

How do chance and uncertainty influence the career development of adults?

Australian Catholic University

Submitted by

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Statement of Authorship and Sources

This thesis contains no material published elsewhere or extracted in whole or in part from a thesis by which I have qualified for or been awarded another degree or diploma.

No other person's work has been used without due acknowledgement in the text of the thesis.

This thesis has not been submitted for the award of any other degree or diploma in any other tertiary institution.

All research reported in this thesis received the approval of the relevant Ethics Committees (Appendix K, Appendix L).

Signed:

Gerard Patrick Torpy

How do chance and uncertainty influence the career development of adults?

Acknowledgements

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Dedication

This research is dedicated to each individual concerned to find a place that suits her or him in a tumultuous world of challenge, opportunity and complexity.

List of Tables

Table 1:	<i>Categories of Career Theory</i>	12
Table 2:	<i>Content included in systems approaches to career guidance</i>	19
Table 3:	<i>Fractals occurring within complex systems</i>	27
Table 4:	<i>Theoretical Framework</i>	54
Table 5:	<i>Table demonstrating the aims and purpose of each study</i>	54
Table 6:	<i>Table demonstrating the Research Design for Study One</i>	56
Table 7:	<i>Table demonstrating the Research Design for Study Two</i>	58
Table 8:	<i>Table demonstrating the Research Design for Study Three</i>	59
Table 9:	<i>Table demonstrating the Research Design for Study Four</i>	60
Table 10:	<i>Table demonstrating the Research Design for Study Five</i>	62
Table 11:	<i>Table demonstrating the Research Design for Study Six</i>	63
Table 12:	<i>Reported paid and unpaid roles of responders</i>	76
Table 13:	<i>Characteristics of a chance event</i>	78
Table 14:	<i>Effect of a positive chance event</i>	80
Table 15:	<i>Biographical synopsis of interviewees</i>	93
Table 16:	<i>Processes and relationships - nodal structure of the five process analysis themes</i>	116
Table 17:	<i>Embedded Systems - nodal structure of theme</i>	126
Table 18:	<i>Rater assessment of chance event categories</i>	137
Table 19:	<i>Alumni recognition of a chance event</i>	138
Table 20:	<i>Alumni categorization of chance events</i>	139
Table 21:	<i>Questions re categorization of chance events</i>	152
Table 22:	<i>Aggregate chance event - mean, standard deviation and sig</i>	156
Table 23:	<i>Survey 3 - Recognition and Categorization of chance events - Means and Standard Deviations</i>	157
Table 24:	<i>Recognition of a chance event</i>	158
Table 25:	<i>Categorization of chance events within the vignettes</i>	160
Table 26:	<i>Mean ratings of identification of a chance event (1=no, 2=unsure, 3=yes) and single sample t-test comparing ratings to neutral rating</i>	170
Table 27:	<i>Phases of uncertainty experienced by Paula</i>	201

List of Figures

<i>Figure 1:</i>	<i>Collins' drawing representing a complex system.....</i>	<i>66</i>
<i>Figure 2:</i>	<i>Study One Survey Sequence Chart.....</i>	<i>74</i>
<i>Figure 3:</i>	<i>The coincidence of availability and opportunity</i>	<i>105</i>
<i>Figure 4:</i>	<i>The five parent nodes that emerged from the interviews</i>	<i>128</i>
<i>Figure 5:</i>	<i>The Three Child Nodes within Embedded Systems.....</i>	<i>129</i>
<i>Figure 6:</i>	<i>Subsets within the Accumulation Child Nodal Structure</i>	<i>130</i>
<i>Figure 7:</i>	<i>Estimated Marginal Means of mean chance event identified aggregate</i>	<i>155</i>
<i>Figure 8:</i>	<i>Distribution of Participant Ratings for Scenario - Vignette 6.....</i>	<i>172</i>
<i>Figure 9:</i>	<i>Distribution of Participant Ratings for Scenario - Vignette 9.....</i>	<i>173</i>
<i>Figure 10:</i>	<i>Distribution of Participant Ratings for Scenario - Vignette 14.....</i>	<i>174</i>
<i>Figure 11:</i>	<i>Sea of Uncertainty.....</i>	<i>200</i>

Abstract

How do chance and uncertainty influence the career development of adults?

This thesis explored the question “How do chance and uncertainty influence the career development of adults?” Its purpose was twofold:

- To discover patterns of experience and career-related behaviour among adults in the Australian workforce; and
- To explore the potential of the Chaos Theory of Careers (Pryor & Bright, 2011) as a theoretical construct appropriate to the research, education and counselling needs of Australian young people and workers; and, by implication, the needs of international communities facing similar challenges.

The thesis begins with a literature review which positions the Chaos Theory of Careers as providing an innovative description of the processes involved in a person's career development. Traditional theory about career development emphasised a match and fit approach to describing career guidance needs with little reference to the relevance of changes in a career plan. The distinctive feature of the Chaos Theory of Careers is its capacity to explain the rapid rate of change evident in modern society, and its inclusion of change, chance and unpredictability as part of a holistic description of processes influencing a person's career development. This enables the Chaos Theory of Careers to incorporate viable elements of existing career theories into a realistic analysis of contemporary circumstances.

The research conducted six studies using a mixed methods approach. The Study One survey explored several dimensions of the research topic and identified subjects suitable for in depth interviews. Study Two was a qualitative study of 19 one-to-one interviews. This was followed by three further survey studies. The final study involved a Focus Group including several of the participants from the Study Two interviews.

Several findings of interest emerged from the research. There may be a greater frequency of chance events affecting career development than previously identified in the literature. There appears to be a proportion of the population blind to the existence of chance events affecting

How do chance and uncertainty influence the career development of adults?

career development. If this possibility is supported in further research, the incidence of chance event may well be greater than the commonly reported 60% figure.

Individuals in the research exhibited significant variability of interpretation of what constitutes a chance event. They also showed variability in their categorization of chance events.

Coding analysis within the qualitative research enabled the functioning of the individual in the midst of uncertainty to be described in detail not previously available in the literature. It appears that individuals adopt a *satisfication* approach guided by their values and intuition to determine a course of action in the midst of uncertainty. This provides them with a short-term plan with a degree of predictability where previously no predictability was available.

The research also identified the difficulty of using precise language when investigating issues involving complexity, and noted the use of fuzzy concepts in related disciplines exploring aspects of complexity.

Table of Contents

Statement of Authorship and Sources	i
Acknowledgements	ii
List of Tables	iii
List of Figures	iv
Abstract	v
Table of Contents	vii
Chapter One - Literature Review Part 1 – The influence of chance and uncertainty on the career development of adults	1
1.1 Section1 - History of Career Guidance	2
1.1.1 Early research and the struggle for an identity	3
1.1.2 The emergence of theory	3
1.1.3 The Rise of Postmodernism	8
1.1.4 Career development theories.....	12
1.1.5 Developmental theory	13
1.1.6 Trait and factor/trait oriented theory.....	15
1.1.7 Learning theory based/social learning cognitive	15
1.1.8 Socioeconomic/person in environment.....	17
1.1.9 Persistent challenges for career guidance	20
1.1.10 Language and career development theory	20
1.1.11 Calls for theory convergence	20
1.1.12 Social justice	22
1.1.13 True reasoning, career perception and decision making.....	22
1.2 Section 2 - The Information Age and Increasing Complexity	23
1.2.1 Complexity and career guidance.....	24
1.2.2 Career theory embracing complexity and change.....	25
1.2.3 Systems theory framework	25
1.2.4 Application of chaos theory	26
1.2.5 Change, Chance and Uncertainty in Early Career Theory – a Gap in the Literature.....	28
Chapter Two - Research on Uncertainty and Chance events impacting on Career Development	32
2.1 Clarifying what a chance event is	32
2.2 Reference to chance events in the literature	34
2.3 Limitations of pre-dominant theories.....	36
2.4 Understanding and communicating about uncertainty	38
2.5 Preponderance with measurement	39
2.6 Openness to Ambiguity.....	39
2.7 Studies referring to the frequency of chance events	41
2.8 Studies emphasizing the importance of context.....	44
2.9 Studies of adults and the value of qualitative inquiry	45
2.10 Experimental use of the Chaos Theory of Careers	48
2.11 Gaps in existing research	50

How do chance and uncertainty influence the career development of adults?

Chapter Three - Research Design	52
3.1 Theoretical Framework.....	52
3.2 Epistemology	52
3.3 Overview of Research Design	56
3.3.1 Phase one.	56
3.3.2 Phase two.	59
3.4 Understanding and interpreting within complex systems.....	64
3.5 Using imagery to represent complex systems.....	65
3.6 Limitations and Variables.....	67
3.6.1 Personal disposition of the researcher.....	67
3.6.2 Uniqueness of the individual	67
3.6.3 Cultural characteristics.....	68
3.6.4 Sample size	68
3.6.5 Recall	68
3.7 Limitations specific to a particular study.....	69
3.7.1 Specific to Study One Survey.....	69
3.7.2 Specific to Study Two Interviews.....	69
3.7.3 Specific to Study Three Survey.....	69
3.7.4 Specific to Study Four Survey and Study Five Survey.....	69
3.7.5 Specific to Study Six Focus Group.....	69
3.7.6 Generalizability of the research	70
Chapter Four - Study One Survey.....	71
4.1 Introduction.....	71
4.2 Aims.....	71
4.3 Design.....	72
4.4 Participants.....	75
4.5 Results.....	76
4.5.1 Frequency of a chance event.....	76
4.5.2 Chance event having a positive effect	77
4.5.3 Chance event having a negative effect.....	77
4.5.4 Estimate of others' experience of a chance event.....	77
4.5.5 Characteristics of a chance event.....	78
4.5.6 Frequently experienced categories.....	79
4.5.7 Least commonly experienced categories	79
4.5.8 One-off or concatenated chance events	79
4.5.9 Time passed before outcome of chance event	79
4.5.10 Level of impact of the chance event	80
4.5.11 Level of control.....	80
4.6 Discussion.....	80
4.6.1 Frequently experienced categories.....	80
4.6.2 Unexpected exposure to work one finds interesting.....	81
4.6.3 An unexpected change of residency	82

How do chance and uncertainty influence the career development of adults?

4.6.4	Least commonly experienced categories	83
4.6.5	One-off or concatenated chance events	83
4.6.6	Time passed before outcome of chance event	84
4.6.7	Type of impact of the chance event	85
4.7	Level of control.....	85
4.8	Estimate of others' experience of chance events	86
4.9	Terminology.....	86
Chapter Five - Study Two Interviews – experiencing and responding to chance events		88
5.1	Introduction.....	88
5.2	Design	88
5.3	Aims and purpose	91
5.4	Participants.....	92
5.5	Biographical synopsis of interviewees.....	92
5.6	Procedure	94
5.7	Analysis – developing themes, nodes and sub-sets	95
5.7.1	Dual perspectives - moment and processes	97
5.8	Findings and preliminary discussion	98
5.8.1	Section one - Two methods of analysis	98
5.8.2	Section two - Momentary analysis - The six most common categories	98
	i) Unexpected opportunity.....	99
	ii) Barriers to a previous career plan	100
	iii) Being in the right place at the right time	103
	iv) Personal or work relationship	107
	v) Influences of family.....	108
	vi) An injury or health problem.....	112
5.8.3	Negative chance events were reported in the interviews	114
5.8.4	Section three - Process analysis - Managing chance events	114
5.8.5	Coding derived from process analysis	116
5.8.6	Nonlinear and disproportionate impact.....	118
5.8.7	Managing chance events – Theme: Complexity.....	118
5.8.8	Managing chance events – Theme: Control.....	119
5.8.9	Managing chance events – Theme: Embedded systems.....	121
5.8.10	Managing chance events – Theme: Opportunities.....	121
5.8.11	Managing chance events – Theme: Satisfaction.....	122
5.9	Discussion.....	123
5.9.1	How process analysis aligns with chaos theory.....	123
5.9.2	Interplay of forces	123
5.9.3	A closer look at the functioning of Embedded Systems using the Collins model.....	125
5.10	Summary and direction of further studies.....	131
5.11	Development of further studies.....	131
5.11.1	Study Three Survey.....	131

How do chance and uncertainty influence the career development of adults?

5.11.2	Study Four Survey	131
5.11.3	Study Five Survey.....	132
5.11.4	Study Six - Focus Group.....	132
Chapter Six - Study Three Survey – Identification and categorization of chance events by College Alumni.....		133
6.1	Introduction.....	133
6.2	Design	135
6.3	Participants.....	136
6.4	Materials	136
6.5	Procedure	136
6.6	Results.....	138
6.6.1	Alumni recognition of chance events	138
6.6.2	Alumni categorization of chance events	139
6.7	Discussion.....	140
6.7.1	Comparison of Rater and Alumni assessments – Recognition of a chance event.....	140
6.7.2	Comparison of Rater and Alumni assessments - Categorization of a chance event.....	142
	i) Unexpected opportunity.....	142
	ii) Being in the right place at the right time	143
	iii) Barriers to previous career plan	144
	iv) An injury or health problem.....	144
	v) Unplanned influence of family	144
6.7.3	Clarity facilitated categorization.....	145
6.8	Conclusion re hypotheses	147
6.9	Concluding remarks	147
6.10	Limitations	148
6.11	Research progress to this stage	149
Chapter Seven - Study Four – Recognition and categorization of chance events by an opportunity sample of Australians.....		151
7.1	Introduction.....	151
7.2	Design	152
7.2.1	Inclusion of <i>wrong place at the wrong time</i>	153
7.3	Materials	153
7.4	Participants.....	153
7.5	Procedure	154
7.6	Results.....	154
7.6.1	Demographic variables - Recognition of a chance event.....	154
7.6.2	Demographic variables - Categorization of a chance event.....	156
7.6.3	Variability in the recognition of a chance event	157
7.6.4	Variability in the categorization of a chance event.....	159
	• Definite responses	159

How do chance and uncertainty influence the career development of adults?

•	Unsure responses	161
•	The Level of Agreement among the cohort	161
•	Variation among the cohort by chance event category	161
•	Comparison of rater and Australian worker assessments	162
7.7	Concluding remarks	165
Chapter Eight - Study Five Survey – Identification of chance events by a purposive sample of Australian citizens..... 167		
8.1	Introduction.....	167
8.2	Participants.....	167
8.3	Materials	168
8.4	Method	168
8.5	Design	168
8.6	Results.....	169
8.6.1	Rejection of vignette as a description of a chance event	174
8.6.2	Variability within subject’s responses to a vignette	175
8.7	Discussion.....	176
8.7.1	Majority identification of a chance event	176
8.7.2	Subjects rejected some vignettes nominated by raters.....	176
8.7.3	Subjects displayed internal variation in their responses	177
8.7.4	Context as a factor in variable responses	178
8.8	Limitations	180
8.9	Study Six.....	180
Chapter Nine - Study Six Focus Group – An exploration of behavior in response to chance events and uncertainty..... 181		
9.1	Introduction.....	181
9.2	Design	183
9.2.1	Exercise one - Openness towards uncertainty	184
9.2.3	Exercise three - Decision making in an environment of uncertainty.....	185
9.3	Participants.....	185
9.4	The facilitator.....	187
9.5	Materials	187
9.6	Procedure	187
9.7	Results.....	188
9.8	Discussion – Exercise one	189
9.8.1	Multiple emotions	189
9.8.2	Accepting	190
9.8.3	Rejecting	191
9.8.4	Conscious and measured risk.....	192
9.8.5	Readiness for change	193
9.9	Exercise two: Managing chance events and uncertainty	194
9.9.1	Luck	194

How do chance and uncertainty influence the career development of adults?

