessive-compulsive
Vulnerability	Dependent, borderline
Extraversion	—
Gregariousness	Avoidant, schizoid
Actions	Obsessive-compulsive
Conscientiousness	—
Order	Passive-aggressive
Self-Discipline	Dependent, passive-aggressive, histrionic
<b>SNAP Traits</b>	
Negative Temperament	Avoidant, dependent, obsessive-compulsive, passive-aggressive, borderline, paranoid
Mistrust	Paranoid, schizotypal, narcissistic, avoidant
Self-Harm	Antisocial
Low Self-Esteem	—
Suicide Proneness	—
Eccentric Perceptions	All except avoidant
Positive Temperament	—
Detachment	All except antisocial, histrionic and dependent
Impulsivity	—
<b>EMSs</b>	
Emotional Deprivation	Schizoid, antisocial, narcissistic
Abandonment/Instability	Avoidant, dependent, borderline
Mistrust/Abuse	All except avoidant, dependent, obsessive-compulsive and passive-aggressive
Social Isolation/Alienation	Avoidant, schizoid, schizotypal, obsessive-compulsive, passive-aggressive, narcissistic
Defectiveness/Shame	Borderline
Failure	Obsessive-compulsive
Dependence/Incompetence	Dependent, antisocial
Vulnerability to Harm/Illness	Schizotypal
Subjugation	Avoidant, dependent, passive-aggressive
Emotional Inhibition	Schizoid, schizotypal, borderline, avoidant, obsessive-compulsive, passive-aggressive
Insufficient Self-Control/Self-Discipline	Passive-aggressive

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Negativity/Pessimism	—
Punitiveness	Paranoid, obsessive-compulsive
YSQ-S3 Total Score	—
<b>Dysfunctional PD Beliefs</b>	
Avoidant PD beliefs	Avoidant
Dependent PD beliefs	Dependent
Schizoid PD beliefs	Schizoid
Paranoid PD beliefs	Paranoid
Borderline PD beliefs	Borderline

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#### 4.4.5 Limitations

The small clinical group of seven participants, and consequently the overall small sample size of 21 participants, was the most significant limitation of this study as it reduces the generalisability of the findings. It is a common observation in psychological research that clinical samples are notoriously difficult to recruit. Despite extensive and exhaustive recruitment efforts at two mental health services, only seven clinical participants could be recruited for this study. There are two potential reasons for the low participation rate. First, the time investment required (i.e., up to four hours to complete all measures) may have dissuaded some potential clinical participants from taking part in the study. Second, the requirement of the private psychiatric hospital to obtain the written permission of each participant's consultant psychiatrist prior to the participant's involvement in the research significantly hampered recruitment efforts. Approximately 20 inpatients and outpatients from the hospital expressed an initial interest in obtaining more information about the study. However, only three patients actually took part in the study because of difficulties with obtaining the written permission from the consultant psychiatrists of the remaining patients. Several consultant psychiatrists were only casually employed by the private psychiatric hospital and hence it was difficult to get into contact with them. Other consultant psychiatrists simply did not return the consent forms despite several requests that they do so and this prevented their patients from taking part in the study. As a consequence of this, a selection bias could have affected the sampling.

In addition to affecting the generalisability of findings, the small sample size also reduced the power of the nonparametric tests and the likelihood of detecting statistically significant and meaningful results. For example, there were some substantial score differences between the clinical and non-clinical groups on some variables (e.g., Warmth) that failed to reach statistical significance. The increased

power associated with a larger sample size may have resulted in statistically significant findings. Consequently, the results of this small exploratory study should be viewed with some caution until they are replicated with larger samples. Nevertheless, as has been discussed, the significant results were broadly consistent with previous work.

Another possible limitation relates to the diagnostic characteristics of the clinical sample. Specifically, the clinical sample was comprised primarily of participants with self-reported mood-anxiety disorders and PDs. Participants with other types of mental disorders (e.g., “externalising” disorders) were not sampled and this may have reduced the dispersion of scores for some variables (e.g., narcissistic PD features), resulting in less variance being sampled.

A final limitation is that this study relied on the clinical participants to self-report their formal psychiatric diagnoses. As such, there is a risk that the clinical participants could have under- or over-reported information concerning their actual psychiatric status. Formal diagnostic assessment of the clinical participants was not conducted as existing measures were too time-consuming to be incorporated into the research protocol.

#### **4.4.6 Conclusion**

In line with dimensional approach assumptions, this small exploratory study found that a combination of traits and dysfunctional schemas could differentiate a heterogeneous clinical group from non-clinical groups. The traits and dysfunctional schemas that differentiated the groups were theoretically and empirically linked to the PD features that were present in the clinical group. These findings tentatively support the idea that traits and dysfunctional schemas are associated with personality pathology.

## **Chapter 5: General Discussion**

### **5.1 Introduction**

The overall aim of this research was to examine the relationships between personality traits, dysfunctional schemas and PD features. Three studies were conducted to both better understand as well as to conceptualise personality pathology from an integrated perspective that incorporates some of the key constructs from both trait and cognitive-behavioural theories of PDs. Studies 1 and 2 revealed that general personality traits from the FFM and maladaptive personality traits from the SNAP model, respectively, were meaningfully related both with dysfunctional schemas, conceptualised as either EMSs or dysfunctional PD beliefs, and with theoretically-relevant PD features in non-clinical analogue samples. Specifically, Studies 1 and 2 found that subsets of FFM and SNAP traits, respectively, as well as dysfunctional schemas collectively accounted for a substantial amount of variance in the PD features assessed by the WISPI-IV PD scales. Moreover, EMSs and PD-specific dysfunctional beliefs added incremental validity to the prediction of PD features over and above traits from either trait model. Further, Studies 1 and 2 revealed that each PD syndrome was associated with specific combinations of both FFM or SNAP traits and dysfunctional schemas. These unique combinations of dimensional characteristics for each PD syndrome, it can be argued, could constitute a prototypic personality “type” profile along the lines of the PD trait profiles that have been proposed for DSM-5 (APA, 2011). Study 1 also revealed a large number of positive correlations between EMSs, PD features and PD-specific dysfunctional beliefs, suggesting a high degree of overlap amongst the measures of these constructs. However, Study 2 showed that these correlations were substantially reduced and consequently more theoretically-meaningful when psychological distress and general PD symptomatology were controlled. Finally, results of Study 3 indicated statistically significant and clinically meaningful differences between clinical and non-clinical groups on a combination of personality trait and dysfunctional schema dimensions that were associated with the PD features of the clinical group. Overall, five general research questions motivated this research and the main findings and implications pertaining to each research question will be discussed in turn.



## **5.2 Are there Theoretically-Meaningful Relationships between Personality Traits and Dysfunctional Schemas?**

Dysfunctional cognitive schemas about the self, others and the world that have been derived from past experiences are central features of personality pathology and are important targets for change in many PD treatments (Beck et al., 2004; Livesley, 2003; Young, 1999). As reviewed in sections 1.4.2 and 1.4.4, a growing number of published studies have explored the relationships between PDs and dysfunctional schemas. In contrast, there has been a paucity of research to date that has investigated the relationships between personality traits and dysfunctional schemas. Accordingly, this thesis represents a much-needed investigation to assess the relationships between specific personality traits and dysfunctional schemas.

Studies 1 and 2 of this research explored the relationships between general (FFM) and maladaptive (SNAP) personality traits and dysfunctional schemas operationalised as either EMSs or dysfunctional PD beliefs. Results showed that most dysfunctional schemas obtained a largely similar pattern of correlations with the high-order FFM domains and their counterpart SNAP temperaments. That is, with a few theoretically-meaningful exceptions, the majority of the dysfunctional schemas were positively correlated with Neuroticism/Negative Temperament but negatively correlated with Extraversion/Positive Temperament, Agreeableness and Conscientiousness/low Disinhibition. However, the magnitudes of the correlations differed and were consistent with theoretical expectations. In trait terms, these findings suggest that the personality tendencies towards emotional maladjustment, reclusiveness and low positive emotions, interpersonal antagonism, and behavioural under-control are associated with a myriad of deeply-rooted, rigid and maladaptive thinking patterns in general. Interestingly, this personality profile is not unique to dysfunctional schemas, rather it is also generally characteristic of most Axis I and Axis II disorders (Kotov et al., 2010; Malouff et al., 2005; Watson et al., 2006). As such, one implication from these findings is that excesses or deficiencies in levels of these personality dimensions could reflect an underlying vulnerability or risk factor towards psychological dysfunction in general and particularly if this vulnerability is accompanied by adverse life experiences (Clark, 2005).

While dysfunctional schemas largely obtained a similar basic pattern of correlations with the higher-order FFM domains and SNAP temperaments, better discrimination among individual dysfunctional schemas was achieved by the lower-

order FFM and SNAP traits. Specifically, results across Studies 1 and 2 revealed that each dysfunctional schema correlated in predictable ways with theoretically-relevant FFM or SNAP lower-order traits, respectively. The magnitudes of the correlations were also theoretically-meaningful and suggested stronger relationships between those personality traits and dysfunctional schemas that captured similar aspects of personality pathology features, thus reflecting the concurrent validity of the relevant personality trait and dysfunctional schema dimensions. For example, Study 1 found that FFM Straightforwardness had a moderate negative correlation with the EMS of Mistrust/Abuse; whereas Study 2 showed that SNAP Aggression obtained a moderate positive correlation with this EMS. That is, individuals who tend to be disingenuous and manipulative (low Straightforwardness) or who are prone to anger (high Aggression) are likely to hold a stronger dysfunctional schema surrounding the theme that others will intentionally hurt, deceive and abuse them and can therefore not be trusted (high Mistrust/Abuse). The overall patterns of theoretically-meaningful correlations among conceptually similar FFM or SNAP personality traits and dysfunctional schemas could suggest that these constructs share common variance with latent superordinate personality dimensions, especially since some dysfunctional schemas correlated in predictable ways with different poles of the personality dimensions. For example, most dysfunctional schemas were negatively correlated with Conscientiousness facets, but Unrelenting Standards obtained positive correlations with Conscientiousness facets. Hence, an important goal for future research is to examine whether personality traits and dysfunctional schemas can be organised within a broader taxonomy as this could bridge the gap between trait and cognitive-behavioural models of personality (Thimm, 2010).

The identification of theoretically-meaningful relationships between personality traits and dysfunctional schemas is not only important in its own right, but it could also have important implications when reconceptualising PDs using dimensional trait models. As outlined in Chapter 1, the FFM and SNAP are two leading dimensional trait models that proponents argue should replace the DSM-IV-TR's categorical model of classifying PDs. The theoretically-meaningful trait-dysfunctional schema relationships that were identified in this research provide evidence of the concurrent validity of FFM and SNAP traits in relating to specific cognitive features of personality pathology. Thus, if PDs are to be reconceptualised using the FFM, SNAP or selected traits from these models, the findings of this

research could have important implications for the treatment of PDs and personality pathology more broadly. Specifically, since dysfunctional schemas are characteristic maladaptations that are acquired over time they may therefore be more amenable to change than are dispositional personality traits (McCrae et al., 2005). Hence, the implication is that while PDs could be described in terms of traits, PD treatment on the other hand should focus on the dysfunctional schemas that are associated with the traits (Harkness & McNulty, 2002). This idea is reinforced by the fact that there exists a growing body of literature on the treatment of the cognitive-behavioural aspects of PDs (Beck et al., 2004; Young, 1999), but little in the way of the treatment of personality traits (Alwin et al., 2006; Heim & Westen, 2009).

### **5.3 Are there Theoretically-Meaningful Relationships between EMSs and Dysfunctional PD Beliefs?**

As outlined in sections 1.4.1 and 1.4.3, cognitive theory and schema theory of PDs propose that dysfunctional beliefs and EMSs, respectively, underlie PD symptomology. Given the conceptual similarities between these dysfunctional schemas, it is surprising that little research has explored the relationships between EMSs and the PBQ's dysfunctional PD belief scales. Thus, the current research makes a much-needed contribution to the literature.

Study 1 revealed a large number of positive correlations between EMSs and the PBQ dysfunctional PD belief scales, including correlations between theoretically-unrelated schemas. This low level of specificity suggested that the dysfunctional schemas shared overlapping variance and/or that the correlations were inflated due to the confounding effects of psychological distress or general PD symptomology. Zero-order correlations in Study 2 paralleled the results of Study 1, but partial correlations revealed that the number and strength of the zero-order correlations were substantially reduced when psychological distress and general PD symptomology were controlled. The resultant partial correlations were consequently more interpretable and theoretically meaningful, suggesting that some EMSs have salient relationships with theoretically-related PD-specific dysfunctional beliefs irrespective of the confounding influences of psychological distress and general PD symptomology.

One conclusion that can be drawn from these findings is that the YSQ-S3 and PBQ scales might not measure the dysfunctional schema constructs as "purely" as is

intended by their respective authors. Rather, each scale appears to measure variance relevant not only to the particular dysfunctional schema that it purports to measure, but also variance relevant to other dysfunctional schemas, psychological distress and general PD symptomology (Beck et al., 2001; Nelson-Gray et al., 2004; Trull et al., 1993). However, from a theoretical perspective, one would expect dysfunctional schemas to be associated with distress and PD symptomology, particularly if they are active in the respondent at the time of assessment (Weishaar & Beck, 2006). Thus, one implication of these findings is that future studies should control for the effects of distress and general PD symptomology when using these dysfunctional schema scales so that a clearer and more meaningful pattern of results emerges. In addition, the apparent overlap among the YSQ-S3 and PBQ scales could suggest that the scales might be more optimally organised in a broader dysfunctional schema model. Clearly, further research is needed to improve the discriminant validity of these scales. Another issue to consider is the role that the methods used to assess the dysfunctional schemas could have had on the results. For instance, EMSs are conceptualised as broad themes that include components such as bodily sensations and emotions in addition to cognitions (Young et al., 2003). However, it is conceivable that the self-report items that comprise the YSQ-S3 scales more closely assess cognitions (i.e., dysfunctional beliefs) in comparison to the other components of EMSs. Therefore, it would prove informative to explore relationships between the dysfunctional schemas using methods other than self-report scales.