9.9.2	Complexity.....	196
9.9.3	Negative chance events having benefits	198
9.9.4	Values and self-belief	199
9.10	Exercise three: Decision making in an environment of uncertainty	200
9.10.1	Description of the model.....	200
9.10.2	Focus group responses	201
9.10.3	Coping and imagining.....	202
9.10.4	Building resilience via career adaptability.....	203
9.11	Summary.....	205
9.12	Limitations	205
	Chapter Ten - Conclusion and Recommendations.....	206
10.1	Introduction.....	206
10.2	Section 1 - Summary of the studies	206
10.2.1	Study One.....	206
10.2.2	Study Two.....	207
	i) Frequency of chance events.....	208
	ii) Coding analysis reflecting behaviours	208
	iii) Interviewee reporting of negative chance events.....	209
	iv) Variability in responses	210
10.2.3	Study Three.....	211
	i) Recognition of a chance event	211
	ii) Categorization of a chance event	211
	iii) One chance event may fit several categories	211
10.2.4	Study Four.....	212
	i) Recognition of a chance event	212
	ii) Categorization of a chance event	212
10.2.5	Study Five	212
	i) Recognition of a chance event	213
	ii) Questions arising from Studies Three, Four and Five	213
	iii) The range of perceptual differences.....	214
	iv) Communicating and researching about chance events	215
10.2.6	Study Six.....	216
	i) Confirmation of Study Two coding analysis	216
	ii) Negative chance events – self-efficacy and cognitive dissonance	216
	iii) Exposure to chance events raises consciousness	217
10.3	Section II – Linking chance events and uncertainty	217
10.3.1	Recommendation - The benefit of good theory	219
10.4	Implications of the research	219
10.4.1	Value of mixed methodology.....	219
10.4.2	Contribution to new knowledge.....	220

How do chance and uncertainty influence the career development of adults?

i)	Frequency of chance events	220
ii)	Negative chance events and self-efficacy	220
iii)	Variability about what a chance event is, and how to categorise it	221
iv)	Management of the impact of a chance event.....	221
v)	Limitations	222
10.4.3	Suggested research.....	222
i)	Frequency of chance events	222
ii)	Negative chance events and self-efficacy	222
iii)	Variability of perception regarding chance events	222
iv)	Greater understanding and clarity	223
10.4.4	Implications for career counsellors	224
10.4.5	Implications for career educators.....	224
i)	Young people.....	224
ii)	Educational Policy re Career Education	224
iii)	Adults as carers.....	225
iv)	Adults as supervisors	225
v)	Adults as workers.....	225
Appendix A	Survey 1	226
Appendix B	Interview Confirmation and Pre-reading	237
Appendix C	Focus Group Pre-reading	238
Appendix D	Expanded Nodal System	240
Appendix E	Vignettes – Survey 2 and 3	242
Appendix F	Survey 2	245
Appendix G	Survey 3	259
Appendix H	Vignettes Survey 4.....	275
Appendix I	Survey 4	278
Appendix J	Handout – most common categories of chance events	298
Appendix K	ACU Ethics Approval	299
Appendix L	2012 233N Ethics Approved.....	301
Bibliography	302

Chapter One - Literature Review Part 1 – The influence of chance and uncertainty on the career development of adults

For most people career development involves a multitude of considerations. Over a lifetime, any individual in modern western society finds the task of managing career development challenging. When the career counsellor attempts to assist a client with a vocational concern there are a host of issues of which the counsellor should be cognizant. Additionally, the interplay between new technologies and social priorities and values provides a dynamic environment within which each individual must seek and identify his or her future.

Many authors stress the holistic nature of the career counselling challenge (Bright, Pryor, Wilkenfield, & Earl, 2005; McIlveen, 2009; Pryor & Bright, 2011; Savickas et al., 2009). In reflecting on the multi-dimensional nature of this task attention is drawn to “the case for the individual, career life perspective, career choice, working in the 21st century, lifelong learning, counseling in a culturally diverse society, globalization and economic restructuring, effective use of career information, and integrating career and personal counseling” (Zunker, 2012, p. 7). Submerged within this complexity is each human being, who, on emerging into adulthood, seeks to juggle a host of personal interests, needs and obligations. This individual challenge is fraught; having many twists and turns over time.

Within this dynamic world of work, the influence of chance and uncertainty may also influence career development. Practitioners have often recognized this (Chen, 2005; Miller, 1983; Parsons, 1909). However, in the course of over 100 years of theorizing about career development, it is only in recent decades that the dimensions of chance and uncertainty within the career development process have been given serious theoretical attention (Mitchell, Levin, & Krumboltz, 1999; Patton & McMahon, 2014; Pryor & Bright, 2011).

Existing research into this field will be explored in Chapter Two. Prior to that, it is instructive to look at the historical development of career development theory and thereby gain a deeper insight into the relevance of chance and uncertainty as a factor in the career development process.

How do chance and uncertainty influence the career development of adults?

1.1 Section1 - History of Career Guidance

The earliest styles of career guidance were dominated by attending to the practical needs of the client(s). The first theoretical statement about career development was provided by Frank Parsons early in the twentieth century (Parsons, 1909). His work focussed on immigrant and displaced agrarian youth in and around Boston, emphasized the interests and skills of the worker, and matched these to the demands and needs of the workplace.

Parsons' insights, creativity and writings were his response to the plight of young people, particularly boys and young men, consigned to growing urban centres by the impact of the steam engine and industrial and social progress. He recognized the critical need and profound benefit of giving good guidance to young people in their formative years. He saw their need for better education and systematic guidance about their choice of occupation if they were to maximize their talents and live "a useful and happy life" (Parsons, 1909, p.14).

In a sense, Parsons' *Choosing a Vocation* (1909) was a template for career guidance. It provided a substantial basis on which to build a movement. His vision, captured in the last paragraph of *Choosing a Vocation*, unfolded with many twists and turns over the following decades:

Society should guarantee to every child a thorough all-round development of body, mind and character, and a careful planning of and adequate preparation for some occupation, for which, in the light of scientific testing and experiment, the youth seems best adapted or as well adapted as to any other calling which is reasonably available. If this vital period is allowed to pass without the broad development and special training that belong to it, no amount of education in after years can ever redeem the loss. (Parsons, 1909, p.165)

Parsons recognized that self-discovery and education about the world of work were the presenting obstacles to young males. These were the career issues that were first addressed and which led the practice of career guidance as it extended beyond Boston and into the school system of the United States. At the turn of twentieth century, Parsons had been able to articulate a theory which enabled subsequent generations to progress their understanding of the context of work in their communities for several decades. This was followed by a period of consolidation and positioning within applied psychology but with little theory development beyond the initial insight of Parsons' model (Savickas & Baker, 2005).

How do chance and uncertainty influence the career development of adults?

1.1.1 Early research and the struggle for an identity

The process of teaching and guiding young people spread rapidly in the 20th century and there was an increased interest in academic circles to the concept of work. Some academics looked at personal interests as a way of fostering the self-knowledge Parsons had identified as important. One main research focus was in testing people to determine their skills and abilities (Hollingworth, 1929). A positivist style of guidance with its emphasis on testing supported the principle of match and fit. This continued to be a predominant style of vocational guidance into the 1950s. One example of this was the work of Strong (1938, 1943) who developed an interest inventory to determine a person's preference style. Strong worked on this throughout his life and the Strong Interest Inventory became a widely used diagnostic tool (Donnay, 1997; Savickas & Baker, 2005).

Another prominent approach, prompted by the needs of two World Wars and rehabilitation placement challenges, focused on the skill and other trait requirements of industry. This led to a division of psychology in the 1930s into the two camps of academic psychology and industrial psychology. Cronbach (1957) commented on this division about the nature and direction of discourse in research into career matters. The diversity of psychological perspectives on career development continues to be a focus of researchers today (Baruch, Szűcs, & Gunz, 2015; Patton & McMahon, 2014).

1.1.2 The emergence of theory

A major phase of economic expansion and industrial development and a second phase of resettlement of servicemen to the workplace occurred as America regenerated after the Second World War. This ushered in a period of sustained economic growth and high levels of employment. Psychology sought to assist in this process and at the same time increase its relevance to industry. Universities supported psychology faculties and the numbers of researchers in the field grew quickly. This led to a rapid growth in theories to do with career development. Savickas and Baker (2005) suggest that after the work of Ginzberg, Ginsburg, Axelrad, and Herma (1951) was published, there was almost one new theory published each year for 20 years. Many theories related to the details surrounding topics like work choice, skills and aptitudes, and developmental aspects of employment behaviour.

How do chance and uncertainty influence the career development of adults?

In 1951, Ginsberg and his colleagues produced the earliest form of a developmental theory of careers (Ginzberg, et al., 1951). Ginzberg and colleagues focussed on the early developmental stage of adolescence toward early adulthood, which for that era meant approximately 11 years to 17 years old. The young person was said to progress through stages from fantasy through tentative and then to realistic. This added impetus to the educative role of career awareness and some years later, this was followed by a theory based on personality (Roe, 1956). Roe stressed the role of childhood experience in governing the occupational disposition of the adult and alerted the wider career community to early developmental factors like place in the family, needs satisfaction and parental styles.

Ginsberg et al., (1951) and Roe (1956) provided the earliest examples of specific theories about career development. From the 1950s onwards, there was a blossoming of ideas about work. Among these, the most significant contribution to trait and factor theory was the work done by John L. Holland (1959, 1997) who sought to develop the simplest possible model that would help people make occupational choices. The *Self-Directed Search* (Holland, J.L., 1978), became the most widely adopted and researched document in the career field (Zunker, 2012). Its strengths included simplicity, flexibility, adaptability and durability.

Holland devised a questionnaire that asked people to say what they thought their interests and skills were. He classified these into six broad occupational groups: Realistic, Investigative, Artistic, Social, Enterprising, and Conventional. Occupations were also classified using the same categories, enabling the match and fit process to function.

Holland was interested in which personalities were suited to which particular jobs (Holland J.L. 1959, 1997). The *Self-Directed Search* uses a hexagonal model (the RIASEC model) representing six different areas of personal interest. Each letter in the RIASEC model corresponds to a personality type. Holland explored these personality characteristics in detail and then linked them to occupations that required skills most likely to reside in people with this personality. Using this systematic analysis of personal disposition and occupational requirements Holland produced a *Self-Directed Search* questionnaire and an Occupations Finder Booklet to assist counsellors and their clients to develop an effective match between their needs and the requirements of a particular job.

The characteristics of the six personality types Holland (1997) identified were:

How do chance and uncertainty influence the career development of adults?

Realistic: a disposition that describes a person who is a much more concrete thinker than an abstract thinker. This person likes using their hands, is commonly mechanically inclined, and may or may not lack social skills.

Typical jobs: plumber, car mechanic, technician, truck driver, agricultural work

Investigative: this person exhibited a curious and inquiring mind. He or she may seem unsociable due to a tendency to be happy contemplating or thinking about matters of interest. The person with this disposition is likely to be intelligent, interested in maths and science but not particularly interested in leadership.

Typical jobs: chemist, laboratory worker, mathematician, academic research

Artistic: an artistic person has a highly creative mind and finds expression in a diverse range of creative interests. He or she may be disorganised, but highly passionate about preferred activities

Typical jobs: music, crafts, designer, literary work

Social: this describes a person whose primary interest is in relationships and the welfare of others. A social person likes talking with people and is often a good organiser.

Typical jobs: teacher, welfare worker, counsellor, nurse

Enterprising: an enterprising person is highly motivated and proactive. While capable socially, the enterprising person is focused on achievement and highly goal-oriented.

Typical jobs: managerial and supervisory jobs, real estate, car sales

Conventional: this term describes people who are well disposed to order, sequence and other activities with a mathematical focus. This person is likely to be conservative and to enjoy structure.

Typical jobs: accountant, office worker, receptionist, computing

Holland placed great emphasis on the learning experience of the individual in determining his or her personality and hence occupational disposition. The individual was said to have a higher level of congruence when the personality disposition and the occupational skills required were well aligned. Conversely, a person with poor differentiation was likely to experience career indecision and have greater difficulty in finding satisfactory work.

The *Self-Directed Search* tool was hugely influential in the 1970s - 1990s. It continues to be widely used as one aspect of career guidance post-2000. Holland modified his theories over time in response to research and criticisms about his theory. In the later years of his work,

How do chance and uncertainty influence the career development of adults?

Holland recognised the role of context, that is, the changing aspects of a person's life as time and circumstances changed. The appropriateness of the RIASEC model is diminished in the postmodern era however, because it is founded on modernist principles and ignores many of the occupational realities which were emerging later in the 20th century. The dynamism of the modern world means job structures and job titles do not sit as easily into the compartmental style of the RIASEC framework. Pryor (2002) noted that 40% of all jobs listed were contained in just one descriptor – Realistic. Given that six equal weightings would allocate 16.6% of the occupational titles to each area, the proportion allocated to Realistic is more than 2.4 times what an equal quota for each of the six descriptors would be (Pryor, 2002).

The idea of matching people to occupations has also been subject to significant scrutiny in recent times, with many authors commenting on the inadequacy of such a narrowly focussed approach (Amundson, 2003, 2005; Arnold, 2004; Bright, Pryor & Harpham, 2005; Chen 2005; Patton & McMahon 2006; Pryor & Bright 2003a, 2003b; Savickas, 1997). Nevertheless, the trait and factor method is still appropriate if used as part of a broader range of strategies designed to engage and empower the client.

Another dominant idea about career development that emerged after the Second World War was that of developmental stages. The person most closely associated with this type of approach is Donald Super (1953). Super's writings were developed around principles which he first presented in the 1950s and his ideas continued to develop into the 1990s (Super, Savickas, & Super, 1996). In his theoretical work Super proposed that there are five developmental stages in a person's career: Growth, Exploration, Establishment, Maintenance and Decline. During his lifetime, Super expanded his thinking substantially to include ideas such as *the occupational self*, and *life-span, life-space* concepts. These enabled him to include the context in which a person worked such as parent, student, citizen, homemaker, child and leisurite (Super, 1980; Super et al., 1996). Super alerted the profession to the wide array of forces and influences affecting the career development process from childhood, through adolescence into a first job and then throughout a person's work life.

Super's theory builds upon Holland's in that the individual matches his or her occupation to their self-concept within a life-span, life-space context. The individual is formed by the context in which they find themselves; and adjusts to the experiences that he or she has as they go through different stages of life. Super saw vocational development from the perspective of

How do chance and uncertainty influence the career development of adults?

tasks and stages and identified a series of changes that commonly occur throughout a person's life.

His *Life Career Rainbow* – a schematic interpretation of these stages and influences (Super 1980) - is a depiction of the linearity of much of career theorizing in the pre and post war periods. It represents the classical notion of combining life stages, external influences and role types to illustrate the typical career path. This developmental model was a guiding influence in later 20th century career theory. It broadened the perception of career from a static, predictive concept, to one attuned and responsive to multiple influences. It pointed to the evolutionary aspect of career. In his writings Super (1980) emphasised the learning and independent decision-making required of the individual.

To an extent life-span, life-space theory represented a fair depiction of mainstream American society in the period from 1950 – 1980. Whilst mainstream America formed the major part of society, it was, however, by no means the only cultural group living in America during these years.

Super's thinking about career development recognized individual differences and the capacity for people to do more than one job. He identified the interplay between self-concept and environmental influences in determining the jobs that people do. He explored the role of parental and geographic influences in developing the person's self-concept and vocational interests. He highlighted the concept of career maturity, which resulted from a combination of sound self-concept and an appropriate awareness of reality about work opportunities and demands. Super's influence in recognizing the role of career maturity and the changes experienced by adults in their multiple roles - beyond their work life is profound (Brown, 2015; Zunker, 2012).

While Super stressed independent decision making and management of lifestyles and life roles in his later writing, some of his language and perceptions now seem dated, given the volatility and disruptive forces at play in contemporary work and employment environments. Nevertheless, "his constant revisions and open-mindedness on the breadth of career development have made a lasting contribution to the field, and his work has stimulated thinking and further research long after his death" (Patton & McMahon, 2014, p.78).

How do chance and uncertainty influence the career development of adults?

1.1.3 The Rise of Postmodernism

In the early 1900s, the predominance of a positivist approach in science in previous centuries had enshrined reductionist thinking into the rationales of society in general and researchers in particular. The early models of theory and the techniques used by careers counsellors aligned with the perceived scientific principles of the time: logic, rationality, linearity, reductionism, simplicity and stability (Peavy, 1992). Although insights arising from quantum theory had already undermined many of the assumptions of traditional science by the 1940s, they had not reached far beyond physics at that time. Logic, linear thinking and the search for cause and effect explanations remained the predominant rationale well into the 20th century.

Developments in epistemology arising from revelations such as Kuhn's *Paradigm Shift* (Kuhn, 1962, 2012), and the mathematical discoveries of Lorenz (1963) facilitated the creativity of postmodern thinking. The role of the individual as an active agent in his or her career development process began to gain greater focus. Psychologists such as Maslow (1943), Erikson (1980, 1993) and Rogers (1961, 2012) heightened the awareness of counsellors about the importance of identity and fulfilment in the individual. Beginning in the 1950's, there was a greater recognition of the range and diversity of client needs and concerns regarding their *career*.

Ideas such as linearity, causality and predictability were inadequate in attempting to address many of the issues of those seeking or needing vocational guidance. Counselling practice had already been using far more than the trait and fit model of counselling as early as the 1970s (Peavy, 1992). This was largely due to the impact of continuing industrial and social change as well as greater recognition of cultural diversity (Blustein, 2006). The need for answers to the more dynamic properties of many career development stories led theorists to search for explanations beyond the traditional boundaries of the first half of the 20th century. This new wave of thinking focusing as it did on individual perception challenged the traditionally established approaches to career theory. Peavy (1992) and Collin and Young (1992) highlight the assumptions about linear career development models inherent in earlier career theories. They note the increasing tension between such theories and the alternate circumstances occurring in the workplace toward the end of the twentieth century. Beginning in the 1970s, the twin processes of postmodernism and job dislocation generated an increasing number of writers who drew attention to the need for more flexibility in career theorizing (Patton & McMahon, 2014).

How do chance and uncertainty influence the career development of adults?

Well into the twentieth century, Western science and commerce was fascinated with the extent to which uncertainty could be excluded from the vagaries of many aspects of human existence (Dewdney, 2004; Peat, 2002). The reductionist reasoning power of mathematics and statistics provided a sense of increasing certainty and predictability that characterized Western thought and progress from the time of Newton's discoveries about gravity in the 17th century through to the revelations of Albert Einstein in the early 1900s. This trend in thinking continued into the middle of the 20th century. The rapid increase in scientific knowledge was reflected in widespread technological breakthroughs and rapid economic progress. Henry Ford invented automation, over time revolutionizing human behaviour in both industry and the home. Medical science accelerated its discoveries and processes dramatically decreasing mortality rates and increasing life expectancies. By the late twentieth century, some multinational companies had become so successful that they were bigger than national states (Trivett, 2011).