#### **5.4 Can Dysfunctional Schemas Incrementally Add to the Prediction of PD Features Over and Above Personality Traits?**

As outlined in Chapter 1, previous research showed that FFM or SNAP traits could account for a modest amount of variance across the DSM-IV-TR PDs, but that a substantial amount of unexplained variance in PDs remains. Reynolds and Clark (2001) and Stepp et al. (2005) showed that subsets of both FFM and SNAP traits had incremental validity over each other in explaining variance in all PDs, but that these traits still could only explain a moderate amount of the variance even when considered together in the same regression analysis. Thus, the question posed in Chapter 1 was: what else besides traits can account for the variance in PD features? Dyce (1997) suggested that cognitive distortions and dysfunctional beliefs could potentially explain the remaining amount of variance in PD features that was not

accounted for by traits. However, it is only recently that research has begun to investigate the incremental role of cognitive constructs in explaining PD variance. Specifically, Thimm's (2011) seminal study showed that selected EMSs could incrementally explain a small amount of variance in most PDs over and above subsets of FFM facets. However, as reviewed in section 1.5.3, Thimm's investigation was hampered by several methodological and statistical limitations. The current research expanded on Thimm's work by exploring whether subsets of dysfunctional schemas, operationalised as either EMSs or PD-specific dysfunctional beliefs, that were actual correlates of a specific WISPI-IV PD scale could incrementally add to the prediction of those PD features over and above subsets of either FFM or SNAP traits.

#### **5.4.1 Percentage of Variance in PD Features Explained by Traits and Dysfunctional Schemas**

The results of the hierarchical regression analyses in Studies 1 and 2 of this research showed that subsets of both FFM and SNAP traits explained statistically significant amounts of variance in all PD features. Specifically, in Study 1 subsets of FFM traits significantly explained between 18% (obsessive-compulsive PD) to 49% (avoidant PD) of the variance in PD features; whereas in Study 2 subsets of SNAP traits significantly explained between 37% (schizoid PD) to 57% (avoidant PD) of the variance. The amount of variance in PD features that was explained by FFM or SNAP traits in this research is similar in range to previous studies that have used different subsets of these personality trait predictors in regression analyses (see Tables 1.5 and 1.8 in Chapter 1). Altogether, these findings confirm that the pathological PD features, symptoms and behaviours outlined in the DSM-IV-TR's categorical PD criteria, and as measured by the WISPI-IV PD scales in the present research, can be described in terms of a combination of underlying general or maladaptive personality trait dimensions that cut across the diagnostic categories (Widiger et al., 2009). However, the findings also indicated that: (a) some PD features (e.g., avoidant PD) were more amenable to trait description than others (e.g., obsessive-compulsive PD), particularly using FFM traits; and (b) there was a sizeable portion of variance in all PD features as measured by the WISPI-IV PD scales that was left unexplained by either FFM or SNAP traits. These findings are consistent with those of previous studies that used other measures of PDs and other

subsets of FFM or SNAP traits as potential predictor variables (e.g., Bagby, Costa, et al., 2005; Trull et al., 2001; Wolf et al., 2011). Collectively, these findings suggest that FFM and SNAP personality traits might not adequately capture all the core personality pathology features of the existing DSM-IV-TR PD constructs and this could have implications for the reconceptualisation of PDs using dimensional trait models.

Importantly, in both Studies 1 and 2, the results showed that dysfunctional schemas, either EMSs or the PD-specific dysfunctional belief scales, incrementally explained statistically significant amounts of variance in PD features over and above the amounts of variance already accounted for by traits alone from either trait model. In Study 1, subsets of EMSs incrementally explained between 16% (schizoid PD) to 32% (obsessive-compulsive PD) of unique variance in PD features; while the PD-specific dysfunctional belief scales incrementally explained between 1% (borderline PD) to 12% (schizoid PD) of unique variance in PD features, over and above the variance already accounted for by FFM traits. In Study 2, subsets of EMSs incrementally explained between 6% (schizoid PD) to 20% (avoidant and dependent PDs) of unique variance in PD features, whereas the PD-specific dysfunctional belief scales incrementally explained between 1% (borderline and avoidant PDs) to 5% (schizoid PD) of unique variance, over and above the variance already explained by SNAP traits. Although the incremental gains in PD variance that were accounted for by dysfunctional schemas were relatively small in comparison to the predictive power of traits, the dysfunctional schemas nonetheless contributed to the statistically significant prediction of all PD features. These findings extend the findings of Thimm (2011) and suggest that dysfunctional schemas, whether conceptualised as broad EMSs or specific dysfunctional PD beliefs, provide important additional information about personality pathology that is independent of the effects of general or maladaptive personality traits. That is, the current findings highlight the importance of dysfunctional schemas for the conceptualisation of PDs and improve our understanding of PDs beyond a trait description.

Overall, the current research established that personality traits and dysfunctional schemas together explained a substantial amount of variance in PD features as measured by the WISPI-IV PD scales. Specifically, in Study 1, FFM general personality traits, EMSs and the PD-specific dysfunctional belief scales together explained about 49% (antisocial PD) to 74% (avoidant PD) of the total

variance in PD features; whereas in Study 2 the SNAP maladaptive personality traits, EMSs and the PD-specific dysfunctional belief scales collectively explained between 48% (schizoid PD) and 78% (avoidant PD) of the total variance in PD features. The total amount of variance in PD features that was collectively explained by subsets of personality traits and dysfunctional schemas in the current research generally exceeded the amounts of variance collectively explained by subsets of both FFM and SNAP traits in previous research (Reynolds & Clark, 2001; Stepp et al., 2005). On the basis of the current findings it can be argued that the PD features, symptoms and behaviours that are outlined in the DSM-IV-TR PD categories are better accounted for by both personality traits and dysfunctional schemas, rather than by personality traits alone. As such, these findings do provide support for Bornstein's (2007) argument that an enhanced understanding of PDs can be achieved if PDs are conceptualised and assessed using constructs from multiple theoretical frameworks.

#### **5.4.2 Possible Mediation Effects**

Throughout Studies 1 and 2, two general patterns emerged in the results of the hierarchical regression analyses that suggested the possibility of mediation effects. First, most FFM and SNAP traits that were statistically significant predictors of PD features at step one of the regression analyses had reduced beta values or were no longer significant predictors at steps two and three once the blocks of dysfunctional schemas were considered. Moreover, several traits that were not predictors of specific PD features were nonetheless correlated with the dysfunctional schemas that were significant predictors of the relevant PD features. These findings could suggest the possibility of partial and, in some cases, full mediation between specific FFM or SNAP traits and dysfunctional schemas in the prediction of theoretically-related PD features. One implication from these findings is that dysfunctional schemas could act as the cognitive links between broad dispositional personality tendencies and the specific PD features, symptoms and behaviours that comprise the DSM-IV-TR PD syndromes (Ball, 2005). Schemas are said to influence attention, information-processing, the meaning or interpretation that an individual attributes to events and even the individual's ensuing responses to his or her interpretations of events (Cottraux & Blackburn, 2001; Pretzer & Beck, 2005). It therefore is possible that dysfunctional schemas could be the mechanisms through which some personality/temperament traits exert their influences on PD-related

features and behaviours. This suggestion is consistent with the argument put forth by Tackett et al. (2009) that “personality becomes disordered when maladaptive variations in certain personality traits (or facets) are combined with problems in interpersonal perception, which then serves to make the person’s behaviour increasingly rigid and inflexible” (p. 691). The conclusion that can be drawn from this argument is that both traits and dysfunctional schemas are necessary for the conceptualisation of PDs.

It follows then, that another implication from these findings is that some traits, particularly those from the FFM, could be more closely related to dysfunctional schemas rather than full-blown PD symptomology (Harkness & McNulty, 2002). Although only speculative at this point, the mediation hypothesis is nonetheless readily understood from the broader theoretical framework of FFT (McCrae & Costa, 2008b). That is, FFM and SNAP personality traits are considered to be distal basic tendencies, whereas dysfunctional schemas and even the amalgam of PD features, symptoms and behaviours that comprise the DSM-IV-TR PD criteria, as measured by the WISPI-IV PD scales in this research, are characteristic maladaptations that are influenced by the basic tendencies. As Harkness and McNulty argued, “Characteristic [mal]adaptations vary in the length of the causal path leading to them from the traits. Some characteristic [mal]adaptations lie causally close to the traits; others are more remote” (p. 393). If dysfunctional schemas operate at a middle level acting as cognitive links between specific personality traits and PD features or symptoms (Ball, 2005), then one method that could be used to untangle these relationships is testing for mediation.

Investigation of the mediation hypothesis could ultimately lead to the formulation of an integrated theoretical model of personality pathology that incorporates some of the key constructs from disparate personality theories (Alwin et al., 2006; Bornstein, 2007; Krueger, Eaton, Derringer, et al., 2011) and specifies causal linkages among the constructs. In addition to such possible implications for theory, the mediation hypothesis could also have practical implications for the treatment of PDs. As outlined in section 1.5.4, characteristic maladaptations such as dysfunctional schemas may be more amenable to change than dispositional personality/temperament tendencies because characteristic (mal)adaptations are said to be acquired over time and are influenced by personality traits (McCrae et al., 2005). Thus, if dysfunctional schemas do indeed have more proximal causal



relationships with the PD features, symptoms and behaviours that comprise the PD syndromes, then early intervention and treatment strategies for PDs should focus on the characteristic maladaptations, especially dysfunctional beliefs in the first instance, rather than only on the personality traits (Ball, 2005; Ball & Cecero, 2001; Beck et al., 2004; Harkness & McNulty, 2002; McCrae, 2006; McCrae et al., 2005; Young et al., 2003).

The second key pattern that emerged from the results of the regression analyses was that some of the EMSs that were statistically significant predictors of PD features also had reduced beta values or were no longer statistically significant predictors in the final model of the relevant regression analyses once the PD-specific dysfunctional belief scales were taken into account. These findings could suggest that relationships between some particular EMSs and PD features could be partially or fully mediated by dysfunctional PD beliefs. This finding is perhaps not unexpected given the theoretical distinction between broad EMSs that cut across diagnostic categories (Young et al., 2003) and the more narrowly-defined dysfunctional beliefs that are characteristic of each PD (Beck et al., 2004). The possibility that some relationships between EMSs and PD features may be mediated by PD-specific dysfunctional beliefs could have important implications for theory. For example, such a relationship could suggest that different types of characteristic maladaptations not only vary in their causal distance away from personality traits, but also from each other (Harkness & McNulty, 2002; McCrae & Costa, 2008b). Thus, a test of this particular mediation hypothesis could lead to the development of a broader model that delineates the relationships among EMSs, PD-specific dysfunctional beliefs and PD symptomology, which in turn could have practical implications for the treatment of these characteristic maladaptations.

### **5.5 Are Unique Constellations of Trait and Dysfunctional Schema Predictors Differentially Related to PD Features?**

Hierarchical regression results in both Studies 1 and 2 revealed that each PD syndrome was associated with its own unique profile of direct and indirect personality trait and dysfunctional schema predictors that collectively accounted for considerable amount of variance in PD features. What can be inferred from this finding is that the PD features, symptoms and behaviours that are outlined in the DSM-IV-TR's PD criteria, as assessed by each WISPI-IV PD scales in the current

research, can largely be described and understood in terms of specific combinations of trait and dysfunctional schema dimensions. That is, unique constellations of trait and dysfunctional schema dimensions may underlie the symptomatic or behavioural manifestations of each DSM-IV-TR categorical PD syndrome, as is proposed in trait (Clark et al., in press; McCrae et al., 2005; Widiger et al., 2009; Widiger & Mullins-Sweatt, 2009) and cognitive-behavioural (Beck et al., 2004; Young et al., 2003) models of PDs, respectively.

As discussed in Chapter 1, in dimensional trait models of PDs, personality pathology is assessed through a smaller set of universal trait dimensions which can then be used to define clinically or theoretically salient PD types (Tackett et al., 2009). The findings of the current research suggest that the personality pathology features that are encoded in the existing DSM-IV-TR PD categories can be largely accounted for in a dimensional model that consists of both personality traits and dysfunctional schemas. As such, the findings of the current research not only provide general support for a dimensional approach to PD conceptualisation, but they also build on existing literature reviewed in section 1.3 that has utilised trait-only models to conceptualise PDs. Specifically, the findings do suggest that dysfunctional schemas could be important constructs to include in a dimensional reconceptualisation of PDs and this in turn could have important theoretical and practical implications (Thimm, 2011).

Further, it was previously argued in both Studies 1 and 2 that the unique constellations of direct and indirect trait and dysfunctional schema predictors of each DSM-IV-TR PD syndrome that emerged in the hierarchical regression analyses could be conceptualised as comprising prototypic PD type profiles comparable to the trait profiles that have been proposed for DSM-5 (APA, 2011). Broadly speaking, a greater number of personality traits tended to have indirect predictive relationships with PD features in the current research, especially in the Study 1 PD type profiles; whereas dysfunctional schemas, particularly dysfunctional PD beliefs, generally tended to have direct predictive relationships with PD features. Overall, these findings support Bornstein's (2007) contention that some theoretical personality constructs may be more useful than others in explaining certain PD features. Further, the PD type profiles obtained in this research are one way of empirically demonstrating Bornstein's proposal of conceptualising each DSM-IV-TR PD category using constructs from multiple theoretical frameworks. Table 5.1 lists the

PD type profiles that were obtained in Studies 1 and 2 of the current research. It also presents the trait profiles that have been proposed for DSM-5 so as to compare and contrast the features of the DSM-IV-TR PDs that are captured in this data.

Table 5.1

*Comparison of the PD Type Profiles Obtained in this Research and the Trait Profiles Proposed for DSM-5*

<b>DSM-IV-TR PD category</b>	<b>Study 1 PD type profiles (FFM traits &amp; dysfunctional schemas)</b>	<b>Study 2 PD type profiles (SNAP traits &amp; dysfunctional schemas)</b>	<b>PD trait profiles proposed for DSM-5<sup>a</sup></b>
<i>Cluster A</i>			
Paranoid	<p><i>Traits:</i> (+) Self-Consciousness (-) Values*, Trust, Straight-Forwardness, Compliance</p> <p><i>Schemas:</i> (+) Mistrust/Abuse*, Entitlement/Grandiosity, Paranoid PD beliefs*</p>	<p><i>Traits:</i> (+) Negative Temperament, Mistrust, Aggression*, Eccentric Perceptions*, Entitlement*, Detachment</p> <p><i>Schemas:</i> (+) Mistrust/Abuse*, Entitlement/Grandiosity*, Punitiveness*, Paranoid PD beliefs*</p>	<p><i>Traits:</i> (+) Suspiciousness, Hostility, Unusual Beliefs &amp; Experiences, Intimacy Avoidance</p>
Schizoid	<p><i>Traits:</i> (-) Gregariousness, Values*</p> <p><i>Schemas:</i> (+) Emotional Deprivation, Mistrust/Abuse, Social Isolation/ Alienation*, Emotional Inhibition*, Schizoid PD beliefs*</p>	<p><i>Traits:</i> (+) Aggression, Eccentric Perceptions, Detachment*</p> <p><i>Schemas:</i> (+) Emotional Deprivation, Emotional Inhibition*, Schizoid PD beliefs*</p>	<p><i>Traits:</i> (+) Withdrawal, Intimacy Avoidance, Restricted Affectivity, Anhedonia</p>
Schizotypal	<p><i>Traits:</i> (+) Depression (-) Values*, Modesty</p> <p><i>Schemas:</i> (+) Mistrust/Abuse*, Social Isolation/Alienation*, Vulnerability to Harm/Illness*, Entitlement/Grandiosity*</p>	<p><i>Traits:</i> (+) Mistrust, Eccentric Perceptions*, Dependency*, Detachment</p> <p><i>Schemas:</i> (+) Mistrust/Abuse*, Vulnerability to Harm/Illness*, Enmeshment/ Undeveloped Self*, Emotional Inhibition*, Entitlement/Grandiosity*</p>	<p><i>Traits:</i> (+) Eccentricity, Cognitive &amp; Perceptual Dysregulation, Unusual Beliefs &amp; Experiences, Restricted Affectivity, Withdrawal, Suspiciousness</p>
<i>Cluster B</i>			
Histrionic	<p><i>Traits:</i> (+) Assertiveness*, Excitement-Seeking (-) Straight-Forwardness, Modesty, Self-Discipline, Deliberation</p> <p><i>Schemas:</i> (+) Enmeshment/</p>	<p><i>Traits:</i> (+) Eccentric Perceptions*, Dependency*, Exhibitionism*, Entitlement</p> <p><i>Schemas:</i> (+) Enmeshment/ Undeveloped Self*, Entitlement/Grandiosity,</p>	<p><i>Traits:</i> (+) Emotional Lability, Manipulativeness, Attention Seeking</p>

	Undeveloped Self, Entitlement/Grandiosity*, Approval/Recognition – Seeking*, Histrionic PD beliefs*	Approval/Recognition – Seeking, Mistrust/Abuse*, Histrionic PD beliefs*	
Narcissistic	<p><i>Traits:</i> (+) Self-Consciousness (-) Values*, Modesty</p> <p><i>Schemas:</i> (+) Emotional Deprivation*, Social Isolation/Alienation*, Entitlement/Grandiosity*, Approval/Recognition – Seeking*, Narcissistic PD beliefs*</p>	<p><i>Traits:</i> (+) Mistrust, Eccentric Perceptions*, Entitlement, Detachment*, Propriety*</p> <p><i>Schemas:</i> (+) Mistrust/Abuse*, Entitlement/Grandiosity*, Approval/Recognition-Seeking*, Narcissistic PD beliefs*</p>	<p><i>Traits:</i> (+) Grandiosity, Attention Seeking</p>
Antisocial	<p><i>Traits:</i> (+) Depression (-) Values, Straight-Forwardness, Modesty</p> <p><i>Schemas:</i> (+) Mistrust/Abuse*, Dependence/Incompetence, Entitlement/Grandiosity*, Antisocial PD beliefs*</p>	<p><i>Traits:</i> (+) Aggression*, Self-Harm, Eccentric Perceptions, Entitlement*, Disinhibition*</p> <p><i>Schemas:</i> (+) Emotional Deprivation*, Mistrust/Abuse, Dependence/Incompetence, Antisocial PD beliefs*</p>	<p><i>Traits:</i> (+) Manipulativeness, Deceitfulness, Callousness, Hostility, Irresponsibility, Impulsivity, Risk Taking</p>
Borderline	<p><i>Traits:</i> (+) Depression*, Vulnerability (-) Straight-Forwardness*, Tender-Mindedness, Deliberation*</p> <p><i>Schemas:</i> (+) Abandonment/Instability*, Mistrust/Abuse, Emotional Inhibition, Entitlement/Grandiosity*, Borderline PD beliefs*</p>	<p><i>Traits:</i> (+) Negative Temperament*, Eccentric Perceptions*, Detachment, Disinhibition*</p> <p><i>Schemas:</i> (+) Abandonment/Instability*, Defectiveness/Shame*, Entitlement/Grandiosity*, Borderline PD beliefs*</p>	<p><i>Traits:</i> (+) Emotional Lability, Anxiousness, Separation Insecurity, Depressivity, Impulsivity, Risk Taking, Hostility</p>
Cluster C Avoidant	<p><i>Traits:</i> (+) Depression, Self-Consciousness* (-) Gregariousness</p> <p><i>Schemas:</i> (+) Abandonment/Instability, Social Isolation/Alienation*, Subjugation*, Emotional Inhibition*, Approval/Recognition – Seeking*, Avoidant PD beliefs*</p>	<p><i>Traits:</i> (+) Negative Temperament*, Mistrust, Dependency, Detachment* (-) Exhibitionism*</p> <p><i>Schemas:</i> (+) Social Isolation/Alienation*, Emotional Inhibition*, Approval/Recognition – Seeking*, Avoidant PD beliefs*</p>	<p><i>Traits:</i> (+) Withdrawal, Intimacy Avoidance, Anhedonia, Anxiousness</p>

Dependent	<p><i>Traits:</i> (+) Depression, Self-Consciousness*, Vulnerability* (-) Values*, Straight-Forwardness, Self-Discipline, Deliberation*</p> <p><i>Schemas:</i> (+) Abandonment/Instability*, Dependence/Incompetence, Subjugation*, Approval/Recognition – Seeking*, Dependent PD beliefs*</p>	<p><i>Traits:</i> (+) Negative Temperament, Eccentric Perceptions, Dependency*</p> <p><i>Schemas:</i> (+) Abandonment/Instability*, Subjugation*, Approval/Recognition – Seeking*, Dependent PD beliefs*</p>	<p><i>Traits:</i> (+) Submissiveness, Anxiousness, Separation Insecurity</p>
Obsessive-Compulsive	<p><i>Traits:</i> (+) Self-Consciousness (-) Values, Actions</p> <p><i>Schemas:</i> (+) Social Isolation/Alienation*, Emotional Inhibition*, Unrelenting Standards, Entitlement/Grandiosity*, Approval/Recognition – Seeking*, Punitiveness*, Obsessive-compulsive PD beliefs*</p>	<p><i>Traits:</i> (+) Negative Temperament*, Entitlement*, Detachment*, Propriety*, Workaholism*, Eccentric Perceptions*</p> <p><i>Schemas:</i> (+) Failure*, Emotional Inhibition, Unrelenting Standards*, Approval/Recognition – Seeking*, Obsessive-compulsive PD beliefs*</p>	<p><i>Traits:</i> (+) Rigid Perfectionism, Perseveration</p>
<i>DSM-IV-TR Appendix</i>			
Passive-Aggressive	<p><i>Traits:</i> (-) Activity*, Values, Modesty, Order, Self-Discipline*</p> <p><i>Schemas:</i> (+) Social Isolation/Alienation*, Emotional Inhibition, Entitlement/Grandiosity*, Passive-aggressive PD beliefs*</p>	<p><i>Traits:</i> (+) Negative Temperament, Eccentric Perceptions, Entitlement, Detachment, Disinhibition*, Aggression</p> <p><i>Schemas:</i> (+) Subjugation*, Entitlement/Grandiosity, Insufficient Self-Control/Self-Discipline, Passive-aggressive PD beliefs*</p>	<p><i>Traits:</i> (+) Hostility, Depression</p>

*Note.* <sup>a</sup>Based on DSM-5's proposed trait profiles of the DSM-IV-TR PDs (APA, 2011); N/A = Not applicable; \*indicates that the variable was a statistically significant direct predictor of the relevant PD features in the final regression model; (+) indicates a positive relationship; (–) indicates a negative relationship.

As shown in Table 5.1, the personality trait profiles of the Study 1 and Study 2 PD types generally captured conceptually similar features of DSM-IV-TR personality pathology even though different personality trait models were used. For example, the borderline PD type profiles are comprised of specific traits from the high Neuroticism/Negative Temperament and low Agreeableness and Conscientiousness/high Disinhibition dimensions; whereas the avoidant PD type

profiles are comprised of specific traits from the high Neuroticism/Negative Temperament and low Extraversion/Positive Temperament dimensions. These personality patterns are consistent with previous research (Saulsman & Page, 2004). However, the constellations of SNAP traits in the Study 2 PD type profiles captured salient personality pathology features that were not captured by FFM traits in the Study 1 PD type profiles. For example, some core features of the DSM-IV-TR schizotypal PD construct include odd beliefs, perceptual distortions and eccentric behaviour (APA, 2000). These PD features were captured in the Study 2 schizotypal PD type profile by the SNAP trait of Eccentric Perceptions, but not in the Study 1 schizotypal PD type profile. This is because the FFM as measured by the NEO-PI-R does not explicitly assess these or other pathological personality features. Further, central features of the DSM-IV-TR obsessive-compulsive PD construct include maladaptive perfectionism and over-conscientiousness (APA, 2000). These personality pathology features were captured in the Study 2 obsessive-compulsive PD type profile by the SNAP trait of Workaholism, but not in the Study 1 obsessive-compulsive PD type profile. This is because FFM Conscientiousness facets had little relationship with obsessive-compulsive PD features. Thus, one conclusion that can be drawn from these findings is that SNAP traits outperform FFM traits as measured by the NEO-PI-R in capturing the breadth of personality pathology features encoded in the DSM-IV-TR PDs. An implication from these findings is that there is a need to develop FFM measures that equally capture adaptive and maladaptive expressions of FFM traits in order to increase the validity and clinical utility of the FFM as a possible dimensional alternative to the categorical classification system of PDs (Haigler & Widiger, 2001). The lack of coverage of personality pathology in existing FFM measures could explain why the DSM-5 PD Work Group developed their own extended version of the FFM that encompasses the more maladaptive and extreme variants of FFM traits (APA, 2012d).

Examination of Table 5.1 above reveals that the dysfunctional schema profiles of the Study 1 and Study 2 PD types were generally similar particularly in terms of the direct predictors. For instance, across both studies the schizoid PD type profiles contained the dysfunctional schemas of Emotional Deprivation, Emotional Inhibition and schizoid PD beliefs; with Emotional Inhibition and schizoid PD beliefs being direct predictors of schizoid PD features. However, the table also reveals several differences between the dysfunctional schema profiles of the two

studies' PD types, particularly concerning the indirect predictors. For example, Dependence/Incompetence was an indirect predictor of dependent PD features in the Study 1 PD type profile, but is absent from the Study 2 PD type profile. One possible explanation for this finding could be that some variance in dependent PD features that was captured by the Dependence/Incompetence EMS in the Study 1 PD type profile was accounted for by the SNAP trait of Dependency in the Study 2 PD type profile. The observed differences in dysfunctional schema predictors across the Study 1 and Study 2 PD types could suggest that some dysfunctional schemas and SNAP traits capture aspects of conceptually similar PD features and do so better than FFM traits (Ball, 2005). This is not unexpected since both dysfunctional schemas and SNAP traits are dimensions relevant to maladaptive personality functioning, whereas FFM traits capture normal-range personality functioning.