The progress of classical science was unprecedented in its rapid and extensive impact on society. Science and business combined to enable humans to enter outer space and foster a twentieth century of wonder, excitement and positivism, using processes such as mega-scaling, miniaturization, the power of computing, and the marvels of telecommunication (Castells, 2011; Morowitz, 2002). Even today, classical science and its methodologies are, when used appropriately, powerful and compelling in providing insight, understanding and technological innovation.

During this era, the role of uncertainty in human interaction with and beyond Nature was given less and less credence and attention. At both the philosophical and practical levels, such questions seemed esoteric. It took almost 200 years for the reductionist fervour of science to be challenged and destabilized from its pre-eminent status as the source of knowledge (Dewdney, 2004). While key scientific and mathematical questions moved from the revelations of Newtonian physics to Einstein's relativity, there had been few insights or questions arise which had unsettled the mathematical or scientific community in its quest to reveal the secrets of nature. A new area of research and discovery was, however, disturbing this long held conviction that one day all would be revealed. With the advent of Heisenberg's uncertainty principle, the newly discovered properties of the microscopic world threatened the long held principles of classical science. Its pervasive impact as a repository of all of knowledge was being challenged (Dewdney, 2004).

How do chance and uncertainty influence the career development of adults?

Humans are so used to uncertainty that to varying extents we take it for granted. While we live with uncertainty, our awareness and consciousness of what it really is or means to our lives is limited. This is a quite normal method of human functioning. We know about and live with air and water; but few of us have or seek a deep understanding of the properties and behaviours of air or water. We use them. We ignore them. We discover more about them if they upset our routines.

In much the same way, uncertainty is our lifelong companion – yet we live in ignorance or even denial of its characteristics and behaviour. It is only when some surprise occurrence catches us off-guard that we reflect and investigate more fully the circumstances. Often this reflection shows that what may have seemed improbable was actually a logical consequence waiting to occur.

Sometimes we act as if uncertainty does not exist. It is common for people to make plans without reference to the uncertainties involved, or alternatively, to simply misunderstand or ignore the evidence available to them. These are habits which Taleb (2010) describes as “forward and backward processes” (p. 13).

Yet, there are many habits and structures in our society that exist because of uncertainty: safety rails on building sites; contingency entries in budgets; umbrellas in handbags. Our language reflects our sub-conscious about uncertainty: *‘I’ll keep this for a rainy day’*, or *‘A bird in the hand is worth two in the bush’*. Our actions, however, do not always reflect a conscious awareness of uncertainty and the part it plays in our lives (Taleb, 2010; Chen, 2005). Interestingly, Taleb (2010) makes the point that sometimes doing nothing in the midst of uncertainty is a valid strategy (p. 332), and Nowotny (2015) refers to the process of “muddling through” (p. 168) as a valid approach to managing uncertainty.

Today as we travel deeper into the twenty first century, historical presumptions about the neatness and predictability of nature are giving way to more creative insights (Morowitz, 2002). New awareness and questioning has arisen with the discovery of quantum mechanics. Amid the imponderables of the minute workings of nature, the sense that uncertainty and emergence is integral to nature is centre stage. Moreover, the principles inherent in theories of quantum mechanics have moved beyond physics and theoretical mathematics, into a vast array of existing and new bodies of knowledge and human curiosity (Holland, J.H., 2006; Patton M. Q., 2011; Pryor & Bright, 2011).

How do chance and uncertainty influence the career development of adults?

Amid these intellectual tensions, the postmodern movement gave rise to a constructivist style of theorizing. Within this philosophy the place and role of the individual is paramount (Zunker, 2012). Young and Collin (2004) indicated that career practitioners found an action centered constructivist approach was “closer to the situations of everyday practice” (p. 374) that counsellors were experiencing. This approach placed a greater emphasis on the perception of the individual as a key driver in the career development process. A narrative style of career guidance evolved so that the counselling process gave greater credence to the client’s story and her or his capacity to work through the issues at hand (Amundson, 2003; Savickas, 1997, 2002).

Constructivism placed an emphasis on the perspective of the individual gaining meaning and understanding in the career determining process. Several styles of constructivism emerged including a social constructivist methodology that enabled researchers to explore the role of social institutions (family, organizations, social class) in career development contexts (Amundson, 2003; Savickas & Baker, 2005).

As a result of the postmodern trend in career theory development, there are now many vantage points from which career theorists perceive the concept of career development. Various authors use multiple categories to describe the existing range of career theories (Hackett, Lent, & Greenhaus, 1991; Osipow, 1990). Patton and McMahon (2006) identify more than a dozen descriptors to provide such categories when reviewing the attempts of seven different authors to address this task. This wide range of perspectives, which addresses the complex multi-dimensional nature of career development referred to earlier in this chapter provides a much deeper insight into the number and variety of career development influences experienced by an individual.

This situation perplexes sections of the profession. A conference held in 1992 and reported on two years later sought to generate greater consistency in career theorizing (Savickas & Lent, 1994). Despite this, the issue persists and may even be deepening as cross-fertilization of ideas across disciplines occurs (Baruch, Szűcs, & Gunz, 2015). The understanding of the processes of career development has improved. However, the diversity of ideas has created its own problems. The resultant wide range of perspectives remains a source of confusion and some frustration among academics, (McIlveen, 2009; Patton & McMahon, 2014).

How do chance and uncertainty influence the career development of adults?

1.1.4 Career development theories

Recognizing the fluid nature of some of these categorical terms, I have chosen to discuss various theories under four categories using a blend of the terminology used by Brown (2012) and Zunker (2012). These groupings (see Table 1, Categories of Career Theory) reflect the wide range of overlapping vantage points from which career development is viewed.

Table 1: Categories of Career Theory

Brown (2012)	Zunker (2012)	Key Features
Developmental	Developmental	Identifies age-related stages Contemporary thinking extends this from infancy to old age
Trait & Factor	Trait Oriented	Emphasis on standardized testing Analysis of a person's disposition and interests Analysis of skills required to complete job tasks Matching of individual and job
Learning Theory Based	Social Learning and Cognitive	Focuses on the learning aspect of the person's career development. Principally addresses childhood, early adolescence and early adulthood. Explores concepts like career fantasy, career maturity and career identity.
Socioeconomic	Person in Environment	Explores the impact of genetic, locational, social class and other contextual circumstances on Career Development.

Categorical groupings such as in Table 1 are beneficial for conceptual purposes. Their purpose is to provide some structure to the mental process of positioning career perspectives. The categories are fluid rather than bounded to allow for flexibility regarding the theoretical constructs. Sometimes a catch-all term like *Other* is used by an author to render the categorical approach comprehensive (Zunker, 2012; Patton & McMahon, 2014).

Some aspects of career development inherent in all broadly focussed theories have not been placed into any of the four categories. Furthermore, ideas and theories emerge and evolve over time. Therefore, rather than adopt a categorization of *Other*, I will indicate some career issues which are currently discussed and theorized about but reside outside these four chosen categories. Examples of this are Gottfredson's Theory of Circumscription and Compromise (Gottfredson, 1981, 1996, 2002, 2005), Values Theory (Brown, 2002), and theory to do with Life Balance (Hall, 2004).

How do chance and uncertainty influence the career development of adults?

1.1.5 Developmental theory

The earliest presentation of a developmental theory came from the work of Ginzberg et al. (1951). This work was important because it went beyond the traditional testing mentality of the profession and explored the time-based phases in a young person's life prior to a chosen work commitment. The first version of this work described the process as ending at early adulthood. However, in later versions Ginzberg extended the developmental concept to be a more prolonged period of the person's life (Ginzberg, 1972). Ginzberg's early work is significant because it was the first to extend career theory beyond the trait and factor approaches which arose in, and dominated, the first half of the 20th century.

Super (1957) presented a more comprehensive theory of life stages soon after Ginzberg and colleagues' first publication. Super's theory evolved over nearly 40 years, and is a landmark in career theory. The *life-span, life-space theory* (Super, 1980), still provides many pointers to career counsellors and is a continuing source of research focus.

One such contemporary researcher is Mark Savickas who developed a *Theory of Vocational Behaviour* by combining Super's work with the constructivist insights of the postmodern era, Savickas (2002). Although he too, is questioning the temporally structured validity of Super's concepts for the present age, stating that:

Rather than conceptualizing careers as a meta-narrative of stages, 21st century theories should approach careers as individual scripts. Career stages as defined in extant theories (Super, 1957) are mainly shaped by societal needs. A slack and stable labor market will embrace the idea of career stages whereas these stages are no longer functional in a tight and changing labor market (Savickas et al., 2009, p. 240).

Savickas' work has emphasised the personal agency involved in career development. In his more recent iterations, he has emphasised the distinction between vocational guidance and career education and looked at the stages of development inherent in these. Savickas' (2009) concept of life designing refers to the use of the narrative process to generate stories from the client's past and present to facilitate detection of life patterns. These can then be used to formulate a future story that can provide a focus and direction in the person's next transitional phase of career. This leads Savickas to introduce a further term, "life trajectories" to the milieu of descriptors within the field (Savickas, 2009, p.240).

How do chance and uncertainty influence the career development of adults?

Savickas' ideas on life design continue to evolve and have led to an international collaboration seeking to develop the concept. Life designing focusses on engaging the client through narrative counselling to recognize the emergent qualities of career development. It has moved away from a linear approach, and incorporated the dynamics of the post postmodern world of work (Morrow, 2007; Nota & Rossier, 2015).

A further developmental style of theory is the Theory of Circumscription and Compromise developed by Gottfredson (1981, 1996, 2002, 2005). It explored the way in which career aspirations develop. Gottfredson identified two dimensions of self-concept: the social self (intelligence, social status, and gender) and the psychological self (personality and values). Her theory focused on the early years through to early adulthood, by which time a person will have identified a career direction. She proposed that the psychological purpose of making a job choice is to generate a social identity. The young person experiences four stages of growth in awareness: orientation to size and power (beginning about age three); orientation to gender (from six to eight); acceptable and unacceptable jobs are being identified and evaluated based upon the level of social status they hold and unsuitable jobs are dismissed (from age nine to 13). The final stage from age 14 onwards involves exploring jobs that fit within acceptable boundaries of social acceptability or skill or ability demand. The process of compromise continues, with factors like accessibility being included.

Gottfredson included notions of environmental influence in her theory to reflect the means by which a person matches his or her self-concept to jobs with compatible social and environmental features. Eventually, a range of acceptable jobs are identified (*Circumscription*) and the process of job choice is resolved (*Compromise*) by identifying the preferred jobs from within this narrower group.

These ideas were advanced by investigating many developmental aspects of career development including the importance of sex type and the role of psychological characteristics with regard to compromise. Hesketh, Pryor and Gleitzman (1989) suggested that options can exist within a range rather a single possibility, and that choice within the set of options does not necessitate that the most preferred will be chosen. They introduced the concept of satisficing (Simon, 1955), the principle that in most cases people and organizations seek to obtain a satisfactory solution, not necessarily the optimum one; this may be a useful concept to apply to career decision making.

How do chance and uncertainty influence the career development of adults?

However, it has been difficult for innovative thinking to penetrate the dominance of reductionism during the 20th century (Patton & McMahon, 2014). In all but the most recent versions of developmental theories, the predominant feature is of a linear career model – a model that is inappropriate for the work environment of the 21st century.

1.1.6 Trait and factor/trait oriented theory

A common feature of trait and factor theories is their predisposition toward neatness. The positivist rationale facilitated the pursuit of classification and standardized testing within an objective framework (Zunker 2012).

The classic theorists in this area are Parsons (1909) and Holland (1959, 1997) whose theories have been discussed. Many aspects of the work of Parsons and Holland are still valid within contemporary career theories, but they no longer hold the pre-eminence within career development thinking as was the case in the modernist era. Nevertheless, trait and factor theory still plays a valuable role in many aspects of current career development agendas.

One example of this is the *Theory of Work Adjustment* (Dawis & Lofquist, 1984). Its focus is the dynamic inter-relationship between the biological and psychological needs of the individual worker and the environmental demands characteristic of the workplace. This includes skill needs, work environment, and co-worker relations. Subsequent iterations of this theory led to a name change to the *Person – Environment Correspondence Theory* (Lofquist & Dawis, 1991; Dawis, 2002).

The *Person – Environment Correspondence Theory* provides an interesting perspective on workplace relationships and the ways in which these interactions can affect productivity either positively or negatively. As such Person – Environment Correspondence theory is well situated to explore the dynamic aspects of 21st century work culture and practices.

1.1.7 Learning theory based/social learning cognitive

This group of theories focuses on the capacity of the person to learn, change and grow in ways that have the potential to enrich his or her life. The tenets of such theories build on the positive and negative reinforcement principles of the behaviorist Albert Bandura (1977). The key features in this type of theory are their interpretation of the psychological functioning of the individual and the means by which personal agency can impact positively on the career

How do chance and uncertainty influence the career development of adults?

development process. Bandura identified a concept he called self-efficacy. This referred to a person's level of confidence in their ability to learn a topic, or complete a task. Low self-efficacy was a likely predictor of poor results. Higher self-efficacy gave greater confidence and persistence to the person and was likely to lead to a successful outcome. There were skills that could be learned to counter the impact of low self-efficacy.

Krumboltz, Mitchell and Jones (1976) expanded on these ideas with their *Social Learning Theory of Career Selection* in which they described intricate interaction between cognitive and environmental processes leading to career choices. These were *mutual* processes, occurring in a *lifelong* way and caused but not able to be predicted. The theory explored the interaction of social, environmental and cognitive factors in the development of attitudes, beliefs and behaviours. These authors indicated that four distinct factors guided the career decision making of a person: genetic endowments, environment, learning experiences and task management skills. The reciprocal interplay of these factors produces reinforcement which impacts positively to build behaviours or negatively to reduce behaviours and in this way guides and governs the career decision-making process. The key use of the theory is to facilitate learning and the improvement of self-efficacy by the person so that the likelihood of more substantial and promising judgments and outcomes about career decisions is achieved (Mitchell, 1990).

In the late 1990s, Krumboltz and colleagues further developed these ideas to incorporate the effect of chance events on career development (Mitchell, Levin, & Krumboltz, 1999). The Happenstance Theory explored the potential for individuals to generate positive outcomes from circumstances involving unpredictability and chance. The capacity of the open-minded person to be an influential agent in this process could be learned and exploited by developing a heightened sense of opportunity awareness. The key skills and attitudes involved were curiosity, persistence, flexibility and a sensible level of risk-taking. This theory taps into elements of the contemporary workplace and will be elaborated upon in Section II of this chapter.

A further theory in this domain is Social Cognitive Career Theory (Lent, Brown, & Hackett, 1996, 2002). The learning model of Bandura (1986) is also the basis of this theory. The interaction between three dimensions - person, environment and experience - governed the learning and belief systems of the individual. These authors emphasised the potential for learning to address low self-efficacy as an inhibitor to a person's career development. The

How do chance and uncertainty influence the career development of adults?

reciprocal relationship between personal beliefs, behavioral experiences and the environment within which the person operates is analysed to identify misconceptions, which may inhibit further progress and growth towards meaningful and rewarding work. Many of these difficulties can be resolved using cognitive analysis with the assistance of astute counselling.

Cognitive learning can generate new positive learning and a successful outcome. Confidence and performance could be positively influenced by more constructive information processing to address misguided beliefs. Eventually, a positive recurring cycle of self-talk, better goals and outcomes can raise the career aspirations and success of the client.

A third contribution in this group of theories is the *Cognitive Information Processing* theory first proposed in 1991 (Peterson, Sampson Jr, & Reardon, 1991). It was updated in 2002, (Peterson, Sampson Jr, Lenz, & Reardon, 2002). The theory focuses on the detail involved in productive decision making about career issues. It includes a model of decision making, which assists the counsellor in diagnosis and intervention strategies with clients.

Cognitive Information Processing acknowledges the complexity of the career processing task for the individual. It addresses this by identifying five stages which can be explained and explored with the individual in a counselling context. These are *Communication, Analysis, Synthesis, Valuing* and *Execution*. Using a social cognitive approach the aim of Cognitive Information Processing is to increase self-efficacy through successful learning of the principles of processing issues related to career development.

Cognitive Information Processing is widely researched and used among counsellors (Patton & McMahon, 2014). It reflects a key aspect of career and life functioning, and can be incorporated into other career theories to augment outcomes (Brown, 2012).

1.1.8 Socioeconomic/person in environment

While the importance of personal agency is respected by all career theorists, some theories focus more on the impact of circumstances largely beyond the immediate control of the individual. These insights into the range of influences on career development arise from the perspective of sociology and economics. Analysis of individual behaviour can be made from many such perspectives: social status, educational circumstances, and economic structural situations. These sociological and economic perspectives increase our awareness and

How do chance and uncertainty influence the career development of adults?

understanding of the multitude of forces affecting work practices and the choice parameters within which a person may have to function.

Bronfenbrenner (1979) suggested a model like this in his book *The Ecology of Human Development*. He was first to draw attention to the significance of context on human development. Bronfenbrenner proposed a four-layered set of environmental (*ecological*) influences beginning with the smallest and immediate microsystem; through to a broad macro system at the perimeter. Researchers explored his ideas in the latter part of the 20th century.

A contextualist theory of careers emerged by combining constructivist psychology with an enviro-social perspective (Young, Valach & Collin, 1996, 2002). Young et al., stress the value of the narrative technique in combination with an action methodology to assist the client to identify and interpret the role of work in their life. Work is described in active terms as a *project*. The counsellor and client are co-partners in discovering and working through elements of the project. The constructivist approach heightens the agency aspect of the individual in his or her career while the contextualist approach readily accommodates many features of the post-industrial environment now dominant in people's lives. The interplay of these factors is the focus of Patton and McMahon (1996, 2014) who build on these concepts in developing a *Systems Theory Framework* to reflect the contemporary career development challenges of the worker.

The *Systems Theory Framework* uses complex systems analysis to present a model that one can use to adumbrate the vast array of information, perspectives and theories pertaining to career development. This is one of the key objectives of its authors. "There is little dispute that some combination of constructs and theories is necessary to provide a coherent and practical overarching picture. Systems theory has been suggested as an overarching framework to unify existing theories" (Patton & McMahon, 2014, p.211). They go on to suggest that the *Systems Theory Framework* provides "a metatheoretical synthesis of the existing career theory literature" (p.211).

The *Systems Theory Framework* conceptualizes the wide range of perspectives in career theories and provides a structural context for their use. In their review of career theory Patton and McMahon (2006, p. 18), list 31 such influences from the many dimensions likely to influence an individual's life. These are shown in Table 2.

How do chance and uncertainty influence the career development of adults?

Table 2: Content included in systems approaches to career guidance

Intrapersonal Influences	Social System	Environmental Societal	Process
Gender	Peers	Political decisions	Chance
Age	Family	Historical trends	Change over time
Self-concept	Media	Globalization	Recursiveness
Health	Community groups	Socioeconomic status	
Ability	Workplace	Employment market	
Disability	Educational institutions	Geographic location	
Physical attributes			
Beliefs			
Personality			
Interests			
Values			
Aptitudes			
Skills			
World of work knowledge			
Sexual orientation			
Ethnicity			

Note. From W. Patton, & M. McMahon, 2006, *Career development and systems theory: Connecting theory and practice* (2nd ed.). Rotterdam, The Netherlands: Sense Publishers, p. 18.

The *Systems Theory Framework* identifies three areas of the individual's personal circumstances and distinguishes them from the processes that occur in enacting the career. The *Systems Theory Framework* refers to many personal characteristics listed under *Intrapersonal influences* and to the *Social System* within which the person functions. There is a reciprocal interaction between the individual and the social system. These factors also interact simultaneously within the *Environmental* system,

A series of *processes* are also represented within the Systems Theory Framework model. Processes include: *change over time* – reflecting maturation and other changes; *the element of chance* - the unexpected good and bad things that happen in life; and *recursiveness* – the capacity for any or all of these content or process aspects to interact with one another. Zunker (2012, p. 7) suggests a similar list of nine basic issues for career counsellors to ponder and stresses their role in the career professional's mental imagery. In these depictions, the individual functions as a complex system within a multitude of other complex systems.

How do chance and uncertainty influence the career development of adults?

1.1.9 Persistent challenges for career guidance

The growing variety of career theories evident towards the end of the 20th century reflected other trends that were of direct concern to the career guidance profession. Important among these were the vagaries and limitations of language; a continuing struggle by the careers movement for identity and recognition; the need for advocacy related to social justice; and encouraging realist viewpoints in career perception and decision-making.

1.1.10 Language and career development theory

The use of language and terms in the career development profession is not as clear and precise as in some other sciences.

The multiplicity of career theory perspectives has been further complicated by a lack of precision in the use and meaning of terminology. While disconcerting to many (Arthur & Rousseau, 1996; Baruch, 2004) there is a tendency for the protagonists of a theory to generate new terminology or proffer a nuanced meaning of existing terminology to describe some of the life experiences or challenges that they are discussing. Various authors remark on this but there is no obvious solution (Brown, 2012; Patton & McMahon, 2014).

A further complication is that where early forms of career guidance had the relatively simple objective of a job advisory function, postmodern descriptions of the role refer to whole of life scenarios. A person's job or paid work is viewed as part of a wider range of roles that a person may undertake. His or her career is referred to as the way in which these multiple responsibilities are integrated and managed over time (Hall, 2004; Nota & Rossier, 2015; Super, 1980; Super et al, 1996).

There is a need for the researcher to be open and receptive to the wide range of interpretations applied to human behaviour. The use of definitive language and boundary-implying rationales can be arbitrary and distorting (Sullivan, 1999, p. 447). Alternatively, a pluralist approach, while it may not provide definitive results, can provide richer insights into the subtlety of each person's circumstances, needs and possible solutions.

1.1.11 Calls for theory convergence

The development of constructivist perspectives has resulted in a plethora of theories about career development. Some theories are more comprehensive, such as *life-span, life-space*

How do chance and uncertainty influence the career development of adults?

theory (Super et al., 1996), while other theories have a direct focus on a more specific aspect of the broad career development process.

This led to calls for convergence within the profession. Convergence seems to have several advantages. It could clarify and consolidate many theoretical constructs under a common set of assumptions. It could generate a typology or lexicon within career research that positioned all researchers on a common agenda as discourse on career processes and circumstances developed. It could facilitate a more persuasive presence for the career guidance profession in communicating to governments, industry and other research disciplines Savickas and Lent (1994).

The call for convergence of career theories has persisted for the last two decades. It has encouraged theories that integrate ideas from various theoretical constructs. The discussion has also led to a maturing of the profession, but 20 years later, the goal of convergence remains with some supportive and others equivocal about the merits of seeking convergence (Patton & McMahon, 2014, p. 11).

Such unity may impose standards that stifled creativity and innovative thinking. Brown (2012) suggests that the field of career development has so many dimensions and nuances that consolidation under a unifying theory is unrealizable stating: “No perfect theory of career choice has yet to emerge and it is unlikely that this will occur” (p.27).

A further difficulty confronting those seeking convergence is the tendency for broader conceptions of work to have entered the career dialogue (Blustein, 2006; Patton & McMahon, 2014). These insights have arisen in the constructivist era as roles such as unpaid work, carer, and others were added to the purely vocational-job nexus that generated the earliest phase of career guidance. Additional concepts such as *protean career* (Hall, 1976, 2004); *boundaryless career* (Arthur, 1994); *life trajectories* (Savickas et al., 2009), and *strange attractors* (Pryor & Bright, 2011) continue to arise. The use of these terms will become more obvious as we consider the current era of career theorizing in Section II of this chapter.

The goal of convergence is challenged by the vagaries of language and the practicalities of describing processes related to human behaviour. Further complicating this task are the growing the complexity in society (Castells, 1996, 2011), and the calls for greater interdisciplinary study in the field (Lee, Felps & Baruch, 2014).

How do chance and uncertainty influence the career development of adults?

1.1.12 Social justice

The advocacy role of career guidance regarding social justice issues – an aspect championed by Frank Parsons and his colleagues – is just as relevant today. The current workplace rewards the highly able. The most valued workers are well-educated, computer literate and flexible. Simply applying the principles of the normal curve suggests there is inherent potential for many minority groups to be marginalised. Pope (1995) highlighted the disadvantages faced by the gay and lesbian community in the United States and other societies. The distribution of the benefits flowing to workers is becoming increasingly stratified. Roe (1956), Gottfredson (1996, 2005), and Dawis (2002) emphasise that those born into the most advantaged genetic and environmental circumstances are able to place themselves at the front of the employment queue. These more advantaged individuals are likely to straddle the learning tasks of the earliest phases of their life more easily and then progress from educated adolescent to mature well-rewarded worker (Blustein et al., 2002). The less fortunate may struggle. There is a continuing role for research and theory development addressing the needs and habits of economic, cultural and other minorities.

1.1.13 True reasoning, career perception and decision making

Parsons spoke strongly about the need for the application of a perspective grounded in a clear sense of self and of the realities of the world around the young men he sought to help, calling it “true reasoning” (Parsons, 1909, p.5).

In the early 21st century the realities of advanced economies are those of a globalized, information rich, educated and dynamic world of work (Castells, 2011). Traditionally, the reciprocal arrangement between the company and worker was based around a linear career model and a psychological commitment providing mutual realms of predictability and certainty to the relationship (Arthur & Rousseau, 2001). Today the emphasis is on a flexible and itinerant worker-employer relationship rendering the world of work more problematic and unpredictable. Both the needs and interests of the individual and the context of their skills and situation are relevant to making sound judgements about career issues (Pryor & Bright, 2011).

How do chance and uncertainty influence the career development of adults?

1.2 Section 2 - The Information Age and Increasing Complexity

The advent of postmodernism generated a wide array of perspectives on career theory as reflected in the previous section. However, in the 70's and 80's futurists pointed to a new world of rapidly evolving technologies and changing work practices (Jones, 1982; Toffler, 1980, 1990). While their message was clear and coherent, the technologies prompting their insights took several decades to filter into the daily working lives of people and become a mainstream reality. The creeping dawn of these trends suddenly turned into a dramatic revolution commonly referred to now as The Information Age (Castells, 2011). Two examples illustrate the initially dormant potential of digital technology:

- Apple Corporation, now one of the biggest companies in the world is only forty years old (Forbes, 2017);
- Google is less than 20 years old (Jarvis, 2011).

Today's twenty-first century world *moves faster*. Much of life is arranged via the digital world of the internet, mobile phones and social media. People expect to do more. This new connectivity has ushered in a world of awareness, opportunity and networking such that opportunities are often only a click away.

Thriving in this metro world of opportunity is not always easy. As always, living independently as an adult requires a vast range of coping and managing skills – skills not readily available to all those leaving adolescence. Additionally, adult life requires resources and access to economic wealth. A steady reliable job with regular income is a good starting point. This is easier said than done for many in the hardened employment conditions of today.

Amid all these dynamics one pervasive factor, which has long been observed but only addressed directly in recent decades, is the issue of uncertainty. Indeed, uncertainty is so prevalent that its multi-dimensional nature and layers remain virtually undiscovered (Lindley, 2007; Mlodinow, 2009). The evolution of thought within and about the world reveals that a focus on uncertainty and its nature or essence is a relatively recent phenomenon (Lindley, 2007; Peat, 2002; Mlodinow, 2009).

Nevertheless, major disruptions to the world of work in the last two decades have arisen in response to broader related forces such as globalization, neo-liberal economics and diminished

How do chance and uncertainty influence the career development of adults?

lead times for technical innovation. The overriding characteristic of these trends has been constant change and unprecedented complexity, leading to the comment that today:

Workers must be employable, lifelong learners who commit themselves to an organization for a period of time and show professional character in performing emotional labour and adapting quickly to changes. The new contract of employability has prompted scholars to reconceptualise careers as boundaryless, Arthur (1994), protean, Hall (2004), customised, Benko & Weisberg (2007), kaleidoscopic, Sullivan & Mainiero (2008), and as a portfolio, Handy (1995). (Savickas, 2005, p. 13)

It is the impact of this digital revolution that is driving current preoccupations in career development theory. The use of the internet, social media and other information technologies has revolutionized workplaces and the day-to-day language and behaviour of billions of workers. The traditional relationships between cause, time and effect no longer hold. In the information age, communication is instant, ubiquitous and constant. Many relationships between social structures, organizations and individuals are anomalous rather than constant and linear.

The insights of constructivists were valuable in breaking the hold of positivism on the field of career development, but their theories focus on the perception of individuals and the patterns their stories can reveal. They do little to explain the natural phenomenon of chance and the repeated waves of change inherent in contemporary life.

1.2.1 Complexity and career guidance

Increasing complexity and its corollaries embody the critical issue facing career theorists in the early decades of the twenty-first century. The characteristics of complexity are:

Change – the rise of globalization and the digital work environment have transcended people's lives. Life and the workplace are in a constant state of flux.

Uncertainty – uncertainty is pervasive and presents itself in many guises. The human reaction to many situations is a sense of confusion and ambiguity.

Unpredictability – often the change that occurs is imperceptible until its effect is felt. Planning in a complex world is very tentative at best, challenging traditional notions of strategic planning.

How do chance and uncertainty influence the career development of adults?

Nonlinearity – points to the disproportionate effect of a cause due to the interactions within complex systems. A small change can result in no change, a moderate level of change, or a major upheaval. This is the antithesis of traditional cause and effect thinking.

Sensitivity to initial conditions - The constantly changing nature of complex systems means that the state of an entity is never static. The system is *dynamical*, constantly monitoring and responding to its context, both internally and externally.

The theoretical positions taken to interpret and understand this complexity are of utmost interest to contemporary career development theorists and practitioners.

1.2.2 Career theory embracing complexity and change

The application of complex adaptive systems theory to a wider range of intellectual fields such as computing, health, linguistics, biology and public administration is well established (Holland, J.H., 2012). With the adaptation of complexity theory to the careers field, the opportunity arose to embrace the role of change as integral to the career process. In earlier phases of career theorizing, complexity was being interpreted as a maze of influences, and change was portrayed as an occasional, irregular but non-patterned input into people's lives. Complexity theory makes sense of uncertainty and unpredictability by interpreting it in the context of patterns (Patton & McMahon, 2014; Pryor & Bright 2005).

Three recent theories address the theme of complexity and its relationship to career development. Bloch (2005) and Pryor and Bright (2003a, 2005, 2011) have both articulated theories using chaos theory as a model and they will be discussed shortly. The other major contribution is the Systems Theory Framework (Patton and McMahon, 2014).

1.2.3 Systems theory framework

The Systems Theory Framework was discussed in detail in Section 1. The Systems Theory Framework provides a sound and flexible working model for students, educators and researchers and is widely researched (Amundson, 2005; Brown 2002; Young & Popadiuk, 2012). Patton and McMahon (2014) explain the purpose of the Systems Theory Framework, "Systems theory is being introduced as the basis for an overarching framework within which all concepts of career development described in the plethora of career theories can be usefully positioned and utilised in theory and practice" (p.240).

How do chance and uncertainty influence the career development of adults?

The Systems Theory Framework recognizes the potential of systems theory to address complexity. However, it does not seek to explain how the element of chance functions within the career circumstance of the individual. Instead, it lists chance as another factor in the milieu, including it as a process. In this sense, while the Systems Theory Framework does draw together the multi-dimensional aspects of career guidance, it does not engage the use of complexity theory within careers theory in the way that two other theories do. The strength in embracing chaos theory and a complex systems approach is that it incorporates change as integral to the career development process.

1.2.4 Application of chaos theory

Bloch (2005) identified the principles of chaos theory as the epitome of the career that any person experiences. Bloch's Chaos Theory of Career Development and Spirituality blended her focus on the wholeness of human existence with the dynamic and interrelated features inherent in complexity theory. Yet, within research in career and vocational psychology, the unique nature of each person's *career* is recognized definitionally, and then largely ignored. This was remarked upon by Tyler (1959) when noting that "if during the course of a single day one child engages in almost 2,500 behaviour transactions with 749 different behaviour objects, the possibilities for influence that might help to determine individuality are absolutely staggering" (p.77). In spite of this level of distinctive difference between individuals, the quality of being unique is easily overlooked.

Similarly, within the Chaos Theory of Careers (Pryor & Bright, 2003a, 2005, 2011) the individual is viewed as one part of an organic, self-organizing system. Change is perceived as a constant aspect of the self-regulating system. All parts of the system are inter-related and their behaviours form patterns that are often cyclical and repeated.

A further fundamental principle is that unpredictability is an inherent part of the dynamical nature of the organism and the systems within which it co-exists. Patterns can suddenly self-correct and a new series of patterns emerge. These disruptions can be caused by seemingly unrelated or even minor events. Within complexity theory, the patterns are called "fractals" (Bloch, 2005; Pryor & Bright, 2011). Fractals are given four labels and their simplified meanings are described in Table 3:

Table 3: Fractals occurring within complex systems

Descriptor	Meaning
Point attractor	The entity keeps repeating the previous behaviour
Pendulum attractor	The entity oscillates between extremes within a defined boundary
Torus attractor	The entity moves in a repetitive almost circular pattern
Strange attractor	The entity engages change and creates a distinctively novel pattern

Bloch (2005) referring to the qualities of complexity theory, explains how human behaviour mimics the fractal patterns which complexity theory has revealed within physics, biology and other sciences. It is in this context that she describes a person as an adaptive entity.

Because it is the nature of each entity to adapt to its environment and internal state to maintain its life, these entities may be dubbed *complex adaptive entities*. The theories that explain these entities fall under the rubrics of *chaos theory*, *complexity theory*, and *non-linear dynamics*, the last being the more general term. (Bloch, 2005, p. 195)

In referring to fractals, Pryor and Bright emphasise the importance of what they call ‘shift’ – the constant re-alignment of priorities and practices which are made to allow systems to adjust and thereby maintain equilibrium (Pryor & Bright, 2005; Bright, & Pryor, 2008). In a case where a major re-alignment occurs, it is referred to as a ‘phase shift’ (Pryor & Bright, 2011 p.11).