Importantly, the presence of dysfunctional schemas in both the Study 1 and Study 2 PD type profiles indicates that dysfunctional schemas capture salient features of personality pathology in DSM-IV-TR PD syndromes. In some instances, dysfunctional schemas provided information about PD features that was not accounted for by personality traits. For example, fears of rejection by and separation from significant others and associated excessive dependency and clinging behaviours are key features in the DSM-IV-TR borderline PD construct (APA, 2000). In contrast to FFM and SNAP traits, the Abandonment/Instability EMS explicitly captures these features of personality pathology and was a direct predictor of borderline PD features in both the Study 1 and Study 2 borderline PD type profiles. Hence, the conclusion that can be drawn is that dysfunctional schemas are relevant in a dimensional model of PDs and can provide supplementary information about PD features that goes beyond a trait description (Alwin et al., 2006; Thimm, 2011). In fact, as indicated by the asterisk in Table 5.1, a greater number of dysfunctional schemas than personality traits were direct predictors of PD features. The implication is that some dysfunctional schemas, especially dysfunctional PD beliefs, in contrast to traits have a stronger predictive relationship with PD features and this could have important theoretical and practical implications for research and treatment (Ball, 2005). Indeed, Beck et al. (2004) and Young et al. (2003) have developed treatment strategies for all of the dysfunctional schemas in their respective PD models. Accordingly, the findings of the current research provide support for the argument that conceptualising PDs using constructs from multiple theoretical frameworks

provides more comprehensive information about personality pathology that can be used to better understand and treat PDs (Alwin et al., 2006; Ball & Cecero, 2001; Bornstein, 2007; Thimm, 2011).

The PD type profiles obtained in this research can be compared to the proposed trait profiles for the DSM-5 which allows for a tentative evaluation of the conceptual similarities and differences in the personality pathology features that are captured for each DSM-IV-TR PD syndrome. Table 5.1 above shows that the prominent personality pathology features that were captured by the PD type profiles in the current research are generally conceptually similar to the personality pathology features captured in the proposed trait profiles for DSM-5 PDs (APA, 2011; Skodol, Clark, et al., 2011). For example, the DSM-5 PD Work Group proposes that the prominent pathological traits underlying the DSM-IV-TR's dependent PD syndrome are Submissiveness, Anxiousness and Separation Insecurity. As can be observed in Table 5.1, elements of the dependent PD features that are represented by these pathological traits are also captured by the unique constellations of traits and dysfunctional schemas in the dependent PD type profiles of this research. For instance, in terms of the Study 1 dependent PD type profile it can be argued that the following trait and dysfunctional schema dimensions would likely capture the personality pathology features represented by the DSM-5 traits proposed for dependent PD: Subjugation (Submissiveness), Self-Consciousness and Vulnerability (Anxiousness), and Abandonment/Instability, Subjugation and dependent PD beliefs (Separation Insecurity). Moreover, the Study 1 dependent PD type profile included other traits that could be salient to understanding dependent PD features but are not captured in the DSM-5 trait profile, such as high Depression and low Values, Straightforwardness, Self-Discipline and Deliberation. The personality features that are represented by these FFM traits could have important implications for the understanding and treatment of dependent PD.

Further inspection of Table 5.1 reveals that, in spite of the general similarities, there are also some differences between the salient personality pathology features that were captured in the PD type profiles of this research and the proposed trait profiles for DSM-5. For example, the proposed DSM-5 trait profile for passive-aggressive PD focuses solely on the personality pathology features of hostile behaviour (Hostility) and depressive affect (Depressivity). In contrast, the passive-aggressive PD type profiles in the current research contained personality pathology



features relevant to low Conscientiousness/high Disinhibition which are said to be characteristic of the passive-aggressive PD construct (Widiger et al., 1994; Widiger, Trull, et al., 2002). In addition, the proposed DSM-5 trait profile for narcissistic PD appears to focus solely on the grandiose features of narcissism (Grandiosity and Attention Seeking), as does the Study 2 narcissistic PD type profile that was obtained in this research (Entitlement, Entitlement/Grandiosity and Approval/Recognition-Seeking). In contrast, the Study 1 narcissistic PD type profile appears to capture both grandiose (Modesty [low], Entitlement/Grandiosity, Approval/Recognition-Seeking and narcissistic PD beliefs) and vulnerable (Self-Consciousness and Emotional Deprivation) features of the broader narcissism construct (J. D. Miller, Widiger, et al., 2010; Pincus & Lukowitsky, 2010; Widiger, Trull, et al., 2002).

Tentatively, it can be argued that the overall implication from these findings is that the PD type profiles that were obtained in the current research may offer a more comprehensive description of the salient personality pathology features that define the DSM-IV-TR PD syndromes than do the DSM-5's proposed trait profiles. Only future research can help to clarify this proposition. It can be further argued that the PD type profiles obtained in this research could be more clinically useful than trait-only models of PD syndromes because the PD type profiles integrate theoretical personality constructs, namely dysfunctional schemas, with a trait description, thus allowing for a targeted treatment focus (Alwin et al., 2006; Ball, 2005). From the perspective of FFT, the PD type profiles established in the current research provide information about another level of the personality system. That is, the level of the characteristic maladaptations, which is missing in trait-only models (Harkness & McNulty, 2002; McCrae & Costa, 2008b; McCrae et al., 2005). As argued by Costa and McCrae (2010), both traits and characteristic maladaptations "must be understood and assessed to capture adequately the causes and effects of psychopathology" (p. 129).

### **5.6 Are There Differences between Clinical and Non-Clinical Groups on Trait and Dysfunctional Schema Scores?**

Dimensional models propose that the basic units of personality (e.g., traits, schemas, etc) exist on a continuum ranging from adaptive to maladaptive and that personality pathology is associated with having extremely high or extremely low

levels of the relevant dimensions (Livesley, 2001). Accordingly, research in this field typically assumes that clinical samples have higher levels of personality pathology than non-clinical samples, in line with the dimensional approach. However, few studies have examined directly the between-groups differences on trait and dysfunctional schema dimensions, especially using heterogeneous clinical groups. Thus, in order to contribute to the literature, Study 3 of the current research was a small exploratory study that investigated whether there were statistically significant differences between Australian clinical and non-clinical groups on personality trait and dysfunctional schema scores.

Results in Study 3 did show statistically and clinically significant differences between the clinical and non-clinical groups on a range of personality trait and dysfunctional schema scores and the effect sizes for all significant between-groups differences were large. However, the findings need to be considered with caution because of the small sample size, which also limits the generalisability of the findings. Nevertheless, it is worth noting that the clinical group was heterogeneous in that it was comprised of individuals with a range of self-reported psychiatric disorders, including PD diagnoses. Moreover, the clinical group obtained significantly higher scores than the non-clinical groups on most WISPI-IV PD scales, suggesting a greater presence of PD features in the clinical group. The clinical group was also characterised by a statistically significant and very high level of psychological distress as measured by the K10 scale. Thus, while the results clearly require replication with a larger sample, some tentative conclusions regarding between-group differences on trait and dysfunctional schema dimensions can still be drawn from the findings of this research.

Statistically and clinically significant between-groups differences regarding FFM and SNAP personality traits were primarily observed for traits associated with Neuroticism/Negative Temperament, Extraversion/Positive Temperament and Conscientiousness. That is, the clinical group obtained higher scores than the non-clinical groups on traits associated with Neuroticism (i.e., Anxiety, Depression, Self-Consciousness and Vulnerability) and Negative Temperament (i.e., Mistrust, Self-Harm and Eccentric Perceptions). However, they obtained lower scores on traits associated with Extraversion (i.e., Gregariousness), higher scores on traits at the low end of Positive Temperament (i.e., Detachment) and lower scores on traits associated with Conscientiousness (i.e., Order and Self-Discipline) in comparison to the non-

clinical groups. The clinical group also obtained a lower score on Actions and a higher score on Impulsivity in comparison to the non-clinical groups, but there were no statistically significant differences between the groups on the corresponding domains of Openness or Disinhibition, respectively. These findings indicate that individuals in the clinical group generally had a tendency to experience a higher level of emotional maladjustment, a lower level of positive affect and effective interpersonal engagement, and a higher level of impulsive behaviours in comparison to individuals in the non-clinical groups. When these findings are viewed in the context of meta-analytic research (Kotov et al., 2010; Malouff et al., 2005; Samuel & Widiger, 2008; Saulsman & Page, 2004), they do suggest that personality dimensions are associated with the presence of PD features and psychopathology in general. In fact, Watson et al. (2006) argue that the basic dimensions of Neuroticism/Negative Temperament and Extraversion/Positive Temperament should be used as the organising framework for studying the links between personality functioning and psychopathology. This could have implications for the taxonomy of mental disorders.

Between-groups differences were also found on a range of dysfunctional schemas. In terms of the EMSs, the clinical group obtained higher scores on 13 out of 18 EMSs and also on the YSQ-S3 Total score in comparison to the non-clinical groups. This suggests a link between dysfunctional schemas and the presence of PD features and psychopathology (Young et al., 2003). Interestingly, the clinical group obtained higher scores than the non-clinical groups on all EMSs from the Disconnection and Rejection domain (i.e., Emotional Deprivation, Abandonment/Instability, Mistrust/Abuse, Social Isolation/Alienation and Defectiveness/Shame). Such findings indicate that difficulties in forming secure and satisfying relationships with others were common personality pathology features of individuals in the clinical group (Young et al., 2003). Further, the clinical group obtained significantly higher scores on the avoidant, dependent, schizoid, paranoid and borderline dysfunctional PD belief scales in comparison to the non-clinical groups. This suggests that individuals in the clinical group generally held stronger dysfunctional beliefs that characterise these PDs than did non-clinical individuals.

What is important to highlight about the findings of Study 3 is not merely that there were group differences on trait and dysfunctional schema scores, but that there was a systematic pattern to the group differences. Specifically, the between-

groups differences occurred primarily on the traits and dysfunctional schemas that were shown by Studies 1 and 2 to be predictors of the types of PD features that were present in the clinical group. That is, the clinical group obtained significantly higher scores than at least one comparison non-clinical group on the paranoid, schizoid, schizotypal, borderline, avoidant, dependent, obsessive-compulsive and passive-aggressive PD scales as measured by the WISPI-IV. That the trait and dysfunctional schema dimensions which differentiated the clinical from the non-clinical groups were linked to the PD features present in the clinical group provides further support for the argument that traits and dysfunctional schemas are relevant to understanding personality pathology (Thimm, 2011). Given that higher scores on multiple trait and dysfunctional schema dimensions were linked with greater levels of PD features and psychological distress in the clinical group, one could tentatively hypothesise that it is the combination of specific traits and dysfunctional schemas that is associated with the development and subsequent severity of theoretically-relevant PD features (Ball & Cecero, 2001). This remains a question for future research. Another important question for future research is: to what extent are elevated scores on a specific combination of traits and dysfunctional schemas indicative of a PD diagnosis? Said differently, can a PD diagnosis be derived from scores on a specific combination of theoretically-relevant traits and dysfunctional schemas? Evidence of adaptive failures and impairments in functioning that are associated with the specific combination of traits and dysfunctional schemas would likely be required (Costa & McCrae, 2010; Livesley, 2003). In addition to such theoretical implications, these findings could have important implications for clinical practice. Specifically, the findings indicate that personality traits and dysfunctional schemas are linked to mental health (Ball, 2005). Accordingly, the assessment of personality traits and dysfunctional schemas for all clients could provide clinicians with important information about personality pathology that facilitates case conceptualisation and treatment planning irrespective of formal psychiatric diagnosis (Ball & Cecero, 2001; T. R. Miller, 1991; Piedmont, 1998; Sanderson & Clarkin, 2002; Young et al., 2003).

### **5.7 Key Implications**

There are two key implications based on the findings of the current research. First, this research has implications for the dimensional conceptualisation of PDs.

While proponents of the FFM (Widiger, Costa, et al., 2002) and SNAP (Clark et al., in press) argue that their trait models are potential dimensional replacements for the DSM-IV-TR's categorical system of PD classification, the findings of the current research show that these trait models do not sufficiently account for the variance in personality pathology as defined currently by the DSM-IV-TR PD categories (Clark, 2007). While the DSM-IV-TR's categorical classification of PDs may not be the ideal criterion measure given its limitations (see section 1.2.2), it nonetheless has been argued that a dimensional PD model should at least be linked to the existing DSM-IV-TR categorical PD model in order to replace it (Gunderson, 2010; J. A. Schmidt et al., 1993). The results of this research show that dysfunctional schemas explain incremental variance in PD features over and above the amounts of variance accounted for by traits from either trait model. In fact, this research shows that each DSM-IV-TR PD syndrome is associated with a prototypic profile of trait and dysfunctional schema dimensions. The conclusion that can be drawn from this finding is that utilising multiple theoretical constructs to conceptualise PDs provides better coverage of personality pathology and this in turn could have important implications for case conceptualisation and treatment (Alwin et al., 2006; Bornstein, 2007; Dyce, 1997). Accordingly, the DSM-5's proposed trait profiles for the PDs, and particularly the PDs that will be reconceptualised using the PD Trait Specified diagnosis (APA, 2012c), could provide inadequate coverage of the DSM-IV-TR PD concepts which they are set to replace.