In recognizing the holistic principles of complexity theory, Bloch extends her notion of career to incorporate the wholeness of the human into the realm of career guidance (Bloch, 2005). This is what she refers to as the spiritual dimension of the person – the search inherent in each ‘adaptive entity’ for oneness with its interconnected cosmos (Bloch, 2005). Pryor and Bright (2011) also emphasise this spiritual dimension, seeing in it the relationship between hope, commitment and courage that gives people a sense of purpose, meaning and the will to struggle on through crises in their lives: “Hope is the spiritual dignity that individuals with a perspective bigger than their own immediate felicity bring to the pain and disappointment of barriers, limitations, obstacles and stumbling blocks” (p.171).

Matters of personal inspiration have been explored closely within the careers field (Guindon & Hanna, 2002). There is a growing body of literature in organizational psychology and other fields pointing to the role of spirituality, emotion and intuition as being important parts

How do chance and uncertainty influence the career development of adults?

of human existence and decision making (Senge, 2006; Senge, Scharmer, Jaworski & Flowers 2005; Pryor & Bright, 2011; Dane & Pratt, 2007; Khatri & Ng, 2000). The description of intuition, which Senge provides, is akin to the 'phase shift' dimension of change recognised in chaos theory.

Systems thinking may hold a key to integrating reason and intuition. Intuition eludes the grasp of linear thinking, with its exclusive emphasis on cause and effect that are close in time and space. The result is that most of our intuitions don't make sense – that is they can't be explained in terms of linear logic. (Senge, 2006, p.158)

A further quality associated with change is emergence. Ideas, directions and strategies emerge as each manifestation of change becomes clearer to the 'adaptive entity'. Use of complexity theory provides potential to interpret the wide range of career experiences of 21st century populations in advanced economies. In such a scenario, the path forward becomes less planned and emergent (Patton, M.Q., 2011; Pryor & Bright, 2011). Peat (2002) describes it:

Chaos theory explains the ways in which natural and social systems organize themselves into stable entities that have the ability to resist small disturbances and perturbations. It also shows that when you push such a system too far it becomes balanced on a metaphoric knife-edge. Step back and it remains stable; give it the slightest nudge and it will move into a radical new form of behaviour such as chaos. (p. 124)

1.2.5 Change, Chance and Uncertainty in Early Career Theory – a Gap in the Literature

I have traced the evolution of career development theory over the past century to the point where the current technological revolution has outpaced traditional career theories especially with reference to the frequency and pace of change. Change, chance and uncertainty have long been recognized in career literature. Parsons (1909) emphasized the need for adaptability in young people to cope and adjust to the changing demands of the workplace in the early 20th century. Similar observations were made at different times by other authors (Miller, 1983; Osipow, 1973), but for much of the 20th century, as far as career development was concerned, the role of chance as a factor in career development was largely ignored.

There are many features of 21st century society that are distinctive from earlier periods of history and they impact directly and indirectly on how the post-modern western individual contemplates and chooses to live. These societal characteristics have arisen recently in the sense

How do chance and uncertainty influence the career development of adults?

of human history and are unprecedented. Yet they should not be confused with chance events. These historical changes interconnect with each other and do however, increase the likelihood of chance events influencing an individual's life and work. Some of the more dramatic of these in Western culture are:

- Human longevity
- Exponential development in transport and mobility
- The spread of mass literacy, universal secondary education, post-secondary training and life-long learning
- Developments in media and electronic communication
- The associated rise in real-time connectivity impacting both individually and globally
- Marketing and advertising and its interplay with social mores and social life
- Automation and miniaturization

The resultant increase in and access to human knowledge has generated an accelerated intensity of innovation and change, development and opportunity. Accompanying this many individuals experience great confusion and bewilderment about many aspects of their lives (Tyrrell & Elliott, n.d.).

Given these societal characteristics, two dimensions of the contemporary challenge for career theory are that it needs to be:

- i. Comprehensive enough to cover the vast array of issues which the first 100 years of history have shown to be of relevance to the careers of individuals, and;
- ii. Cognizant and accommodating of the level of complexity and change characteristic of the Information Age.

Such a transition is not easy. It is a giant mental leap for Western thought to move from a reductionist to a dynamical perspective.

In the late 20th century, many supposedly immutable truths were thrown into question not by those who simply questioned the truths but by those who had gone beyond doubting

How do chance and uncertainty influence the career development of adults?

the individual beliefs to doubting the very system of thought in which the beliefs were constructed. (Bloch, 2005, p.195)

However, the patterns of behaviour that non-linear theories expose hold great promise for addressing the dilemmas experienced by career theorists grappling with the diversity and recursiveness of work related issues so clearly portrayed in the *Systems Theory Framework* (Patton and McMahon, 2014). With the increasing rate of technological changes in the latter part of the 20th century, there was also an increasing focus on chance as an influence in career development (Gellat, 1989). Chen (2005), and Mitchell, Levin and Krumboltz (1999) put chance front and centre of their thinking, recognizing it as integral to the processes occurring in career development.

In the aftermath of the Global Financial Crisis, attention of career theorists and researchers focussed increasingly on the disruptive aspects of unemployment (Brown, 2015). Responding to the challenges evident in the globally interconnected economy, there was an increased emphasis on the need for and development of career resilience and career adaptability skills in the literature (Hirschi, Hermann & Keller, 2015; Krieshok, Black & MacKay, 2009).

The unique promise within complexity theory is that it offers a way of understanding why and how chance arises. Complex adaptive systems theories expose patterns within which chance occurs. Can these patterns be recognized, anticipated and influenced? These are the questions the Chaos Theory of Careers addresses and applies to the issue of career development. No matter how we resolve these issues relating to the ambiguity inherent in thinking about the future, Gelatt (1989) offered one prescient insight several decades ago:

The main purpose of counseling has always been to help people make up their minds.

Now counselors can add helping people to keep their minds open and even teaching them how to change their minds. The best final decision may actually be a definite maybe.

(p.255-6)

It is apparent that the Chaos Theory of Careers passes the good theory test. It is relevant to the present and impending era. It accepts and builds upon existing knowledge and theory. As indicated by Kuhn (1962), a new paradigm needs only to assist in the understanding of the currently perplexing issue. Previous paradigms will be adjusted to accommodate a new and successful theory as the pursuit of better explanation and understanding continues. The Chaos Theory of Careers paradigm embraces much of traditional career theory premises as well as

How do chance and uncertainty influence the career development of adults?

providing a comprehensive explanation of the challenges workers face at present. It is coherent and approachable though some of the language used to articulate the theory might be a little foreboding to the uninitiated (Brown, 2002; Pryor & Bright, 2005; Zunker, 2012).

Within those parameters, use of complexity theory provides potential to interpret the wide range of career experiences of 21st century populations in advanced economies. As we forge ahead, this generation of career theorists “may be the first to move decisively to recognize change and to face the challenge of trying to incorporate it into career development theory and practice” (Pryor & Bright, 2011, p.10).

Chapter Two - Research on Uncertainty and Chance events impacting on Career Development

Section 2 of Chapter One outlined the relevance of using a theory with a dynamical perspective when reflecting on concepts related to career development. The *Chaos Theory of Careers* has the potential to do that because it addresses the unpredictability, non-linearity, chance and ambiguity inherent in twenty-first century western lifestyles.

The *Chaos Theory of Careers* acknowledges the relevance and value of other established models of career theory. It emphasizes the need to use the many well-established principles that generations of researchers and theorists have identified and promoted (Pryor & Bright, 2011). It also points to the patterns arising within the dynamics of the information age. The *Chaos Theory of Careers* relates the lived experience of the jobs and careers of ordinary people to the change processes driving economic progress – things such as improved transport and communications, globalization and improvements in human health and longevity.

This chapter will outline existing research relating to unexpected change, unplanned chance and uncertainty with reference to career development, and detail the themes covered to date in the research. It will then indicate areas not addressed within existing research and conclude with an outline of the focus and reasons for this research project.

2.1 Clarifying what a chance event is

The concept of chance events incorporates change as part of its core operational base. On deeper investigation, the vagaries of uncertainty reside within or alongside chance events. Unless clearly stated otherwise, for the purpose of this discussion, the one generic term - *chance event* - is used to refer to each of unexpected change, unplanned chance and circumstances arising from uncertainty.

As with many aspects of research in careers, the language used to refer to chance events lacks definitional precision and is subject to interpretation, a matter that was discussed in Chapter One, Section I.

How do chance and uncertainty influence the career development of adults?

Chance events arise from circumstances replete with complexity, uncertainty and ambiguity. Various references to coincidental happenings occur in the literature including “serendipity” (Diaz de Chumaceiro, 1999, 2004; Williams et al. 1998), “happenstance” (M. J. Miller, 1983; Mitchell, Levin & Krumboltz, 1999), “synchronicity” (Guindon & Hanna, 2002) and “chance events” (Bandura, 1982; Cabral & Salomone, 1990; Pryor & Bright, 2011; Scott & Hartalla, 1990). However, foreseeing or even recognizing chance events can be difficult. Nowotny (2015) emphasizes this, using the analogy of seas of uncertainty with islands of certainty appearing and sometimes then disappearing as the players try to negotiate their way through periods of change, chance and ambiguity.

Therefore, within the context of the influence of chance events on career behaviour and outcomes, it is salient to look at attempts at precise descriptions of chance events by key researchers. Betsworth and Hansen (1996) refer to “events that were not planned or predictable, but that had a significant influence on your career” (p. 97). Rice (2013) supports a similar description of chance events. He makes the point that chance events “have the unique qualities of being unpredictable and unplanned for” (p. 446). Rojewski (1999) refers to chance events as “unplanned, accidental, or otherwise situational, unpredictable or unintentional events or encounters that have an impact on career development and behaviour” (p. 269). This is the description of chance events used by Pryor and Bright, (2011) in the *Chaos Theory of Careers* (p.75). It is comprehensive and clear. It also avoids the word “significant” as used by Betsworth and Hansen. Further, the Betsworth and Hansen definition is about serendipity rather than the more common, *chance events*.

The following terms: ambiguity, chance, change, complexity, uncertainty, unplanned, unpredictability... form an integral part of the lexicon encompassing chance events. They describe various aspects of the experience that people feel and negotiate as they deliberate and seek to resolve aspects of their working lives. Sometimes one or other of these terms refers specifically to a discrete activity. Sometimes it will convey a multitude of functions occurring, or being entertained, simultaneously. When the unexpected or the unplanned occurs, it may reveal itself as a chance event (Nowotny, 2015). Nowotny (2015, p.62) suggests people are especially adept at negotiating multiple perspectives within a minute period in an attempt to resolve an issue and determine a suitable way forward, an idea gaining support within the field of neurodynamics (Grigsby & Osuch, 2007). How the individual perceives and responds to these

How do chance and uncertainty influence the career development of adults?

occasions is the critical component of the influence of the chance event on that particular individual (Bosley, Arnold and Cohen, 2009; Hirschi 2010).

Constructivism has established that the perception of the individual is a vital aspect of the career journey (Amundson, 2009; Savickas et al., 2009). The particular meaning given to a situation is dependent upon the context of the situation and the interpretation placed upon it by the active participant. Shanahan and Porfeli (2006) identify four features of a chance event, suggesting that it is unlikely; can be recognized as causal, yet unintended, and of enough significance to warrant explanation. Their conclusion is that, given the variables and complexities involved in the life course, and the agency of individuals in their life course, “the unlikely and causative nature of chance events cannot be established with a high degree of objectivity” (Shanahan & Porfeli, 2006, p.116). Their focus on objectivity is particularly relevant. Despite, or even possibly because of its capacity for multiple interpretations, the term *chance event* is common within the literature on career development. *Chance event* remains an acceptable term to use to provide a degree of focus for a particularly nebulous concept.

2.2 Reference to chance events in the literature

Researchers have remarked upon the relevance of chance as a factor in career development for many decades. In its earliest phase, the predominant view of career development was that of a positivist and linear mode. This allowed for a *match and fit* style of career advice (Holland, J.L., 1973) and for career progression and advancement throughout the maturation and aging process (Super, 1953, 1980). Studies involving reference to chance and unpredictability were rare. In the latter part of the 20th century, there was a rapid increase in research on career development (Bright & Pryor, 2008, p. 65, Table 1), and the diversity of topics covered by researchers increased.

As early as the 1950s, several authors included the idea of accidental entry into jobs within their research (Caplow, 1954; Form & D. C. Miller, 1951), and indicated that the likely response to chance would vary among different personalities (Rotter, 1966). However, early references to chance as a factor in careers were more like outliers in the field of research into career development.

Early research involving chance events affecting work indicated the diverse contexts within which chance may be a factor. Roe and Baruch (1967) surveyed 30 people who reported

How do chance and uncertainty influence the career development of adults?

that chance had been a factor in finding their current work role. Roe and Baruch made a distinction between the response to chance occurrences among those sensitive to opportunities compared to those ignorant of or unable to respond to similar opportunities (Roe and Baruch, 1967).

Hart, Rayner and Christensen (1971) used results from a survey of 60 men to call for greater attention to be placed on the role of chance events especially for lower skilled workers whose career trajectory they found to be influenced by chance when compared to workers in professional or skilled areas. At the professional level, the men entered their occupations primarily through planning and preparation. At the skilled level, some men entered their occupations through planning while many others were primarily influenced by chance events. Entry into the semiskilled level occupations generally involved unplanned chance events.

Osipow (1973), in comparing the work of seven prominent theorists, suggested chance occurrences were relevant in the evolution of careers. This was supported by Bandura (1982) when he identified the diversity of chance factors and the level of influence that any particular event may have on an individual. He emphasised the unpredictability of chance factors and the varying level of an individual's susceptibility to chance effects on career and life paths. Bandura's work drew attention to the role of context in assessing the significance of chance events (Bandura, 1982).

Following these early references to chance events, there was greater interest in the reported frequency of chance as a factor in career development. To investigate this, Salomone and Slaney (1981) distinguished between *contingency* (planned) and *chance* (unplanned) factors. In a study of 917 non-college degreed workers, they identified two types of approach to future events that they called contingency or planned events and chance or unplanned events.

In a general sense, the workers saw their vocational decisions as being rationally based and mostly influenced by contingency events. However, they also recognised chance events as affecting their careers to some extent. Salomone and Slaney (1981) identified the following contingency factors as being influential: educational level, vocational training opportunities, financial responsibility to others, and awareness of skills and abilities. To a lesser extent, unplanned chance events such as personal factors and unexpected information about jobs were also rated influential. Like others, they pointed to the agentic dimension of career development.

How do chance and uncertainty influence the career development of adults?

They noted the need for action by the individual if a chance occurrence is to have an effect on career development (Salomone & Slaney, 1981).

In a later study, Scott and Hatalla (1990) compared the impact of contingency and chance factors on post-graduation career patterns experienced by 94 female graduates over a 25 – 30 year period. The women reported that contingency factors were more influential than chance factors in influencing their career outcomes. However their response to the category “unexpected personal events” (p.31) within the List of Decision Making Influencers questionnaire prepared by Salomone and Slaney (1981), did provide evidence of unexpected chance events impacting on the career patterns of some of the women. It seems their life experience of career had been influenced by a combination of predictable and some unplanned circumstances.

Throughout the period from the 1950s to the 1980s, the relevance of chance occurred in studies without ever becoming a focal point of research on careers. The main reason for this was the entrenched and continuing positivist, linear and match and fit focus of the established schools of career theory as outlined in Chapter 1.

2.3 Limitations of pre-dominant theories

Such was the predominant focus on education, training and the transition from school to work, or re-entry into the workforce after military service, that the relevance of career guidance was largely seen to be resolved once the initial match and fit process had been achieved. Conceptually, the worker moved into a career role, progressed in a linear (generally upwardly mobile) fashion, worked for several decades and retired. Super (1980) clearly represented this in his descriptions of the life span, life space model.

The role of chance as a factor in career development was emphasised by Baumgardner (1982) and Gelatt (1989) acting as voices of disquiet about the status quo. They suggested that the lure of providing a sense of security through an over emphasis on certainty within career development programs was counterproductive. Young people were being encouraged to select careers before they had any direct experience of the specific characteristics of the particular job. There was discernable disillusion among those same young people disappointed by the realities of work and career (Baumgardner, 1982). This dilemma in career counselling strategies reflects the natural tension between sections of society wishing to provide certainty and predictability to

How do chance and uncertainty influence the career development of adults?

those seeking clarity about their future, and others pointing to uncertainty, chance and unpredictability as a normal part of life and work (Krantz, 1998; Pryor & Bright, 2011).

At the same time as there were consistent calls for convergence of career theory (Osipow, 1990; Savickas & Lent, 1994), there was an increasing focus on the complexity and the increasing pace of change in western society (Castells, 1996, 2011). This prompted the emergence of theory to explain the place of chance in the career process, and the ways in which individuals could address the issues it presented. Hall (1976) had identified the term *protean* to describe the worker who pursued career progress and success from an internally driven set of values and priorities. Similarly, Arthur (1994) coined the word “boundaryless” (p.296) in describing a worker who moved from job to job among different employers as a means of achieving and maintaining career satisfaction (Arthur, 1994; Arthur & Rousseau, 2001). Chen (2005) drew attention to the existence of chance in peoples’ working lives and observed that sociologists were more aware of the role of chance than was the psychological community (Chen, 2005). He advocated that counsellors encourage and develop greater openness, cognitive reframing and knowledge gathering among clients to assist in strategic thinking and adaptive behaviour, which would in turn develop a clearer sense of individual agency.

In the early 2000’s, the career guidance community was primed to understand more about the dimensions of chance and uncertainty in peoples’ working lives. However, our dependence upon language – the critical medium for the articulation and exchange of ideas - limits and inhibits our capacity for mutual understanding. In many fields of thought and discussion, the natural ambiguity of language as a means of communication complicates the search for understanding.

This problem was identified by Arthur and Rousseau (1996). Their focus was on the changing workplace. They emphasised the need for enlightened perception and use of language in the careers field. They associated the rising level of change in the late 20th century workplace with the word, “chaos” (p.37). Chaos embodies non-linearity, giving rise to unpredictable outcomes. Arthur and Rousseau recommended that the individual seeking to negotiate a career in this new environment needed to perceive, think and operate in ways that contrast with traditionally held assumptions. To illustrate the vital role played by perception, they presented revised interpretations of “boundary” and “career” (p.29), “organization” (p.30), “employment” and “group” (p.31), “learning” (p.32) and “civility” and “transitions” (p.33). Arthur and

How do chance and uncertainty influence the career development of adults?

Rousseau substituted “new meanings” (p.29) for the previously held assumptions about each of these terms. The lexical difficulty in a dynamical world is that the relationships and possible interpretations and meanings of terms are evolving continuously to accommodate the “orderly disorder” (p.37) of the new world that the authors had identified (Arthur & Rousseau, 1996).

Arthur and Rousseau suggested that “we may wish that both chaos and boundaryless careers would go away’ (p.37) but showed how ‘if we embrace them we may surprise ourselves at the pace with which our new appreciation grows” (p.37). Collins (2016), mindful of the limitations of language, introduced the idea of using hand drawings to stimulate a preferred understanding of dynamical systems.

2.4 Understanding and communicating about uncertainty

The great advances of science and the scientific method since the Enlightenment were facilitated because science was able to counter this confusion through the development of a far more precise language than the spoken or written word. Peat (2002) refers to the evolution of mathematical language and its inherent precision and limitations. It drove scientific thought and its technological inventions and breakthroughs, yet struggled with the onset of quantum physics.

Other disciplines resolve issues of terminology to suit their particular needs. Many of the great efficiencies of industry and engineering use precise language to achieve standardization of product and process. Ward (2000) has produced a manual of terminology applicable to project management. Thunnissen (2003) assessed uncertainty from many epistemological perspectives in an attempt to define uncertainty. His work demonstrates the variety of contexts and definitions applicable to the term. Each definition was dependent upon the tasks that preoccupied those challenged by the perceived uncertainty. Some focussed on quantification of uncertainty and others targetted the source of uncertainty. This approach led to many contextually based definitions.

An alternative and counter-intuitive perspective on this issue is provided by Blumer (1954). He introduced the notion of “sensitizing concepts” (p.7) to foster a more nuanced understanding of concepts within the social sciences (Blumer, 1954). Patton, M. Q. (2011) has articulated and developed these concepts and applied them successfully to many aspects of complexity (Patton, M. Q., 2011, Chapter 5). The relevance of sensitizing concepts to this study will be explored further in the next chapter on methodology. Similarly, the work of Collins

How do chance and uncertainty influence the career development of adults?

(2016) is pertinent. Her use of hand drawings provides a more exploratory and less definitive approach to the epistemology of complexity.

2.5 Preponderance with measurement

It is possible the pre-occupation with accuracy, precision and its attendant use of measurement has gone too far (Bohm and Peat, 2011). There are realms of knowledge, understanding and insight, which are part of human existence but beyond mathematical measurement. For these areas – human experiences such as wonder, love, enjoyment, happiness, social cohesion and solidarity; and at the other end of the continuum, despair, emotional pain and grief – the sensation and experience are integral to the human condition. In these moments, this is the knowledge and the truth.

These phenomena have been observed for centuries. They are the embodiment of what we call culture. Culture is reflected in the treasured works in art galleries, in music, poetry and literature. When communication about these aspects of culture occurs, the ambiguity of the written or spoken word, if used, is a power and an asset – not a liability. Artists provide us with profound messages that go beyond the need or interest in measurement and precision. Where ambiguity and imprecision can be an obstacle for scientific thought, for those interested in the Arts it is a source of wonder, vitality, amusement and reflection. Blumer (1954) and Patton M.Q. (2011) remind us of this with their emphasis on sensitizing concepts.

2.6 Openness to Ambiguity

Nowotny (2015) made a study of uncertainty in her book *The cunning of uncertainty*. Rather than condemn the ambiguous qualities inherent in some aspects of the human condition, Nowotny suggests it is constructive to address ambiguity as objectively as possible. She proposes that it is beneficial to acknowledge its existence, address the challenges it presents, and interpret the positives, neutrals and negatives that it may reflect.

However, Nowotny (2015) avoids defining uncertainty. Instead, she *describes* it - using the term *cunning* to depict the evasive, mesmerizing and unpredictable character of uncertainty. For much of the book, *cunning* is depicted as an active partner, the spirit as it were, of uncertainty. Uncertainty presents under many guises – risk, threat, ambiguity and false certainty. Nowotny exhorts readers to engage with uncertainty by “embracing the gift” (p.171) it offers – the

How do chance and uncertainty influence the career development of adults?

gift being the opportunities that reside hidden behind the veil of uncertainty. When the many and varied instances of uncertainty are embraced, immense opportunities may be revealed. However, this requires openness and a non-reductionist mindset, as stressed by Blumer (1954 and Patton M. Q. (2011). The capacity to understand the behaviour of complex systems including non-linearity, ambiguity and unpredictability is integral to recognizing how uncertainty functions. This capacity to suspend judgement, to explore nuances and possibilities is also integral to the *Chaos Theory of Careers* model of career guidance.

Once this embracing of uncertainty occurs, Nowotny (2015) suggests the future becomes malleable. Interpreting ambiguity with an open mind gives greater potential for insight and practical response. Imagination and creativity can be tweaked or swayed by a person's insights. This can lead to dramatic, revolutionary change, or as is more likely, change in small incremental steps, or a muddling through approach. Nowotny emphasizes too, the importance of deft judgement about decision-making:

To have a good sense of timing is an art. It is also a matter of luck. It is partly intuition, partly experience, partly absorbing the right cues from the environment and partly the ability to listen to one's unconscious that in some unfathomable way whispers Now! or Don't! Not Yet! (Nowotny, 2015, p.164)

In describing uncertainty, Nowotny indicates that investigative Science, The Arts and many in the creative and entrepreneurial worlds function as comfortable partners with the cunning of uncertainty, which is "ready to guide us in unexpected ways" (Nowotny, 2015, p.171).

Many of these ideas about open-mindedness resonate with the principles proposed by Gelatt three decades earlier (Gelatt, 1989). They have been articulated by Patton, M.Q. (2011) in his approach to continuous and evolutionary development. Peat (2002) agrees and encourages openness towards the *gift* of uncertainty:

The move from certainty to uncertainty that characterized the twentieth century has brought with it great responsibility. Each of us today realizes our connection to the society in which we live through countless feedback loops. Each of us helps to generate and sustain the meaning by which that society functions. What's more, chaos is no longer something to be afraid of; it is an expression of the deep richness that lies within the order of the cosmos and our very lives. (p.153)

How do chance and uncertainty influence the career development of adults?

Some sections of society already operate this way. There is evidence of entrepreneurs using skills in decision-making that are equivalent to blending logic and intuition (Dew, Read, Sarasvathy & Wiltbank, 2009). The application of real options theory to issues dealing with uncertainty and decision-making illustrates this potential. Hult, Craighead and Ketchen (2010) reported on how managers in business use six complementary strategies to assist decision-making under the stresses induced by conditions of uncertainty. Sophisticated methodologies are now used in organizational training to assist executives to recognize, engage with and better understand complexity and the multiple interpretations it fosters (Kurtz & Snowden, 2003; Snowden & Stanbridge, 2004). Kurtz and Snowden maintain “humans are not limited to one identity” (2003, p.464), and in fact that we “constantly flex our identities both individually and collectively” (p.464). Furthermore, they point out the unique nature of each individual and the capacity of humans to make patterns out of complex situations in order to better understand and manage them. They established “Cynefin - a *sense-making* frame work” (p.468) to assist disparate groups to identify mutual learning and knowledge building within complex systems (p.468).

In whatever way people respond to uncertainty, there is no doubt it is a symptom of many of the chance events that individuals experience.

I will now turn to studies about career development that have focused on various aspects of chance events.

2.7 Studies referring to the frequency of chance events

Studies that specifically investigated the reported level of chance events affecting a person’s career found that the frequency of chance events was significant. Using the distinction offered by Salomone and Slaney (1981) of contingency (planned) and chance (unplanned) factors, these studies consistently reported frequency of chance events of greater than 50% (Bright, Pryor & Harpham, 2005; Betsworth & Hansen, 1996; Scott & Hatalla, 1990; Williams et al., 1998).

In their study, Betsworth and Hansen (1996) investigated the responses of 237 college graduates between the age of 52 and 88 years. Sixty-two per cent of males and 54% of females reported being influenced by chance factors during their work life. This study found that chance factors were important, and were recognized by the participant as important. Betsworth and

How do chance and uncertainty influence the career development of adults?

Hansen identified 11 different types of chance as influencers among their 237 participants. These were: professional or personal connections, unexpected advancement, right place, right time, influence of marriage and family, encouragement of others, influences of previous work/volunteer experiences, military experiences, temporary position became permanent, obstacles in original career path, influence of historical events, and unexpected exposure to interest area.

This research indicated that just as there is a wide range of factors in life that affect an individual's career experiences, there is a wide range of chance factors. Some of these are reported to impact more frequently or more strongly than others. Betsworth and Hansen (1996) found that the first three: professional or personal connections – *networking* in contemporary parlance; unexpected advancement; and being in the right place at the right time – *good luck* - were the most frequently cited by their respondents.

Research that is more recent suggests the experience of chance seems common in contemporary life. In a survey completed by 772 high school and university students, Bright, Pryor and Harpham (2005) using the same descriptors as those in the Betsworth and Hansen (1996) study, found that most of this group reported chance events as having an influence on their career decision making, and some referred to multiple chance factors as being influential. The positive chance responses were: personal or work relationship (44%), previous work or social experience (60%), barriers to your previous career plan (36%), injury or health problem (11%), unintended exposure to a type of work or activity that you found interesting (43%), exposure to a type of work or activity that you did not enjoy (33%), a major change of residence over which you had little control (11%), and any other unplanned event (10%).

Bright, Pryor, Wilkenfeld and Earl (2005) used eight categories similar to, or the same as, those used by Betsworth and Hansen (1996) to describe chance events. They used these descriptors when they researched career decision-making among university students. They identified several instances of significant impact of unplanned events, particularly previous work or social experiences (61%), positive work experience (44%), personal or work relationship (43%) and negative work experience at thirty one per cent (Bright, Pryor, Wilkenfeld & Earl, 2005, p.30).

The potential for a qualitative methodology to delve more deeply into individual experience and motivation was demonstrated by Williams et al. (1998). Williams and colleagues

How do chance and uncertainty influence the career development of adults?

studied the effect of chance on women noted for their work in counseling psychology. These 13 post-doctoral psychologists, aged between 43 and 66, had achieved significant success in academia by the time the study took place. All but one had completed her doctorate. Each woman attributed her career outcome to the kind of contingent factors referred to earlier - interest in and commitment to the area of work, and adequate skills and ability to do the job. However, each psychologist was able to identify at least one chance occurrence that influenced her career path, some placing more significance on the chance event than did others.

Arising from these responses, Williams and her team established two categories of chance event, and four subsets common to both categories. The chance categories divided into two groups: (a) those where another person had intervened; and (b) those that were random. In either case, the researchers then identified responses based on four other factors common to either category:

- the timing of the event,
- the stage in their career development,
- the internal readiness of the person to respond to the chance event, and
- the readiness factors external to the person.

An interesting aspect of this study was that the response to the unplanned event was influenced by the maturity of the worker. The more academically mature - that is those experiencing the chance event after having received their doctorate - felt less pressured and more in control of the circumstance than those experiencing the event before they had completed their studies. Therefore, in this instance, the context of the chance event was significant in determining its level of influence (Williams et al., 1998). A complication with this research study is that the information is reported retrospectively. This is a characteristic of many studies in the career development area as the truth of these situations is only revealed over time and after the fact. Vagaries of attribution bias are a difficulty in studies seeking historical reports from a subject's memory (Shanahan & Porfeli, 2006). However, it is apparent from the research that the nature of a chance event and its impact on a person's career outcome has many variables. The context - the lived experience of the individual perception - influences the effect and impact of the chance event. The specific response to the chance event indicates the relevance of the agentic aspect of chance factors in influencing an outcome.

2.8 Studies emphasizing the importance of context

The environment of the chance event requires close analysis for the nature of the event to be fully understood. Krantz (1998) explored the vagaries of chance. He identified a fear factor in people's attitude to unpredictability. Krantz suggested there is a tendency in human nature when reporting on happenings for people to deny the existence of chance in many cases where the randomness of occurrences is evident. He called for an overhaul of the social science worldview committed to focusing on "lawfulness, predictability and control" (p.93). It is possible the reactions people give to the reporting of positive chance events differs from the reactions exhibited toward negative chance events. People are more inclined to be positive about the impact of favorable events, but tend to under report the reality of unfavorable chance events (Krantz, 1998).

A further dimension of context is the individual's openness to intuition. Guindon and Hanna (2002) reported the experiences of three clients' experience of *synchronicity* to emphasise the possibility of chance events occurring in the career development process. In each case, these coincidences enabled the client to find work that gave true meaning to their lives. The researchers' point is that a person's openness to messages and a kind of intuition or spiritual guidance can facilitate a chance event that influences a person's career development significantly.

The person's outlook or attitude to the world is a further contextual factor in the study of chance and career. The concept *locus of control* refers to the extent to which a person feels he or she is able to influence events that have an impact on their life (Craig, Franklin & Andrews, 1984). When researching the thoughts of 200 males at high school, Denga (1984) found that those with an internal locus of control placed less emphasis on the element of chance influencing their career; while those with an external locus of control felt the opposite. Subsequent studies have not replicated Denga's finding in a convincing way, although Bright et al., (2005) did find some support for the effect of external locus of control on perceptions of the impact of chance among a group of 97 undergraduates and 40 older students.

Hirschi (2010) looked at the personality and dispositional characteristics of 229 Grade 11 and 245 Grade 8 and Grade 9 students. He found that two thirds of the students reported chance events as being influential in their transition from school to work and that the influence of chance was more significant for the disadvantaged students. He found too, that "the degree to which

How do chance and uncertainty influence the career development of adults?

chance events affect career decisions and development depends on the specific kinds of transitions people undergo” (p.45). An understanding of context is so important. Bosley, Arnold and Cohen (2009) make the point that the unique interpretation and responsiveness of each individual influences the career development outcome. They stress the capacity of qualitative studies to capture and reveal the unique circumstances and responses of the individual (Bosley, Arnold & Cohen, 2009). Qualitative research offers the possibility that each individual can contribute the distinctively personal details, perspectives and insights of his or her own story.

In a series of three studies aimed at discovering how people perceived chance occurrences, Bright, Pryor, Chan and Rijanto (2009) found that they viewed them as either independent, one-off occurrences, or concatenated – a series of related events. Chance was more often perceived as concatenated with one chance circumstance prompting more subsequent chance events. Other findings were that highly influential chance events are remembered more easily than other chance happenings; and that individuals with an external locus of control are more likely to report negative chance events (Bright, Pryor, Chan & Rijanto, 2009).

The need to increase the client’s capacity for awareness of chance was the focus of Mitchell, Levin and Krumboltz (1999). Their concept of *Planned Happenstance* emphasizes the nurturing of agentic skills that can assist in an individual’s career development. Their theory was an extension of cognitive learning theory. They suggested the development of curiosity, persistence, flexibility, optimism and risk-taking as central to the maximizing of opportunity for a person’s career (Mitchell, Levin & Krumboltz, 1999; Krumboltz, Foley & Cotter, 2013). The principles of the *Planned Happenstance* theory appear sound. Chien, Fischer and Biller (2006) found that teaching of metacognitive skills along *Planned Happenstance* principles was effective with Taiwanese students, but there is little other evidence of research flowing from this theory.