Second, this research has implications for theory. The DSM-5 PD Work Group have stated that a key challenge for the field is to integrate dimensional trait models of PD with other theoretical personality models (Krueger, Eaton, Derringer, et al., 2011). The results of this research suggest that FFT could be a useful starting point for a broader theoretical framework from which personality and personality pathology can be understood (McCrae & Costa, 2008b; McCrae et al., 2005). Specifically, FFT's differentiation of basic tendencies and characteristic (mal)adaptations allows for an integrated theoretical conceptualisation of constructs central to personality pathology. Using FFT as the overarching theoretical framework for this research allowed for the reconciliation of key elements of trait and cognitive-behavioural theories of PD. In line with Bornstein's argument (2007), using an integrated theoretical framework to conceptualise PDs may provide a better

explanation and understanding of the development, manifestation and treatment of personality pathology.

### **5.8 Future Directions**

The results of this research point to a number of potential avenues for future research. First, given the relationships between conceptually similar personality traits and dysfunctional schemas, an important direction for future research is to explore whether personality traits and dysfunctional schemas can be organised within an integrated model of personality. Specifically, factor-analytic research could clarify further the patterns of relationships amongst traits and dysfunctional schemas and elucidate whether these personality characteristics load onto broader personality dimensions in meaningful ways.

The current research revealed that traits and dysfunctional schemas together explained a substantial amount of variance in the majority of DSM-IV-TR PD features as assessed by the WISPI-IV. Nevertheless, unexplained variance remained for all PD syndromes. Future research ought to explore whether other personality constructs can add incremental variance to the prediction of PD features so that a stronger picture will emerge (Dyce, 1997). Defense mechanisms and coping styles are just some examples of other personality constructs that could potentially be useful for the conceptualisation of PDs (Bornstein, 2007).

Since the current research was comprised of studies that utilised a cross-sectional and correlational design it was not possible to speculate on possible causal relationships. To find possible causal relationships, future studies should utilise longitudinal designs to ascertain whether causal relationships between personality traits, dysfunctional schemas and PD features do exist. If causal relationships are found, then this could have important clinical implications in regards to the early intervention and treatment of personality pathology. A related future direction is to empirically test the mediation hypotheses that were proposed in section 5.4.2. It is imperative for future studies to explore fully the possible mediating effects of dysfunctional schemas on the relationships between personality traits and PD features as this could have implications for theory and practice. Future studies can explore both causal and mediation relationships through path analysis.

Another important objective for future research is to validate the PD type profiles that were obtained in the current research. For example, cluster analysis or

discriminant function analysis could be used to explore whether the same constellations of traits and dysfunctional schemas that comprised each PD type profile in the current research can be recovered. Additionally, multivariate analysis of variance can be used to assess which specific constellations of traits and dysfunctional schemas can distinguish among different PD types. Such research will provide much-needed evidence pertaining to the construct and criterion-related validity of a dimensional trait and dysfunctional schema model to account for PD features. Future studies could also compare the predictive validity of the PD type profiles obtained in this research with the proposed DSM-5 trait profiles in accounting for variance in DSM-IV-TR PD features. Studies that explore the clinical utility of each model of PD are also required. In this respect, studies that investigate how well findings that have been obtained using nomothetic research apply to individual clinical cases are necessary and will prove informative.

In line with dimensional assumptions, Study 3 of this research found not only statistically significant but also clinically significant and meaningful differences between clinical and non-clinical groups on a range of personality trait and dysfunctional schema scores. However, the small sample size diminishes the conclusions that can be drawn and limits the generalisability of the results. Thus, larger samples are required to examine group-differences on traits and dysfunctional schemas. Future longitudinal research examining differences on trait and dysfunctional schema scores before and after treatment is needed to show that therapy that targets traits or dysfunctional schemas improves problematic PD-related features, behaviours and symptomology. This research would aim to demonstrate the effectiveness of case conceptualisation and treatment using traits and dysfunctional schemas as central units of personality pathology (Ball, 2005; Ball & Cecero, 2001).

### **5.9 Conclusion**

Given the gaps in the literature, the overall aim of this thesis was to examine the relationships between personality traits, dysfunctional schemas and PD features in order to understand personality pathology from a broader, integrated perspective that incorporates some of the key constructs from both trait and cognitive-behavioural theories of PDs. This research demonstrated that personality traits and dysfunctional schemas were meaningfully related with each other and with theoretically-relevant PD features. Unique constellations of lower-order FFM or SNAP traits explained

variance in all PD features, which is consistent with the idea that PDs should be reconceptualised using a dimensional trait model, as is being proposed for DSM-5. Furthermore, results also showed that dysfunctional schemas operationalised as either EMSs or dysfunctional PD beliefs incrementally explained unique amounts of variance in all PD syndromes, over and above the amounts of variance that were explained by traits alone from either the FFM or SNAP trait models. This indicates that dysfunctional schemas are not redundant in accounting for PD features, symptomology and behaviours, but rather are important constructs for the conceptualisation of PDs (Thimm, 2011). Thus, as Bornstein (2007) has suggested, conceptualising PDs using constructs from multiple theoretical approaches does provide more comprehensive information about personality pathology and this in turn has important implications for case conceptualisation and treatment. Moreover, the overall pattern of results across the hierarchical regression analyses suggested that some dysfunctional schemas have more likely proximal relationships with PD features, symptoms and behaviours, while some traits have more likely distal relationships which could be mediated by dysfunctional schemas. Overall, these findings are consistent with and provide empirical support for FFT (McCrae & Costa, 2008b) which proposes that basic tendencies (traits) and characteristic maladaptations (dysfunctional schemas) together can result in PD-related features, symptomology and behaviours. Particularly, the current research showed that the DSM-IV-TR's PD syndromes were associated with unique constellations of dimensional traits and dysfunctional schemas. It was argued that these unique combinations of dimensional characteristics for each PD syndrome could constitute a prototypic PD type profile along the lines of the PD trait profiles that have been proposed for DSM-5. The current research also found statistically and clinically significant differences between clinical and non-clinical groups on personality trait and dysfunctional schema scores. Between-groups differences predominantly occurred for traits and dysfunctional schemas that were associated with the PD features of the clinical group. This tentatively provides support for the idea that traits and dysfunctional schemas are related to the severity of personality pathology. Overall, the findings of this research have broader theoretical and practical implications for the conceptualisation and treatment of PDs. Accordingly, this thesis has contributed to a better understanding of PDs and is a valuable addition to the scant research in this particular area and to the broader PD literature.



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## Appendices

### Appendix A

#### Information Letter and Consent Forms for Study 1

##### A.1 Information Letter

Australian Catholic University  
Brisbane Sydney Canberra Melbourne Melbourne



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#### INFORMATION LETTER TO PARTICIPANTS

**TITLE OF PROJECT:** The Relationship between Personality Traits and Personality-Related Beliefs

**STAFF SUPERVISORS:** Dr Rivka T. Witenberg and Associate Professor Sabine W. Hatamond

**STUDENT RESEARCHER:** Ms Niwawa Bulus

**COURSE:** Master of Psychology/ Doctor of Philosophy (Clinical)

Dear Participant,

You are invited to participate in a research project examining the relationship between personality traits and personality-related beliefs. Personality traits are an individual's characteristic ways of thinking, feeling and behaving. Personality-related beliefs refer to the beliefs individuals hold about their own personality. Both adaptive and less adaptive personality traits and beliefs are present in all people. However, little psychological research has specifically examined the relationship between these ideas. It is anticipated that this research will help to provide a better understanding of the relationship between both adaptive and maladaptive personality traits and beliefs; which in turn may assist in the conceptualization and treatment of personality-related problems.

We require participants aged over 18 years. If you consent to participate, you will be asked to take approximately between 90 minutes and two hours to complete a questionnaire package that contains several personality-related measures. You may complete the questionnaire package in class time, in your own time or in a quiet room as negotiated with the Student Researcher. There are no right or wrong answers as you will be responding to items about your own personality. After you have completed all the measures, you will be asked to please return your questionnaire package to the Student Researcher in person or by mail using the envelope provided to you. Alternatively, you can return your completed questionnaire package into a box at the School of Psychology reception desk, located on Level 2 of the ACU Melbourne campus building.

Although it is not expected, participation in this study may cause you some slight discomfort as you respond to the more personal questions about your personality. If you feel distressed as a result of participating in the project, please contact Student Services, located on Level 1 Melbourne campus, on 9253 3082 (ACU students only); the ACU Psychology Clinic Director Dr Jo Grinward on 9253 3118; or Lifeline, a 24 hour counselling service on 13 11 14.

Participation in this research project is voluntary. You can withdraw from participating in this project without giving a reason up until data is collected; as after this time it will not be possible to distinguish your data from the data of others. Confidentiality will be maintained during the study and in any report of the study. All participants will be given a code and names on the consent forms will not be retained with the data. Individual participants will not be able to be identified in any reports of the study, as only aggregated data will be reported. The results from the study may be summarized and appear in publications or may be provided to other researchers in a form that does

CRICOS registered provider:  
000043, 601120, 00573F, 00085B

not identify participants in any way. Data will be stored in a locked cabinet in the School of Psychology at St. Patrick's Campus.

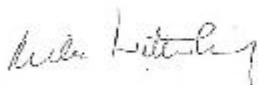
If you have any questions about the project, before or after participating, please contact the Staff Supervisors, Dr Rivka T. Witenberg, on telephone number 9953 3122 or Associate Professor Sabine W. Hammond, on telephone number 9953 3107, in the School of Psychology, St Patrick's Campus, at the Australian Catholic University, 115 Victoria Parade, FITZROY VIC 3065. Alternatively, the Staff Supervisors can be contacted via email at [r.witenberg@stpatrick.acu.edu.au](mailto:r.witenberg@stpatrick.acu.edu.au) or [sabine.hammond@acu.edu.au](mailto:sabine.hammond@acu.edu.au).

This study has been approved by the Human Research Ethics Committee at Australian Catholic University. In the event that you have any complaint or concern about the way you have been treated during the study, or if you have any query that the Student Researcher and Staff Supervisors have not been able to satisfy, you may write to:

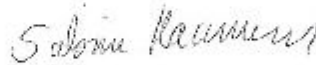
Chair, Human Research Ethics Committee,  
CA Research Services, Australian Catholic University,  
Locked Bag 4115, FITZROY VIC 3065,  
Tel. 03 9953 3158, Fax: 03 9953 3515.

Any complaint will be treated in confidence and fully investigated. The participant will be informed of the outcome.

If you are willing to participate please sign the attached consent forms. You should sign both copies of the consent forms, retain one copy for your records and return the other to the Student Researcher. Your support for the research project will be most appreciated.



Staff Supervisor,  
Dr Rivka T. Witenberg



Staff Supervisor,  
Associate Professor Sabine W. Hammond



Student Researcher,  
Nirawa Butus

## A.2 Consent Forms

Australian Catholic University  
 Brisbane Sydney Canberra Ballarat Melbourne



Australian Catholic University Limited  
 AFN 15 050 192 030  
 Melbourne Campus (St. Patrick's)  
 115 Victoria Parade Fitzroy VIC 3066  
 Locked Bag 4115 Fitzroy VIC 3066  
 Telephone 03 9363 3000  
 Facsimile 03 9363 5005  
[www.acu.edu.au](http://www.acu.edu.au)

## INFORMED CONSENT FORM

Copy for Participant to Keep

TITLE OF PROJECT: The Relationship between Personality Traits and Personality-Related

Beliefs

STAFF SUPERVISORS: Dr Rivka T. Witenberg and Associate Professor Sabine W. Hammond

STUDENT RESEARCHER: Ms Ninawa Butrus

COURSE: Master of Psychology/ Doctor of Philosophy (Clinical)

## Participants section

I ..... (the participant) have read and understood the information in the letter inviting participation in the research, and any questions I have asked have been answered to my satisfaction. I agree to take approximately 90 minutes to two hours to complete the questionnaire booklet provided to me; realising that I can withdraw at any time without giving a reason up until data is collected.

I agree that research data collected for the study may be published or provided to other researchers in a form that does not identify me in any way. I am over 18 years of age.

Name of participant: ..... Phone: .....  
 (block letters)

Signature: ..... Date: .....

Research Student: Ms Ninawa Butrus

Signature: *Ninawa Butrus*

Date: *12/05/2008*

Staff Supervisor: Dr Rivka T. Witenberg

Signature: *Rivka Witenberg*

Date: *12/05/08*

Staff Supervisor: Associate Professor Sabine W. Hammond

Signature: *Sabine Hammond*

Date: *12/05/2008*

CRICOS registered provider.  
 00034G, 00112G, 00875F, 00885B

Australian Catholic University  
 Brisbane Sydney Canberra Perth Melbourne



Australian Catholic University Limited  
 ABN 15 050 192 660  
 Melbourne Campus (St Patrick's)  
 115 Victoria Parade Fitzroy Vic 3035  
 Locked Bag 4115 Fitzroy VIC 3035  
 Telephone 03 6963 3000  
 Facsimile 03 9053 3005  
[www.acu.edu.au](http://www.acu.edu.au)

### INFORMED CONSENT FORM

Copy for Participant to Submit

TITLE OF PROJECT: The Relationship between Personality Traits and Personality-Related Beliefs

STAFF SUPERVISOR: Dr Rivka T. Witenberg and Associate Professor Sabine W. Hammond

STUDENT RESEARCHER: Ms Ninawe Butrus

COURSE: Master of Psychology/ Doctor of Philosophy (Clinical)

#### Participant section

I, \_\_\_\_\_ (the participant) have read and understood the information in the letter inviting participation in the research, and any questions I have asked have been answered to my satisfaction. I agree to take approximately 90 minutes to two hours to complete the questionnaire booklet provided to me, realising that I can withdraw at any time without giving a reason up until data is collected.