2.9 Studies of adults and the value of qualitative inquiry

The research of Williams et al. (1998) with adult female psychologists was referred to earlier in this chapter. Other researchers have also used a focus on particular occupations or groups of adult workers who had experienced a chance event during their career. Mallon and Cohen (2001) sought to gain insights into the perplexing questions about career change of 41 women aged between 32 and 55 years, who left their original jobs in large organizations to move into self-employment. To address this challenge the researchers chose to use “an explicitly

How do chance and uncertainty influence the career development of adults?

interpretative and qualitative stance rooted in a life history methodology” (Mallon & Cohen, 2001, p.220). They conducted in-depth biographical interviews with the women “to understand how participants accounted for this career transition” (Mallon & Cohen, 2001, p. 221). They found common themes of dissatisfaction with the existing workplace, and a yearning for personal growth and a need to integrate their values more fully into their working life had prompted the career change. A further common theme was the desire for an improved balance in their life beyond the workplace. The authors admit the need for much more focused studies “before we can make larger claims of paradigmatic change” (Mallon & Cohen, 2001, p.229). One value of this study is the way its use of qualitative methodology reveals trends, which would be difficult to identify using less intrusive methods.

Diaz de Chumaceiro (2004) made case studies of four female orchestra conductors. These revealed the relevance of serendipity and “pseudoserendipity” (p.347) in the development of their highly acclaimed careers. Diaz de Chumaceiro stresses the relevance of hard work, talent and mastery of skills and suggests these are common to many creative artists but that some level of serendipity is an important but overlooked component of the recorded career history of these creative artists. Their combination of dedication, good luck and fortuitous networking is testament to the principles presented in *Planned Happenstance* theory (Mitchell et al., 1999).

Luck and chance events extend to many aspects of peoples’ working lives. This is exemplified in the research of Bornat, Henry and Raghuram (2011), who studied the careers of South-Asian trained doctors who migrated to the UK. Many of these doctors forged careers in geriatric medicine in the UK National Health Service.

Drawing on historical data from interviews with 54 doctors Bornat et al. (2011) supplemented it with further interviews with a group of 60, mostly male doctors. They elicited stories of the career development of a migratory group of professionals whose careers encountered many barriers including racism and other forms of discrimination. A combination of dedication, fortitude and resilience enabled these doctors to experience career success and satisfaction and in many cases, innovation, in the field of geriatric medicine. One doctor, representative of the corpus of those interviewed, reported that his career trajectory had been the result of “seventy-five per cent of your hard work, twenty-five percent of your luck” (p. 349). This research reports the importance of qualitative biographical research in identifying and

How do chance and uncertainty influence the career development of adults?

understanding the previously ignored relevance of luck and chance in the fashioning of the careers of these doctors (Bornat et al., 2011).

More recent studies commonly report chance events as relevant and even prominent factors in career development. Working from an initial sample of 55 directors of visual media Mainemelis, Nolas and Tsirogianni (2015), studied the biographical careers of 12 acclaimed Film Directors. Their focus was on the boundaryless career (Arthur, 1994; Arthur & Rousseau, 2001), and the “roller-coaster” (Mainemelis et al., 2015, p.17) nature of the success and failure experienced by these film directors over their lifetime. They observed the merit of qualitative research to reveal “approaches that juxtapose chance encounters, social networks and protean orientations” (p.18) in interpreting a director’s career development. They found that the film directors’ careers were replete with serendipitous events and called for more emphasis on research into chance events and the effect such events had on careers (Mainemelis, Nolas & Tsirogianni, 2015).

Peake and McDowall (2012) came to similar conclusions after researching the mid-career transitions of seven tertiary educated workers who had experienced a significant change in occupation. Again, using a qualitative approach, narrative analysis, they developed a life story for each participant. Participants reported disillusion, lucky breaks and a sense of “finding a fit” (p.402) as the ultimate solution to each career dilemma was resolved. The process involved negotiating failure as well as experiencing success, a pattern also noted by Mainemelis et al., (2015) in their study of film directors. Peake and McDowall (2012) call for a “greater focus on the impact of open-systems and “chaotic” behaviour - including chance and non-linearity” (p. 406).

Marc Lippman (2012) is another doctor recounting many instances of serendipity in his career as the challenges and opportunities unfolded during his lifetime as a researcher, teacher and practitioner. Lippman describes the subtleties of an individual’s life journey in his autobiographical report recounting his entry and passage into a career in medicine and medical research. Aspects of protean and boundaryless thinking are evident in Lippman’s thinking. It is clear that the level of reasoning and detail such as is given here, warrants a qualitative approach to some aspects of research on career development (Lippman, 2012).

Bland and Roberts-Pittman (2013) compared the merits of the *Chaos Theory of Careers* and existential forms of career counselling, both of which they saw as giving greater agency to

How do chance and uncertainty influence the career development of adults?

the client. Their study was literature-based rather than dealing experimentally with clients. Most of their focus was with the challenges faced by adults in various aspects of their career. They endorsed the focus on openness, adaptability and the integration of values and intuition into the decision-making processes inherent in both the *Chaos Theory of Careers* and existential career counselling.

These studies indicate the frequency of chance events and the perceived impact of these events on peoples' career development. They also point to the sophistication of qualitative research when seeking a rich understanding of human experience and behaviour.

However, translating the theory emanating from these ideas into practical instruction provides further challenges.

2.10 Experimental use of the Chaos Theory of Careers

Studies by Pryor and Bright (2003a; 2003b), and Peake and McDowall (2011) both of which used the principles of the *Chaos Theory of Careers*, were reported earlier in this chapter. The Chaos Theory of Careers is also leading to developments in career counselling strategies in schools and universities.

Borg and colleagues have experimented with a butterfly model of careers with secondary students (Borg, Bright & Pryor, 2006, 2014). Following these early studies, Borg, with the co-operation of students and staff in New South Wales secondary schools, completed a Ph.D. thesis on the relative benefits of the *Chaos Theory of Careers* and Trait and Fit instructional models (Borg, 2015).

His work compared the effectiveness of instruction involving *Chaos Theory of Careers* principles and strategies with instruction using traditional Trait and Fit methods. The key emphasis in the study was to include *change* as a key concept and attempt to inculcate it into student thinking and processes related to career development. The potential for lasting benefit is evident in the research, although the duration period (28 days) is brief in a careers context. Nevertheless, these are positive findings.

McKay, Bright and Pryor (2005) assessed the merit of using a counselling approach based on the Chaos Theory of Careers. Sixty university students were divided into three distinct groups: Trait and Match, Chaos and a Control group. Using pre-test post-test techniques, McKay et al. found that, while all students benefited from counselling interventions, the process

How do chance and uncertainty influence the career development of adults?

strategies used with the Chaos group were more enduring in encouraging open-mindedness about future career outcomes. Over time (one month in the study), students in the Trait and Match and Control groups tended to maintain more irrational choice options than did the Chaos group (McKay et al. 2005).

The use of video input as a counselling technique was trialled by Davey and colleagues. These researchers reported that the university students showed improved confidence and decreased stress levels after viewing interviews featuring concepts related to themes emphasised in the *Chaos Theory of Careers* (Davey, Bright, Pryor, & Levin, 2005).

Loader (2009, 2011) has used *Chaos Theory of Careers* techniques for several years with students in a secondary school. In his most recent paper, a four-lesson plan is outlined in which students are introduced to *Chaos Theory of Careers* concepts and strategies via video and discussion, the use of collages, and exercises to illustrate chaotic situations in everyday life. Students are encouraged to develop their own opportunism, and the lessons can be used to blend in with other career education and counseling (Loader, 2009, 2011).

Schlesinger and Daley (2016) report on a series of *Chaos Theory of Careers* inspired interventions with university undergraduates. The students were encouraged to explore, prepare, start and adapt – an “EPSA model” (Schlesinger & Daley, 2016, p.88). This provided a means to engage with the realities of career development in the post-modern, chaotic world. Schlesinger and Daley (2016) introduce a visual representation of their EPSA model to illustrate the continuous circular process of EPSA. After the formal introduction of the EPSA method across two careers centres, students showed an increased capacity to tolerate and adapt to the dimension of “uncertainty” (p.93).

These studies represent a small beginning, which, from the reported results, shows promise. They indicate that the principles suggested by Pryor and Bright (2011) can be translated into a praxis that has meaningful impact. Nowotny (2015) suggests that throughout society, the perception of uncertainty can be richer and more nuanced. Patton, M. Q., (2011) provides a theoretical method enabling systematic progress toward emergent, incremental change. As detail of these methods is disseminated more widely, further exploratory and successful practices are likely to emerge.

2.11 Gaps in existing research

Given the diversity of occupations and socio-economic groups and the lifelong scope of career development, there have been very few studies on the impact of chance and uncertainty on career development in the past century. Positivist perspectives have dominated research in the careers field until recent years. There has been a focus on the needs of young people in school or tertiary levels of education. This is an early phase of the life span identified by Super (1957, 1980). This literature review identified less than ten studies to do with chance experiences among adults. Each of these was job specific – such as psychologists, orchestra conductors and film directors. There appear to be few studies of a general nature and few that focus on specific cultural groups.

There are many more dimensions of career development open and susceptible to chance factors. When the occasional number of research studies is compared to the number and variety of job categories within ANZSCO, the paucity of research in this field becomes obvious. ANZSCO (2013) has 1340 occupational groups with subsets of additional jobs within many of these occupation groupings, (P. Curtis, Australian Bureau of Statistics, personal communication, April 2015). This suggests there are several thousand different jobs that could be open to research. Each of these job areas intermingles with differing economic, social and ethnic groups in various communities. In this sense, it is impossible to register all of the groups not studied. For instance, in the modern globalizing world described in Chapter One of this study (Blustein, 2013; Castells, 2011), there are many gender based, ethnic and minority groups that may all experience chance events in their working life.

The general point is that, to date, studies focusing on managing change, chance events, and uncertainty to do with career development are rare. Given the above, there is a multitude of directions and areas open to research. In this study, I will investigate the *impact of uncertainty and chance on the career development of adults*.

Research Problem

This study will explore the occurrence of chance events affecting career development among adults during their working lives. It will investigate the frequency and types of chance events. It will also explore the reactions of those adults in their responses to such chance events. It will investigate the relationship between chance events and the ambiguity and uncertainty associated with the chance events.

How do chance and uncertainty influence the career development of adults?

Research data will be gained from alumni of an Australian University College who report having experienced a chance event, which affected their career development. Data gained from this group will be compared with data from other alumni and from opportunity samples drawn from other Australians. A key to researching complexity is to refrain from seeking final, ultimate or resolving approaches to understanding. In the tradition of Blumer's (1954) "sensitizing concepts" and Patton M.Q.'s (2011) "developmental evaluation", questions beyond the original research question will evolve as the research progresses.

Research Purpose

The research purpose is to investigate the breadth and diversity of responses to chance events and uncertainty and their effects on the career development of adults. A further purpose is to identify patterns of behaviour and strategies, which participants in the research have used to negotiate the chance events and uncertainty that they have experienced.

Research Question

The primary research question is:

How do chance and uncertainty affect the career development of adults?

Chapter Three - Research Design

3.1 Theoretical Framework

The conceptual framework for these studies is based largely on the work of Pryor and Bright (2011). The *Chaos Theory of Careers* postulates that the significance of chance events as a factor in career development had been overlooked historically, and that such events are an even more significant factor in contemporary circumstances.

In Chapter One, I indicated the way in which understanding and interpretation of the concepts of *career* and *career development* have evolved during previous eras. Conceptual evolution such as this is a normal and continuing process familiar to scientists in general (Kuhn, 1962, 1976; Patton, M. Q., 2011) and career theorists specifically (Patton & McMahon, 2014; Savickas, 2002). Development of the *Chaos Theory of Careers* and the structure and development of this research study continues that process.

3.2 Epistemology

Pryor and Bright (2011) address the issue of methodology and the broader epistemological framework in which their work is located. They argue that there is a dichotomy between the approaches prevalent in traditional career theorizing and the challenges presented to career theorists responding to the insights and understandings about the nature of complex systems. Traditional models, reflecting a closed system approach, were predicated on the premise of identifying significant factors and controlling for their level of influence under given circumstances.

Even so, Pryor and Bright (2011) argue that an either/or approach to philosophical positions regarding these complexities is inappropriate. Sampson (2009) agrees, and supports the constructive blending of the strengths of modern and postmodern methodologies to achieve cost effective, broadly based and socially aware career guidance services for both individuals and large populations. “Practitioners need to determine which interventions, either modern or postmodern, work best with which individuals and in which settings” (p.94).

How do chance and uncertainty influence the career development of adults?

Awareness of complexity fosters an open systems approach where no influence is ignored and the goal of understanding supplants that of identifying cause and effect. As Pryor and Bright (2011) suggest, this introduces the “need for a new language to achieve the potential of the chaos theory of careers” (p. 203). Almost a decade earlier they had sensed this when they stated:

Individuals and their environments are viewed as chaotic in the sense that they are complex open adaptive systems which are extremely sensitive to change in initial conditions. As a consequence of both their complexity and this sensitivity, such systems experience non-linear causality - the causes and effects of events that the systems experience are not proportional. (Prior & Bright, 2003a, p.16)

Engaging with these issues creates a tension for the career counsellor between listening to the stories of the *individual actively engaging in personal career development*, and attending to the *dynamic complex environment with its multiple systems and subsystems*. There are many perspectives. By their nature, both *perspectives* and *environments* are prone to constant change. In addition, change, and the possible pathways it presents, is “inherently and intractably uncertain” (Pryor & Bright, 2011, p.202). This elevates the role of unpredictability in the shaping of careers.

Pryor and Bright (2011) demonstrate respect for the historical contributions of trait and factor theory (Holland, J. L., 1973, 1997; Super, 1957, 1980), and the initiatives of constructivists (Amundson, 2003; Brown, 2002; Savickas, 2002) which have arisen in postmodern era. However, they are of the conviction that some form of reality is an essential structural component of sound career theory and guidance. They refer to this epistemology as “constructive realist” (Pryor & Bright, 2003a, p.18). In identifying the influences and processes in peoples’ lives, Bright and Pryor (2014) suggest “human knowledge and experience comprise an inextricable blend of the objective and the real with the subjective and perceived” (p.105).

They contend that the *Chaos Theory of Careers* approach provides a blend of context, open systems thinking, and constructive realist epistemology. This open-minded, dynamic and holistic approach is augmented by the use of mixed methods. This enables multiple lens with which to approach the research (Creswell, 2013).

The Theoretical Framework applied in this study is depicted in Table 4.

How do chance and uncertainty influence the career development of adults?

Table 4: Theoretical Framework

Ontology	Epistemology	Theoretical Perspectives	Methodology	Methods	Data Analysis
Heuristic	Realistic Constructive	Constructivist Realist Chaos Theory	Mixed Methods	Surveys Interview Focus Group	Statistical Coding

The aim and purpose of the six studies is demonstrated in Table 5.

Table 5: Table demonstrating the aims and purpose of each study

Study	Title	Rationale for Study	Aim and Purpose
Study One Survey	Survey 1 - Chance Events in Career Development	The literature review suggests chance events affecting career development are common. This survey should reflect this and provide a more detailed understanding of the frequency and nature of the most commonly experienced career-influencing chance events. Participants who report experiencing such a chance event will be approached to participate in interviews for Study Two.	What is the frequency of chance events as a factor in career development for this cohort? What types of chance events are most common? How much control does a person have over chance events? Participants who have experienced a chance event affecting their career development will be included in Study Two.
Study Two Interviews	Interviews with Survey 1 subjects reporting experience of chance events in their career development.	Use the main themes in Survey 1 responses to guide questioning. Interviews enable the research to acquire rich data on chance events and uncertainty from resilient and able adult workers.	How important is openness to new ideas? How much control does a person have over chance events? How do people deal with uncertainty? How do people feel about and respond to chance events? Does a person's life-stage affect the type of chance events they experience? Can the term, "right place at

How do chance and uncertainty influence the career development of adults?

Study	Title	Rationale for Study	Aim and Purpose
			the right time”, be explained more clearly?
Study Three Survey	Survey 2 – Categorization of chance events by college alumni Toward a taxonomy of chance events	Arising from Study Two interviews, this study seeks to determine whether each college alumnus categorizes chance events in the same way as their peers.	Use the most frequent categories from the coding analysis to assess aspects of categorization of chance events. Is recognition of types of chance events consistent among the college alumni?
Study Four Survey	Survey 3 - Categorization of chance events	This study seeks to determine whether subjects in an opportunity sample categorize chance events consistently. This will enable comparison between this sample and the interview group, and this sample and the College Alumni who participated in Study Three.	Use the most frequent categories from the coding analysis to assess aspects of categorization of chance events. Is recognition of chance event agency consistent among an opportunity sample of subjects?
Study Five Survey	Survey 4 – Recognition of chance events by an opportunity sample	A theme occurred in the interviews of a person needing to recognize a chance event for it to be meaningful to her or him. This study uses an opportunity sample of subjects to establish if there is variability in people’s identification of a chance event.	Use a simulated chance event survey to assess peoples’ recognition of chance events. Is recognition of a chance event consistent among an opportunity sample of subjects?
Study Six Focus Group	Focus Group – Management of and response to chance events	Subjects who were interviewed in Study Two participate in a Focus Group. This offers the opportunity to gain a richer awareness of the subjects’ motivations, insecurities and behaviours regarding chance events.	How do people respond to chance events? How are complexity, uncertainty and ambiguity related to chance events? How does individual agency affect the chance events?