I agree that research data collected for the study may be published or provided to other researchers in a form that does not identify me in any way. I am over 18 years of age.

Name of participant: \_\_\_\_\_ Phone: \_\_\_\_\_  
 (block letters)

Signature: \_\_\_\_\_ Date: \_\_\_\_\_

Research Student: Ms Ninawe Butrus

Signature: \_\_\_\_\_ Date: 12/05/2008

Staff Supervisor: Dr Rivka T. Witenberg

Signature: \_\_\_\_\_ Date: 12/05/08

Staff Supervisor: Associate Professor Sabine W. Hammond

Signature: \_\_\_\_\_ Date: 12/05/08

CRICOS registered provider.

## Appendix B

## ACU Human Research Ethics Committee Approval Notice for Study 1

Australian Catholic University  
Brisbane Sydney Canberra Ballarat Melbourne



## Human Research Ethics Committee

## Committee Approval Form

**Principal Investigator/Supervisor:** Dr Rivka Witenberg Melbourne Campus  
**Co-Investigators:** A/Prof Sabine Hammond Melbourne Campus  
**Student Researcher:** Ninawa Butrus Melbourne Campus

**Ethics approval has been granted for the following project:**  
The relationship between personality disorders, the five-factor model of personality and early maladaptive schemas in an Australian non-clinical sample.  
**for the period:** 28<sup>th</sup> May 2008 - 31<sup>st</sup> December 2010 (subject to annual renewal)  
**Human Research Ethics Committee (HREC) Register Number:** V200708 68

The following standard conditions as stipulated in the *National Statement on Ethical Conduct in Research Involving Humans* (2007) apply:

- (i) that Principal Investigators / Supervisors provide, on the form supplied by the Human Research Ethics Committee, annual reports on matters such as:
  - security of records
  - compliance with approved consent procedures and documentation
  - compliance with special conditions, and
- (ii) that researchers report to the HREC immediately any matter that might affect the ethical acceptability of the protocol, such as:
  - proposed changes to the protocol
  - unforeseen circumstances or events
  - adverse effects on participants

The HREC will conduct an audit each year of all projects deemed to be of more than low risk. There will also be random audits of a sample of projects considered to be of negligible risk and low risk on all campuses each year.

Within one month of the conclusion of the project, researchers are required to complete a *Final Report Form* and submit it to the local Research Services Officer.

If the project continues for more than one year, researchers are required to complete an *Annual Progress Report Form* and submit it to the local Research Services Officer within one month of the anniversary date of the ethics approval.

Signed: Jo Alushin Date: 29.5.2008  
(Research Services Officer, Melbourne Campus)

## Appendix C

### Information Letter and Consent Forms for Study 2

#### C.1 Information Letter

Australian Catholic University  
Brisbane Sydney Canberra Ballarat Melbourne



#### INFORMATION LETTER TO PARTICIPANTS

**TITLE OF PROJECT:** Personality Traits and Beliefs  
**STAFF SUPERVISORS:** Dr Rivka T. Witenberg and Associate Professor Sabine W. Hammond  
**STUDENT RESEARCHER:** Ms Ninawa Butrus  
**COURSE:** Master of Psychology/ Doctor of Philosophy (Clinical)

Australian Catholic University Limited  
 ABN 15 050 192 660  
 Melbourne Campus (St Patrick's)  
 115 Victoria Parade Fitzroy Vic 3005  
 Locked Bag 4115 Fitzroy MCD VIC  
 3005  
 Telephone 03 9953 3000  
 Facsimile 03 9953 3005  
[www.acu.edu.au](http://www.acu.edu.au)

Dear Participant,

You are invited to participate in a research study examining the relationship between personality traits and beliefs. Personality traits are an individual's characteristic ways of thinking, feeling and behaving. Personality-related beliefs refer to the beliefs individuals hold about their own personality. Both adaptive and less adaptive personality traits and beliefs are present in all people. However, little psychological research has specifically examined the relationship between these characteristics. It is anticipated that this research will help to provide a better understanding of the relationship between both adaptive and maladaptive personality traits and beliefs; which in turn may assist in the conceptualization and treatment of personality-related problems.

We require participants aged over 18 years. If you consent to participate, you will be asked to take approximately two hours to complete a computerized personality test and a questionnaire package containing several other personality scales. There are no right or wrong answers as you will be responding to items about your own personality. After you have completed all the scales, you are asked to please return your questionnaire package and ALL materials to the Student Researcher by mail using the reply-paid envelope provided to you. Alternatively, if you are an ACU student you can return your completed questionnaire package into a box at the School of Psychology reception desk, located on Level 2 of the ACU Melbourne campus building. Importantly, please do not keep or discard any questionnaires. It is essential that you please return ALL study materials, even if you do not complete your questionnaire pack.

Although it is not expected, participation in this study may cause you some slight discomfort as you respond to the more personal questions about your personality. If you feel distressed as a result of participating in the project, please contact: Student Services, located on Level 1 of the ACU Melbourne campus, on 9953 3082 (for ACU students only); the ACU Psychology Clinic Director Dr Jo Grimwade on 9953 3118; or Lifeline, a 24 hour counselling service on 13 11 14.

Participation in this research project is voluntary. You can withdraw from participating in this project without giving a reason up until data is collected; as after this time it will not be possible to distinguish your data from the data of others. Confidentiality will be maintained during the study and in any report of the study and names on the consent forms will not be retained with the data. Individual participants will not be able to be identified as each questionnaire pack contains a unique ID number only and no names are required on the packs or the individual scales. The results from the study may be summarized and appear in publications or may be provided to other researchers in a form that does not identify participants in any way as only aggregated data will be reported. Data will be stored in a locked cabinet in the School of Psychology at the ACU Melbourne campus.

GRIICOS registered provider:  
 00004G, 00112G, 00873F, 00885H




If you have any questions about the project, before or after participating, please contact the Staff Supervisors, Dr Rivka T. Witenberg, on telephone number 9953 3122 or Associate Professor Sabine W. Hammond, on telephone number 9953 3107, in the School of Psychology, Melbourne Campus, at the Australian Catholic University, 115 Victoria Parade, FITZROY VIC 3065. Alternatively, the Staff Supervisors can be contacted via email at [rivka.witenberg@acu.edu.au](mailto:rivka.witenberg@acu.edu.au) or [sabine.hammond@acu.edu.au](mailto:sabine.hammond@acu.edu.au).

This study has been approved by the Human Research Ethics Committee at Australian Catholic University. In the event that you have any complaint or concern about the way you have been treated during the study, or if you have any query that the Student Researcher and Staff Supervisors have not been able to satisfy, you may write to:


Chair, Human Research Ethics Committee,  
C/- Research Services, Australian Catholic University,  
Locked Bag 4115, FITZROY VIC 3065,  
Tel: 03 9953 3158, Fax: 03 9953 3315.

Any complaint will be treated in confidence and fully investigated. The participant will be informed of the outcome.

If you are willing to participate please sign the attached consent forms. You should sign both copies of the consent forms, retain one copy for your records and return the other titled "*Informed Consent Form- Copy for Participant to Submit*" to the Student Researcher. Your support for the research project will be most appreciated.



Staff Supervisor,  
Dr Rivka T. Witenberg



Staff Supervisor,  
Associate Professor Sabine W. Hammond



Student Researcher,  
Ninawa Butrus

## C.2 Consent Forms

Australian Catholic University  
Brisbane Sydney Canberra Ballarat Melbourne



Australian Catholic University Limited  
ABN 15 050 192 880  
Melbourne Campus (St Patrick's)  
115 Victoria Parade Fitzroy Vic 3085  
Locked Bag 4115 Fitzroy MCD VIC  
3085  
Telephone 03 9953 3000  
Facsimile 03 9953 3005  
[www.acu.edu.au](http://www.acu.edu.au)

## INFORMED CONSENT FORM

Copy for Participant to Keep

TITLE OF PROJECT: Personality Traits and Beliefs

STAFF SUPERVISORS: Dr Rivka T. Witenberg and Associate Professor Sabine W. Hammond

STUDENT RESEARCHER: Ms Ninawa Butrus

COURSE: Master of Psychology/ Doctor of Philosophy (Clinical)

## Participants section

I ..... (the participant) have read and understood the information in the letter inviting participation in the research, and any questions I have asked have been answered to my satisfaction. I agree to take approximately two hours to complete the questionnaire package provided to me; realising that I can withdraw at any time without giving a reason up until data is collected. I agree to return all study materials to the Student Researcher.

I agree that research data collected for the study may be published or provided to other researchers in a form that does not identify me in any way. I am over 18 years of age.

Name of participant: ..... Phone: .....  
(block letters)

Signature: ..... Date: .....

Research Student: Ms Ninawa Butrus

Signature: *Ninawa Butrus* Date: *05/11/2009*

Staff Supervisor: Dr Rivka T. Witenberg

Signature: *Rivka Witenberg* Date: *05/11/2009*

Staff Supervisor: Associate Professor Sabine W. Hammond

Signature: *Sabine Hammond* Date: *05/11/2009*

CRICOS registered provider:  
00004G, 00112C, 00573F, 00885R

Australian Catholic University  
Brisbane Sydney Canberra Balarat Melbourne



Australian Catholic University Limited  
ABN 15 050 192 690  
Melbourne Campus (St Patrick's)  
115 Victoria Parade Fitzroy Vic 3065  
Locked Bag 4115 Fitzroy MCD VIC  
3065  
Telephone: 03 9953 3000  
Facsimile: 03 9953 3005  
[www.acu.edu.au](http://www.acu.edu.au)

### INFORMED CONSENT FORM

Copy for Participant to Submit

TITLE OF PROJECT: Personality Traits and Beliefs

STAFF SUPERVISOR: Dr Rivka T. Witenberg and Associate Professor Sabine W. Hammond

STUDENT RESEARCHER: Ms Ninawa Butrus

COURSE: Master of Psychology/ Doctor of Philosophy (Clinical)

#### Participant section

I ..... (*the participant*) have read and understood the information in the letter inviting participation in the research, and any questions I have asked have been answered to my satisfaction. I agree to take approximately two hours to complete the questionnaire booklet provided to me; realising that I can withdraw at any time without giving a reason up until data is collected. I agree to return all study materials to the Student Researcher.

I agree that research data collected for the study may be published or provided to other researchers in a form that does not identify me in any way. I am over 18 years of age.

Name of participant: ..... Phone: .....  
(block letters)

Signature: ..... Date: .....

Research Student: Ms Ninawa Butrus

Signature: *Ninawa Butrus* Date: 05/11/2009

Staff Supervisor: Dr Rivka T. Witenberg

Signature: *Rivka Witenberg* Date: 05/11/2009

Staff Supervisor: Associate Professor Sabine W. Hammond

Signature: *Sabine Hammond* Date: 05/11/2009

CRIOCOS registered provider:  
00304C 00112C 00875F 008853

## Appendix D

## ACU Human Research Ethics Committee Approval Notice for Study 2

Australian Catholic University  
Brisbane Sydney Canberra Ballarat Melbourne



## Human Research Ethics Committee

Committee Approval Form

**Principal Investigator/Supervisor:** Dr Rivka Witenburg Melbourne Campus  
**Co-Investigators:** Prof Sabine Hammond Melbourne Campus  
**Student Researcher:** Ninawa Butrus Melbourne Campus

**Ethics approval has been granted for the following project:**  
 The relationship between personality disorders, cognitive schemas and maladaptive personality traits:  
 Using the SNAP-2 to conceptualise personality disorders.  
 for the period: 22.09.2009 to 31.12.2011  
**Human Research Ethics Committee (HREC) Register Number:** V2009 77

The following **standard** conditions as stipulated in the *National Statement on Ethical Conduct in Research Involving Humans (2007)* apply:

- (i) that Principal Investigators / Supervisors provide, on the form supplied by the Human Research Ethics Committee, annual reports on matters such as:
  - security of records
  - compliance with approved consent procedures and documentation
  - compliance with special conditions, and
- (ii) that researchers report to the HREC immediately any matter that might affect the ethical acceptability of the protocol, such as:
  - proposed changes to the protocol
  - unforeseen circumstances or events
  - adverse effects on participants

The HREC will conduct an audit each year of all projects deemed to be of more than low risk. There will also be random audits of a sample of projects considered to be of negligible risk and low risk on all campuses each year.

Within one month of the conclusion of the project, researchers are required to complete a *Final Report Form* and submit it to the local Research Services Officer.

If the project continues for more than one year, researchers are required to complete an *Annual Progress Report Form* and submit it to the local Research Services Officer within one month of the anniversary date of the ethics approval.

Signed: ..... Date: .....  
 (Research Services Officer, Melbourne Campus)

## Appendix E

### Information Letter and Consent Forms for Study 3

#### E.1 Information Letter for Counselling/Outreach Service

Australian Catholic University  
 Brisbane Sydney Canberra Ballarat Melbourne



#### INFORMATION LETTER TO PARTICIPANTS

TITLE OF PROJECT: Personality Traits and Beliefs  
 STAFF SUPERVISORS: Dr Rivka T. Witenberg and Associate Professor  
 Sabine W. Hammond  
 STUDENT RESEARCHER: Ms Ninawa Butrus  
 COURSE: Master of Psychology/ Doctor of Philosophy (Clinical)

Australian Catholic University Limited  
 ABN 15 050 182 880  
 Melbourne Campus (St Patrick's)  
 115 Victoria Parade Fitzroy VIC 3085  
 Locked Bag 4115 Fitzroy VIC 3085  
 Telephone 03 9953 3000  
 Facsimile 03 9953 3006  
[www.acu.edu.au](http://www.acu.edu.au)

Dear Participant,

You are invited to participate in a research study examining the relationship between personality traits and beliefs. Personality traits are an individual's characteristic ways of thinking, feeling and behaving. Personality-related beliefs refer to the beliefs individuals hold about their own personality. Both adaptive and less adaptive personality traits and beliefs are present in all people. However, little psychological research has specifically examined the relationship between these characteristics. It is anticipated that this research will help to provide a better understanding of the relationship between both adaptive and maladaptive personality traits and beliefs; which in turn may assist in the conceptualization and treatment of personality-related problems. This study is being conducted by Student Researcher Ninawa Butrus as part of her doctorate in clinical psychology.

#### What is involved?

We require participants from Connexions whom are aged over 18 years. If you consent to participate, you will be asked to attend two 2-hour testing sessions at Connexions to complete some computerized personality tests and a questionnaire package containing some other personality scales. There are no right or wrong answers as you will be responding to items about your own personality. In addition, we are interested in developing some brief case studies that will contain some background information about you plus your profile on the personality scales. No identifying information about you or Connexions will be reported in any way. To develop these case studies, we require your written consent to access your Connexions file and/or speak with your Connexions counsellor. This part of the research is entirely optional and will not impact on your ability to participate in the other part of the research involving completing the personality tests.

#### What do I get for participating?

Upon completion of all personality scales, you will receive two adult movie tickets to thank you for your time and participation in the research. Should clear results emerge, it may also be possible for you to receive some brief, general feedback about your personality traits through your Connexions counsellor. You can also receive the group results once the study is completed by emailing us at [personalityresearch@live.com.au](mailto:personalityresearch@live.com.au)

#### What happens if I feel distressed?

Although it is not expected, participation in this study may cause you some slight discomfort as you respond to the more personal questions about your personality. If you feel distressed as a result of participating in the project, in the first instance, please speak with your Connexions counsellor. In addition, please contact these other services for further support: the Australian Catholic University Psychology Clinic at the Melbourne campus for low-cost counselling (9953 3006); the SuicideLine (1300 651 251), a 24 hour counselling service; or Lifeline (13 11 14), a 24 hour counselling service.

#### Do I have to participate?

Participation in this research project is completely voluntary. You can withdraw from participating in this project at any time without giving a reason up until data is collected; as after this time it will not be possible to distinguish your data from the data of others.

CRICOS registered provider:  
 00004G, 00112C, 00673F, 00685R

**What will happen with my information?**

Your information will remain confidential at all stages of the project. Confidentiality will be maintained during the study and in any report of the study and names on the consent forms will not be retained with the data. Individual participants will not be able to be identified as each questionnaire pack contains a unique ID number only and no names are required on the packs or the individual personality scales. Furthermore, any file information we collect about you will be de-identified in that your name and any other personal information about you will not be recorded. The results from the study may be summarized and appear in publications or may be provided to other researchers in a form that does not identify participants in any way as only aggregated data will be reported. Data will be stored in a locked cabinet in the School of Psychology at the ACU Melbourne campus.

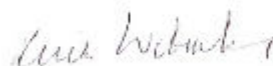
If you have any questions about the project, before or after participating, please contact the Staff Supervisors, Dr Rivka T. Witenberg, on telephone number 9953 3122 or Associate Professor Sabine W. Hammond, on telephone number 9953 3107, in the School of Psychology, Melbourne Campus, at the Australian Catholic University, 115 Victoria Parade, FITZROY VIC 3065. Alternatively, the Staff Supervisors can be contacted via email at [rivka.witenberg@acu.edu.au](mailto:rivka.witenberg@acu.edu.au) or [sabine.hammond@acu.edu.au](mailto:sabine.hammond@acu.edu.au).

This study has been approved by the Human Research Ethics Committee at Australian Catholic University. In the event that you have any complaint or concern about the way you have been treated during the study, or if you have any query that the Student Researcher and Staff Supervisors have not been able to satisfy, you may write to:

Chair, Human Research Ethics Committee,  
C/- Research Services, Australian Catholic University,  
Locked Bag 4115, FITZROY VIC 3065,  
Tel: 03 9953 3158, Fax: 03 9953 3315.

Any complaint will be treated in confidence and fully investigated. The participant will be informed of the outcome.

If you are willing to participate please sign the attached consent forms. You should sign both copies of the consent forms, retain one copy for your records and return the other titled "*Informed Consent Form- Copy for Participant to Submit*" to the Student Researcher. Your support for the research project will be most appreciated.



Staff Supervisor,  
Dr Rivka T. Witenberg



Staff Supervisor,  
Associate Professor Sabine W. Hammond



Student Researcher,  
Ninawa Butrus

## E.2 Consent Forms for Counselling/Outreach Service

Australian Catholic University  
Brisbane Sydney Canberra Ballarat Melbourne



### INFORMED CONSENT FORM

#### Copy for Participant to **KEEP**

TITLE OF PROJECT: Personality Traits and Beliefs  
STAFF SUPERVISORS: Dr Rivka T. Witenberg and Associate  
Professor Sabine W. Hammond  
STUDENT RESEARCHER: Ms Ninawa Butrus  
COURSE: Master of Psychology/ Doctor of Philosophy (Clinical)

Australian Catholic University Limited  
ABN 15 050 102 660  
Melbourne Campus (St Patrick's)  
115 Victoria Parade Fitzroy Vic 3085  
Locked Bag 4115 Fitzroy MCD VIC  
3085  
Telephone 03 9953 3000  
Facsimile 03 9953 3005  
[www.acu.edu.au](http://www.acu.edu.au)

#### Participant's section

I ..... (*the participant*) have read and understood the information in the letter inviting participation in the research, and any questions I have asked have been answered to my satisfaction. I agree to attend two 2-hour testing sessions held at Connexions (1 Langridge St, Collingwood) to complete two computerized personality tests and a questionnaire package containing other personality scales; realising that I can withdraw at any time without giving a reason up until data is collected.

I agree that research data collected for the study may be published or provided to other researchers in a form that does not identify me in any way. I am over 18 years of age.

In addition,

\* I also give / do not give (*please circle*) my consent for the Student Researcher to access my Connexions file for the purpose of obtaining information about me that is relevant to writing a case study. I understand that no identifying information about me will be recorded or reported in any publication of the study.

\* I also give / do not give (*please circle*) my consent for the Student Researcher to speak with my Connexions counsellor for the purpose of obtaining information about me that is relevant to writing a case study. I understand that no identifying information about me will be recorded or reported in any publication of the study.

\* I also give / do not give (*please circle*) my consent for the Student Researcher to provide my Connexions counsellor with some brief, general feedback about my personality traits should clear results emerge.

Name of participant: ..... Phone: .....  
(*block letters*)

Signature: ..... Date: .....

Research Student: Ms Ninawa Butrus

Signature: ..... Date: 2/8/2010

Staff Supervisor: Dr Rivka T. Witenberg

Signature: ..... Date: 2/8/2010

Staff Supervisor: Associate Professor Sabine W. Hammond

Signature: ..... Date: 2/8/2010

CRIQCOS registered provider:  
00004G, 00112C, 00873F, 00888B

Australian Catholic University  
Bishops Square Canberra Eastern Melbourne

### INFORMED CONSENT FORM

#### Copy for Participant to SUBMIT

TITLE OF PROJECT: Personality Traits and Beliefs  
STAFF SUPERVISORS: Dr Rivka T. Witenberg and Associate  
Professor Sabine W. Hammond  
STUDENT RESEARCHER: Ms Ninawa Butras  
COURSE: Master of Psychology/ Doctor of Philosophy (Clinical)



Australian Catholic University Limited  
ABN 15 050 192 830  
Melbourne Campus (St Patrick's)  
115 Victoria Parade Fitzroy VIC 3065  
Locked Bag 4115 Fitzroy MCD VIC  
3065  
Telephone 03 9953 3000  
Facsimile 03 9953 3035  
[www.acu.edu.au](http://www.acu.edu.au)

#### Participant's section

I ..... (*the participant*) have read and understood the information in the letter inviting participation in the research, and any questions I have asked have been answered to my satisfaction. I agree to attend two 2-hour testing sessions held at Connexions (1 Langridge St, Collingwood) to complete two computerized personality tests and a questionnaire package containing other personality scales; realising that I can withdraw at any time without giving a reason up until data is collected.

I agree that research data collected for the study may be published or provided to other researchers in a form that does not identify me in any way. I am over 18 years of age.

In addition,

\* I also give / do not give (*please circle*) my consent for the Student Researcher to access my Connexions file for the purpose of obtaining information about me that is relevant to writing a case study. I understand that no identifying information about me will be recorded or reported in any publication of the study.

\* I also give / do not give (*please circle*) my consent for the Student Researcher to speak with my Connexions counsellor for the purpose of obtaining information about me that is relevant to writing a case study. I understand that no identifying information about me will be recorded or reported in any publication of the study.

\* I also give / do not give (*please circle*) my consent for the Student Researcher to provide my Connexions counsellor with some brief, general feedback about my personality traits should clear results emerge.

Name of participant: ..... Phone: .....  
(*block letters*)

Signature: ..... Date: .....

Research Student: Ms Ninawa Butras

Signature: *Ninawa Butras*

Date: *3/8/2010*

Staff Supervisor: Dr Rivka T. Witenberg

Signature: *Rivka Witenberg*

Date: *3/8/2010*

Staff Supervisor: Associate Professor Sabine W. Hammond

Signature: *Sabine Hammond*

Date: *3/8/2010*

CRIICOS registered provider:  
0004G 00112C 00873F 00885D



## E.3 Information Letter for Private Psychiatric Hospital

Australian Catholic University  
Brisbane Sydney Canberra Ballarat Melbourne



### INFORMATION LETTER TO PARTICIPANTS

**TITLE OF PROJECT:** Personality Traits and Beliefs  
**STAFF SUPERVISORS:** Dr Rivka T. Witenberg and Associate Professor Sabine W. Hammond  
**STUDENT RESEARCHER:** Ms Ninawa Butrus  
**COURSE:** Master of Psychology/ Doctor of Philosophy (Clinical)

Australian Catholic University Limited  
 AIN 15 050 182 680  
 Melbourne Campus (St Patrick's)  
 115 Victoria Parade Fitzroy VIC 3065  
 Locked Bag 4115 Fitzroy VIC 3065  
 Telephone 03 9953 3000  
 Facsimile 03 9953 3006  
[www.acu.edu.au](http://www.acu.edu.au)

Dear Participant,

You are invited to participate in a research study examining the relationship between personality traits and beliefs. Personality traits are an individual's characteristic ways of thinking, feeling and behaving. Personality-related beliefs refer to the beliefs individuals hold about their own personality. Both adaptive and less adaptive personality traits and beliefs are present in all people. However, little psychological research has specifically examined the relationship between these characteristics. It is anticipated that this research will help to provide a better understanding of the relationship between both adaptive and maladaptive personality traits and beliefs; which in turn may assist in the conceptualization and treatment of personality-related problems. This study is being conducted by Student Researcher Ninawa Butrus as part of her doctorate (PhD) in clinical psychology.

#### What is involved?

We require participants from The Victoria Clinic who are aged over 18 years. If you consent to participate, you will be asked to attend one 4-hour or two 2-hour testing sessions at The Victoria Clinic to complete some computerized personality measures and a questionnaire package containing some other personality scales. There are no right or wrong answers as you will be responding to items about your own personality.

#### What do I get for participating?

Upon completion of all personality measures, you will receive two adult movie tickets to thank you for your time and participation in the research. It will not be possible for you to receive individual results as no names are retained with the data. However, you can receive the group results once the study is completed by emailing us at [personalityresearch@live.com.au](mailto:personalityresearch@live.com.au)

#### What happens if I feel distressed?

Although it is not expected, participation in this study may cause you some slight discomfort as you respond to the more personal questions about your personality. If you feel distressed as a result of participating in the project, in the first instance, please speak with Ninawa. She will refer you to your mental health clinician or relevant staff at The Victoria Clinic. In addition, please contact these other services for further support: the SuicideLine (1300 651 251) or Lifeline (13 11 14), which are both 24 hour counselling services.

#### Do I have to participate?

Participation in this research project is completely voluntary. You can withdraw from participating in this project at any time without giving a reason up until data is collected; as after this time it will not be possible to distinguish your data from the data of others.

#### What will happen with my information?

Your information will remain confidential at all stages of the project. Confidentiality will be maintained during the study and in any report of the study and names on the consent forms will not be retained with the data. Individual participants will not be able to be identified as each questionnaire pack

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 00004G 00112Q 00873F 00885R

contains a unique ID number only and no names are required on the packs or computerized measures. The results from the study may be summarized and appear in publications or may be provided to other researchers in a form that does not identify participants in any way as only aggregated data will be reported. Data will be stored in a locked cabinet in the School of Psychology at the ACU Melbourne campus.

**Who do I contact if I have more questions?**

If you have any questions about the project, before or after participating, please contact the Staff Supervisors, Dr Rivka T. Witenberg, on telephone number 9953 3122 or Associate Professor Sabine W. Hammond, on telephone number 9953 3107, in the School of Psychology, Melbourne Campus, at the Australian Catholic University, 115 Victoria Parade, FITZROY VIC 3065. Alternatively, the Staff Supervisors can be contacted via email at [rivka.witenberg@acu.edu.au](mailto:rivka.witenberg@acu.edu.au) or [sabine.hammond@acu.edu.au](mailto:sabine.hammond@acu.edu.au).

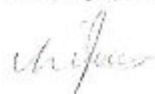
This study has been approved by the Melbourne Clinic Research Ethics Committee and the Human Research Ethics Committee at Australian Catholic University. In the event that you have any complaint or concern about the way you have been treated during the study, or if you have any query that the Student Researcher and Staff Supervisors have not been able to satisfy, you may write to:

Chair, Human Research Ethics Committee,  
C/- Research Services,  
Australian Catholic University,  
Locked Bag 4115, FITZROY VIC 3065  
Tel: (03) 9953 3158, Fax: (03) 9953 3315

Chair, The Melbourne Clinic Research Ethics Committee,  
Professorial Unit  
The Melbourne Clinic  
130 Church St, RICHMOND VIC 3121  
Tel: (03) 9420 9353

Any complaint will be treated in confidence and fully investigated. The participant will be informed of the outcome.

If you are willing to participate please sign the attached consent forms. You should sign both copies of the consent forms, retain one copy for your records and return the other titled "*Informed Consent Form- Copy for Participant to Submit*" to the Student Researcher. Your support for the research project will be most appreciated.



Student Researcher,  
Ninawa Butrus



Staff Supervisor,  
Dr Rivka T. Witenberg



Staff Supervisor,  
Associate Professor Sabine W. Hammond

## E.4 Consent Forms for Private Psychiatric Hospital

### **PERSONALITY TRAITS AND BELIEFS STUDY**

Ninawa Butrus, Rivka T. Witenberg & Sabine W. Hammond

*Australian Catholic University*

#### ***Study Summary***

Clients from The Victoria Clinic are invited to participate in a research study examining the relationship between personality traits and beliefs. Both adaptive and less adaptive personality traits and beliefs are present in all people. However, little psychological research has specifically examined the relationship between these characteristics. It is anticipated that this research will help to provide a better understanding of the relationship between adaptive and maladaptive personality traits and beliefs; which in turn may assist in the conceptualization and treatment of personality-related problems, namely personality disorders (PDs). This study is being conducted by Student Researcher Ninawa Butrus as part of her doctorate (PhD) in clinical psychology.

The overall aim of this study is to examine the relationships between adaptive and maladaptive personality traits, cognitive schemas (i.e., core beliefs), psychological distress and PDs in a clinical sample in order to understand PDs from a dimensional perspective. We require inpatient and/or outpatient clients from The Victoria Clinic who are aged over 18 years to participate. *Participants need not have any specific diagnosis*; however, participants with cognitive impairments or psychosis will be excluded as it is anticipated that these participants will experience difficulties completing the measures. Participation involves completing several computerized and pen/paper personality-related measures. Participants can complete the measures in one testing session that may take up to 4 hours, with breaks as required or in two 2-hour testing sessions, with breaks as required. All testing sessions will be held at The Victoria Clinic with the Student Researcher present.

Although not expected, participation in this study may cause some participants to feel minor discomfort or distress as they respond to the more personal or negatively-worded items/questions about their personality traits and core beliefs. If a participant becomes uncomfortable or distressed, the Student Researcher will: (a) engage the participant in a discussion about their concerns and/or answer any questions; (b) inform the participant that they are free to withdraw their participation at any stage without penalty; and (c) immediately refer the participant to their mental health clinician or relevant staff member at The Victoria Clinic. The Student Researcher will also advise the participant to contact the counselling services that are listed in the Information Letter for further support.

Upon completion of all personality measures, participants will receive two adult movie tickets to thank them for their time and participation in the research. It will not be possible for participants to receive individual results as no names are retained with the data. However, participants can receive the group results once the study is completed by emailing the researchers.

### **CONSULTANT'S PERMISSION**

I hereby give permission / reiterate my verbal permission given on ..... for my patient ..... to be invited to participate and to be included in the research study **PERSONALITY TRAITS AND BELIEFS** as summarized above.

Consultant Name ..... Signature .....

Date .....

Australian Catholic University  
Inglism Street, Canberra Bazaar, Melbourne

### INFORMED CONSENT FORM

#### Copy for Participant to KEEP

TITLE OF PROJECT: Personality Traits and Beliefs  
STAFF SUPERVISORS: Dr Rivka T. Witenberg and Associate  
Professor Sabine W. Hammond  
STUDENT RESEARCHER: Ms Ninawa Butrus  
COURSE: Master of Psychology/ Doctor of Philosophy (Clinical)



Australian Catholic University Limited  
ABN 15 050 152 680  
Melbourne Campus (St Patrick's)  
115 Victoria Parade Fitzroy Vic 3065  
Locked Bag 4115 Fitzroy MCD VIC  
3065  
Telephone 03 9953 3000  
Facsimile 03 9953 3005  
[www.acu.edu.au](http://www.acu.edu.au)

#### Participant's section

I, \_\_\_\_\_ (*the participant*) have read and understood the information in the letter inviting participation in the research, and any questions I have asked have been answered to my satisfaction. I agree to attend one 4-hour or two 2-hour (*please circle*) testing sessions held at The Victoria Clinic (324 Malvern Rd, Prahran) to complete two computerized personality tests and a questionnaire package containing other personality measures; realising that I can withdraw my participation at any time without giving a reason up until data is collected.

I understand that the project may not be of direct benefit to me and that I am not able to receive any individual results as no names are retained with the data. Any risks, discomforts or inconveniences associated with participation have been explained to me. I agree that research data collected for the study may be published or provided to other researchers in a form that does not identify me in any way. I have been informed that any information I provide will be kept confidential. I am over 18 years of age and my consent to participate in the study has been given freely.

Name of participant: \_\_\_\_\_ Phone: \_\_\_\_\_  
(*block letters*)

Signature: \_\_\_\_\_ Date: \_\_\_\_\_

Name of Independent Witness: \_\_\_\_\_ This document has been signed before me.  
(*block letters*)

Signature: \_\_\_\_\_ Date: \_\_\_\_\_

Address: \_\_\_\_\_

Research Student: Ms Ninawa Butrus

Signature: \_\_\_\_\_

Date: 2/8/2010

Staff Supervisor: Dr Rivka T. Witenberg

Signature: \_\_\_\_\_

Date: 2/8/2010

Staff Supervisor: Associate Professor Sabine W. Hammond

Signature: \_\_\_\_\_

Date: 2/8/2010

CR COS registered provider  
00C04G 00112C 00875F 009859

Australian Catholic University  
 Brisbane, Sydney, Canberra, Balmain, Melbourne

### INFORMED CONSENT FORM

#### Copy for Participant to SUBMIT

TITLE OF PROJECT: Personality Traits and Beliefs  
 STAFF SUPERVISORS: Dr Rivka T. Witenberg and Associate  
 Professor Sabine W. Hammond  
 STUDENT RESEARCHER: Ms Ninawa Butrus  
 COURSE: Master of Psychology/ Doctor of Philosophy (Clinical)



Australian Catholic University Limited  
 ABN 15 030 192 650  
 Melbourne Campus (St Patrick's)  
 115 Victoria Parade Fitzroy Vic 3065  
 Locked Bag 4115 Fitzroy MCD VIC  
 3065  
 Telephone 03 9953 3000  
 Facsimile 03 9953 3005  
[www.acu.edu.au](http://www.acu.edu.au)

#### Participant's section

I ..... (the participant) have read and understood the information in the letter inviting participation in the research, and any questions I have asked have been answered to my satisfaction. I agree to attend one 4-hour or two 2-hour (please circle) testing sessions held at The Victoria Clinic (324 Malvern Rd, Prahran) to complete two computerized personality tests and a questionnaire package containing other personality measures; realising that I can withdraw my participation at any time without giving a reason up until data is collected.

I understand that the project may not be of direct benefit to me and that I am not able to receive any individual results as no names are retained with the data. Any risks, discomforts or inconveniences associated with participation have been explained to me. I agree that research data collected for the study may be published or provided to other researchers in a form that does not identify me in any way. I have been informed that any information I provide will be kept confidential. I am over 18 years of age and my consent to participate in the study has been given freely.

Name of participant: ..... Phone: .....  
 (black letters)

Signature: ..... Date: .....

Name of Independent Witness: ..... This document has been signed before me.  
 (black letters)

Signature: ..... Date: .....

Address: .....

Research Student: Ms Ninawa Butrus

Signature: ..... Date: 3/8/2010

Staff Supervisor: Dr Rivka T. Witenberg

Signature: ..... Date: 3/8/2010

Staff Supervisor: Associate Professor Sabine W. Hammond

Signature: ..... Date: 3/8/2010

CRICOS registered provider:  
 02004G, 00112C, 00873F, 00885B

*Appendix F*

Research Ethics Committee and Agency Approval Notices for Study 3

**F.1 ACU Human Research Ethics Committee Approval Notice for Study 3**



AUSTRALIAN CATHOLIC UNIVERSITY

Human Research Ethics Committee

Committee Approval Form

**Principal Investigator/Supervisor:** RIWITENBURG, Sabine Hammond Melbourne Campus

**Co-Investigators:** Melbourne Campus

**Student Researcher:** Ms Ninawa Butrus Melbourne Campus

**Ethics approval has been granted for the following project:**

The relationship between personality traits, cognitive schemas and personality disorders in an Australian clinical sample

**for the period:** 05.02.2010 - 31.12.2011

**Human Research Ethics Committee (HREC) Register Number:** V2009 102

The following standard conditions as stipulated in the *National Statement on Ethical Conduct in Research Involving Humans (2007)* apply:

- (i) that Principal Investigators / Supervisors provide, on the form supplied by the Human Research Ethics Committee, annual reports on matters such as:
  - security of records
  - compliance with approved consent procedures and documentation
  - compliance with special conditions, and
- (ii) that researchers report to the HREC immediately any matter that might affect the ethical acceptability of the protocol, such as:
  - proposed changes to the protocol
  - unforeseen circumstances or events
  - adverse effects on participants

The HREC will conduct an audit each year of all projects deemed to be of more than low risk. There will also be random audits of a sample of projects considered to be of negligible risk and low risk on all campuses each year.

Within one month of the conclusion of the project, researchers are required to complete a *Final Report Form* and submit it to the local Research Services Officer.

If the project continues for more than one year, researchers are required to complete an *Annual Progress Report Form* and submit it to the local Research Services Officer within one month of the anniversary date of the ethics approval.

Signed:

(Research Services Officer, Melbourne Campus)

Date: .....05.02.2010.....

## F.2 Jesuit Social Services Connexions Program Approval Notice

BUILDING A JUST SOCIETY



Ms Ninawa Butrus  
 C/- School of Psychology  
 Australian Catholic University  
 Locked Bag 4115  
 Fitzroy VIC 3065

30/09/2009

Dear Ninawa,

Connexions are happy to be involved in your research and we are willing to provide you with any assistance you may need throughout the duration of your study.

It will be possible for you to access client files and/or speak with Connexions counsellors, contingent upon receiving written consent from the individual client.

Please note that I will be away on maternity leave from 25<sup>th</sup> October 2009 until April 2010.

During this time, your contacts will be: Rob Stoll and/or Michelle Lund. Please contact Rob ([robert.stoll@jss.org.au](mailto:robert.stoll@jss.org.au)) or Michelle ([michelle.lund@jss.org.au](mailto:michelle.lund@jss.org.au)) if you require any assistance.

We wish you all the best with your research.

Dr Rebecca Deering  
 Psychologist  
 Connexions  
[rebecca.deering@jss.org.au](mailto:rebecca.deering@jss.org.au)

### CONNEXIONS

Supporting young people with mental health and substance use problems

1 Langridge Street, Collingwood VIC 3066 PO Box 1141, Collingwood VIC 3066

Tel 03 9415 8700 Fax 03 9415 7733 Email [connexions@jss.org.au](mailto:connexions@jss.org.au) Web [www.jss.org.au](http://www.jss.org.au)

ABN 72 005 269 534

### F.3 The Melbourne Clinical Research Ethics Committee Approval Notice

9 June 2010

A/Prof Sabrina J Hammond  
 School of Psychology  
 Australian Catholic University  
 Locked Bag 4115  
 FITZROY VIC 3065



The Melbourne Clinic

130 Church Street  
 Richmond VIC 3121  
 Tel: 03 9423 4855  
 Fax: 03 9423 7655  
 Email: info@melbourneclinic.com.au  
 A not-for-profit company

Dear A/Prof Hammond,

**Re: Project 187: The relationship between personality traits, cognitive schemas and personality disorders in an Australian clinical sample**

Thank you for attending the meeting of the Research Ethics Committee held on 9 June 2010. I would confirm that the above project was tabled, discussed and approved.

Could you please sign, date and return the enclosed Acceptance of Research Requirements form.

We wish you success with the research and look forward to hearing from you further on its progress.

I confirm that although we do not list Committee members by name, the Committee is constituted and functions in accordance with the National Statement on Ethical Conduct in Research Involving Humans (2007) issued by the National Health and Medical Research Council (NHMRC) in accordance with the NHMRC Act, 1982.

Yours sincerely

Dr H Derham  
 Chair  
 Research Ethics Committee