How do chance and uncertainty influence the career development of adults?

3.3 Overview of Research Design

The research involved six studies. This included four surveys, one set of interviews, and one focus group.

3.3.1 Phase one.

The first phase of the research was conducted in 2014 and 2015. It included Study One, a survey about “Chance Events and Career Development”; and Study Two, a series of interviews. The research design for Study One is shown in Table 6.

Table 6: *Table demonstrating the Research Design for Study One*

Study	Title
Study One Survey	Chance Events in Career Development
Background	The literature review supports the view that chance events are a factor in career development (Betsworth & Hansen, 1996; Hirschi, 2010; Peake & McDowall, 2012). This is endorsed by Pryor and Bright, (2011), whose Chaos Theory of Careers claims that chance events occur more frequently than is commonly acknowledged in the practice of careers guidance.
Aims	To compare the frequency of chance events as a factor in career development for this cohort with frequencies established in the literature. To identify which categories of chance event are reported most frequently by this group of subjects. To explore the circumstances of the chance event, and whether the event was an isolated event or connected to other chance events. To allow subjects to describe their experience of chance events in open-ended responses. To identify subjects who report the experience of chance events affecting their career development, and who are willing to be interviewed about this experience.
Hypotheses	That the reported frequency of experience of chance events will be similar to previous levels of chance event as reported in the literature. That there will be a diversity of circumstances among the chance events reported. That a number of respondents who have experienced chance events during their career will be willing to participate in an interview.

How do chance and uncertainty influence the career development of adults?

Study	Title
Design	<p>Study One Survey had three sections.</p> <p>Section 1 asked for general demographic data, including gender, age, income and details about work history.</p> <p>Section 2 included questions about the subject's response to chance events. One set of questions related to chance events which had a positive effect on career development. A second set of questions asked about chance events which had a negative effect on career development.</p> <p>Section 3 asked subjects willing to be interviewed about their responses to provide contact details.</p> <p>The complete survey is in Appendix A</p>
Subjects	86
Procedure	An online survey was emailed to 250 alumni of an Australian University College.
Expected Theoretical and Practical Implications of the results	<p>Study One Survey is expected to provide feedback consistent with earlier studies regarding the frequency of chance events affecting careers (Betsworth & Hansen 1996; Bright, Pryor, Wikenfeld & Earl, 2005), and to assist in identifying which categories of chance event are reported most commonly. It will indicate whether chance events were singular occurrences or concatenated – a series of connected events, (Bright, Pryor, Chan & Rianto, 2009), and to what extent the person experienced a sense of control regarding the chance event (Bright et al., 2009; Bright, Pryor & Harpham, 2005; Hirschi, 2010).</p> <p>Study One Survey will also identify subjects willing to participate in a one-to-one interview about their experience of a chance event(s). Background data and open-ended responses will assist in the preparation of interviews by providing details unique to each interview participant.</p>
Analysis	<p>The reported frequency of chance events at 60% was consistent with previous studies.</p> <p>25% of chance events were concatenated.</p> <p>This cohort exhibited responses consistent with an internal locus of control (Rotter, 1966).</p> <p>This cohort reported no experience of negative chance events.</p> <p>Over 60% of respondents indicated a willingness to participate in an interview, but just over 20% of these had reported a chance event affecting their career.</p>

How do chance and uncertainty influence the career development of adults?

Study Two involved 20 interviews. The research design for Study Two is shown in Table 7.

Table 7: *Table demonstrating the Research Design for Study Two*

Study	Title
Study Two Interviews	Interviews with subjects who reported during the Study One Survey of having experienced at least one chance event in their career development.
Background	<p>Themes in Study One Survey responses provided a guide to formulate the questions asked in the interviews.</p> <p>Ten males and one female from among the college alumni met the criteria to be interview participants. An additional nine females of similar educational background were sourced using snowballing techniques (McMurray, Scott & Pace, 2004). Each of these females completed the Study One Survey prior to participating in the interview.</p>
Aims	<p>To acquire rich data on chance events which have impacted on the subject's career development. To explore the circumstances and processes involved in resolving the effects of the chance event. To use probe questions to explore how much control a person has over chance events. To identify the relevance of openness to new ideas. To understand more about how people deal with uncertainty.</p> <p>To explore whether subjects can explain the meaning of "being in the right place at the right time" more clearly.</p>
Hypothesis	There was no specific hypothesis in this Study. The premises were that the interviews will reveal rich data unavailable via surveys; and that coding analysis of the data will provide insights about individual responses to chance events.
Design	Interviews were semi-structured. Each subject completed the Study One Survey prior to interview. This provided an outline of the subject's work history and confirmed his or her experience of at least one chance event. Subjects were emailed a confirmation letter with an outline of the interview content. This included topics relating to the chance event and the level of control they had experienced. A sample of the letter is at Appendix B. Subjects were invited to include any other relevant content before completing the interview.
Subjects	10 male and 10 female graduates from Australasian Universities
Procedure	Interviews were face to face where possible. Five males were interviewed by phone, as they were living interstate. All interviews were recorded and then transcribed by the author. A copy was forwarded to each subject for verification of the transcription.

How do chance and uncertainty influence the career development of adults?

Study	Title
Expected Theoretical and Practical Implications of the results	<p>Study Two Interviews – will provide a greater depth of understanding to aspects of participants experience of chance events (Maxwell, 2011; Williams et.al., 1998). Interviews will allow exploration of the context of the chance event(s), (Pryor & Bright, 2011; Cabral & Salamone 1990; Saldana, 2009).</p> <p>Interviews will focus on three specific topics - chance events; the level of control experienced; and any experience of uncertainty – as well as other points that the participants raise during the interview.</p> <p>Participants will be asked to explore what meaning they attach to the term “being in the right place at the right time”.</p> <p>Coding will enable development of themes to explore and explain the processes that participants experience, and the strategies they use to manage the impact of chance events.</p>
Analysis	<p>110 chance events were identified within the transcripts of interview. The six most frequent categories of chance event accounted for over 70% of the chance events reported by the subjects.</p> <p>Respondents suggest that “Being in the right place at the right time” refers to being available for, and interested in an opportunity which presents unexpectedly</p> <p>Chance events act as a marker of uncertainty in people’s lives.</p>

3.3.2 Phase two.

The second phase of the research was conducted in 2016 and 2017. It involved Studies Three, Four, Five and Six - three surveys and a Focus Group. These four studies are represented in Table 8, Table 9, Table 10 and Table 11.

Study Three Survey was prepared after analysis of the interviews. College alumni completed this survey. The research design for Study Three is shown in Table 8.

Table 8: Table demonstrating the Research Design for Study Three

Study	Title
Study Three Survey	Study Three Survey: Categorization of chance events affecting career development by a group of college alumni.
Background	The interviews revealed a level of confusion among the interview participants about the precise nature and characteristics of a chance event affecting career development.

How do chance and uncertainty influence the career development of adults?

Study	Title
Aim	To explore the level of consistency among college alumni regarding identification and classification of chance events affecting career development.
Hypothesis	That there will be a degree of variability in the recognition and categorization of chance events affecting career development among college alumni.
Design	Vignettes using text from interview transcriptions taken from Study Two were presented in an online survey. Some modifications to names, workplaces and locations were made to protect the identity of individuals depicted in the vignettes. Subjects were asked to identify a chance event, and to categorize it using descriptors common to the literature, and used in the Study One Survey.
Subjects	29
Procedure	Study Three Survey was emailed to approximately 200 college alumni. The email list almost the same as the email list used in Study One Survey. Minor adjustments were made to maintain anonymity of the interview participants, and to comply with protocols at the University College.
Expected Theoretical and Practical Implications of the results	Study Three Survey – Research in the Social Sciences is beset with problems of definition (Blumer, 1954; Patton, M. Q., 2011). Current terminology describing chance events (Betsworth & Hansen 1996; Bright, Pryor, Wilkenfeld, & Earl; Rojewski, 1999), is used in this study. Analysis of interviews suggested, (i) a need for greater clarification of what a chance event is, and (ii) some confusion about which descriptor best describes the nature of a specific chance event. This survey will assist in establishing whether this confusion exists, and if so, whether it is particular to the interview participants or extends to their peers <i>within</i> the College alumni.
Analysis	Alumni recognized chance events as occurring in the vignettes used in the survey. Alumni varied in their recognition of a chance event. Alumni varied in their allocation of categories to chance events.

Study Four Survey was prepared after analysis of the interviews. This survey was completed by use of an opportunity sample of subjects. The research design for Study Four is shown in Table 9.

Table 9: *Table demonstrating the Research Design for Study Four*

Study	Title
Study Four Survey	Study Four Survey: Categorization of chance events by an opportunity sample of subjects

How do chance and uncertainty influence the career development of adults?

Study	Title
Background	Is there a difference between the interpretation of college alumni and another group of people in their identification and classification of chance events affecting career development?
Aims	To establish the degree of consistency regarding identification and classification of chance events affecting career development between a cohort of college alumni and subjects sourced by opportunity sampling. To compare these results with those obtained in the Study Three Survey, completed by college alumni.
Hypothesis	That there will be a degree of variability in the recognition and categorization of chance events affecting career development among a group of people. That there will be no difference in identification and classification of chance events affecting career development between a cohort of college alumni and an opportunity sample of subjects. If confirmed, this will indicate widespread variability among populations regarding the recognition and categorization of chance events.
Design	Vignettes using text from interview transcriptions taken from the Study Two interviews were presented in an online survey. Some modifications to names, workplaces and locations were made to protect the identity of individuals depicted in the vignettes. Subjects were asked to identify a chance event, and to categorize it using descriptors common to the literature, and used in the Study One Survey.
Subjects	105
Procedure	An online survey was emailed to an opportunity sample of individuals
Expected Theoretical and Practical Implications of the results	Study Four Survey - Research in the Social Sciences is beset with problems of definition (Blumer, 1954; Patton, M. Q., 2011). Current terminology describing chance events (Betsworth & Hansen 1996; Bright, Pryor, Wilkenfeld, & Earl, 2005; Rojewski, 1999) is used in this study. Analysis of interviews suggested, (i) a need for greater clarification of what a chance event is, and (ii) some confusion about which descriptor best describes the nature of a specific chance event. This survey will assist in establishing whether this confusion exists, and if so, whether it is particular to the interview participants or extends to an opportunity sample of subjects <i>beyond</i> the College alumni.
Analysis	Over 60% of the Australian citizen sample recognized chance events for all but one vignette. A significant minority did not confirm the existence of a chance event, being either unsure or disagreeing with that interpretation. Similar variation occurred in the categorization of a chance event. This level of variation was similar to results for the Study Three survey of alumni.

How do chance and uncertainty influence the career development of adults?

Study Five was a survey prepared after analysis of the interviews. Survey 4 was completed by use of an opportunity sample of subjects. The research design for Study Five is shown in Table 10.

Table 10: Table demonstrating the Research Design for Study Five

Study	Title
Study Five Survey	Study Five Survey: Recognition of chance events by an opportunity sample of subjects
Background	Interviews completed in Study Two revealed a level of confusion among the subjects about the identification of a chance event affecting career development.
Aim	To explore the degree of consistency in identification of chance events affecting career development among an opportunity sample of subjects.
Hypothesis	That there will be a significant degree of variability in the recognition of chance events affecting career development among a random sample of adults.
Design	Vignettes depicting chance events extracted from the interview transcripts were presented in an online survey. These included verbatim transcriptions, adaptations of the speaker's story, and two events which were not chance events. These were included to ascertain each subject's level of discrimination about chance events.
Subjects	150
Procedure	An online survey was emailed to individuals and a business network, and posted on Facebook.
Expected Theoretical and Practical Implications of the results	<p>Study Five Survey - Research in the Social Sciences is beset with problems of definition (Blumer, 1954; Patton, M. Q., 2011). Current terminology describing chance events (Betsworth & Hansen 1996 Bright, Pryor, Wilkenfeld, & Earl, 2005; Rojewski, 1999) is used in this study.</p> <p>Analysis of interviews suggested a need for greater clarification of what a chance event is.</p> <p>This survey will assist in establishing whether this confusion exists, and if so, whether it is particular to the interview participants or extends to an opportunity sample of subjects outside the College alumni and by implication to broader sections of the population.</p>
Analysis	Australian citizens in the sample distinguished between vignettes describing chance events affecting career development and control examples, which did not include a relevant chance event. The sample recognized chance events within the vignettes. Their responses indicated variation in their recognition of a chance event.

How do chance and uncertainty influence the career development of adults?

Study Six involved use of a Focus Group after analysis of the interviews. The research design for Study Six is shown in Table 11.

Table 11: Table demonstrating the Research Design for Study Six

Study	Title
Study Six Focus Group	Study Six Focus Group - Management of and response to chance events
Background	Use of a focus group enables an in-depth study of the reasoning, motivations and behaviours of people (Krueger & Casey, 2009). Detailed discussion of issues experienced by people whose career development has been affected by a chance event will assist in understanding how people behave in these circumstances.
Aims	To explore the reasoning, motivations and behaviours of people experiencing chance events. To involve participants from the interviews completed in Study Two in reflective discussion about experiencing and managing chance events.
Hypothesis	There was no specific hypothesis in this Study. The premise was that detailed discussion in a focus group provides richer understanding of the impact of chance events affecting career development.
Design	The moderator led a structured discussion (Krueger & Casey, 2009). Documents prepared for the Focus Group are in Appendix C.
Subjects	There were five in total. Three participants were interviewees from Study Two, (1 F and 2M), a moderator, and the researcher participated in the Focus Group. Many potential Study Two interviewees were unavailable due to work and personal commitments, or were interstate or overseas resulting in a small number of participants.
Procedure	A moderator familiar with the topic chaired the Focus Group. The Focus Group met in a spacious, quiet location and the discussion was recorded and transcribed. The moderator used a whiteboard to note participant contributions and continuously reflect their comments. Documents prepared for the Focus Group are in Appendix C.

How do chance and uncertainty influence the career development of adults?

Study	Title
Expected Theoretical and Practical Implications of the results	<p>Study Six Focus Group – Member checking is a proven method of triangulation in qualitative analysis (Maxwell, 2013; Saldana, 2009). The inclusion of a moderator and the active participation of all parties in the focus group provide the potential to deepen understanding and modify tentative insights and conclusions as the coevolution of understanding continues within the research, (Patton, M.Q. 2011).</p> <p>Coding analysis provided insights into the impact of chance events on the interview participants. The use of a focus group assisted in confirming or rejecting findings identified in the analysis of interviews; and in further exploring the motivations and nuanced behaviours of interview participants.</p>
Analysis	<p>Focus Group discussion confirmed the findings of the Study Two coding analysis of chance events and their impact on individuals. Discussion of a schema depicting behaviour under uncertainty refined the sequential stages of strategy development a person explores during periods of uncertainty regarding job status and/or career development.</p>

3.4 Understanding and interpreting within complex systems

The divide between reductionism and postmodern thinking was discussed in Chapters one and two. Within this research project, the search for answers to the research question required an open and less definitively focussed approach, especially with regard to Study Two, the interviews, and Study Six, the Focus Group.

Post-modernism involves ways of thinking and understanding natural and human existence, which differ from earlier reductionist methodologies. Questions are asked with the likelihood that there may well be multiple answers, or that the answers may defy definition. Indeed, the obsession with certainty, which was characteristic within reductionism, has been replaced by respect for uncertainty, infinite possibility, and continuous emergence.

Understanding complexity warranted incorporation of “sensitizing concepts” (Blumer, 1954, p.7) into the design and application of Study 2 and Study 6. In developing Blumer’s ideas, Patton, M.Q., (2011) sees “sensitizing concepts” (Ex.5.6, p.148) as critical to the “abductive process” (p. 284-85) and inherent in investigations dealing with complex systems. Patton also emphasizes the need to adopt new concepts and terminology to better interpret the operational patterns, sensitivities and the inherently unpredictable nature of complexity. For instance, when explaining the behaviour of complex systems, he exhorts his readers to come to grips with the term *dynamical*:

How do chance and uncertainty influence the career development of adults?

This process is inherently dynamic – and even more often *dynamical*. Is that really a word? ... Yes, it really is a word. Get to know it and start to use it, for it describes a pervasive pattern of turbulent and uncertain change in complex systems. (p.135)

Patton, M.Q. (2011) enlists Glenda Eoyang, founding executive director of the Human Systems Dynamics Institute to explain the nature of change in dynamical systems and its relevance to the experience of everyday life. Eoyang describes it in the following way:

Dynamical change relates to the behaviour of complex systems, where patterns of change are completely unpredictable. Dynamical change is marked by:

- Fractal patterns when change at one level instigates or prevents change at another level...
- Intermittent jumps and cascades when the system seems stuck as tension accumulates then breaks loose with abandon
- Networks of connections that can either hold a system stable or move it quickly into new patterns
- Self organising patterns when interacting parts generate coherent system-wide patterns
- Dynamical change influences objects that are already in motion. It does not follow smooth dynamic paths because the number of variables is large and/or unknown, the system is open to outside influences, and the forces have potential to amplify each other. (Patton.M. Q., 2011, p.136)

3.5 Using imagery to represent complex systems

While the textual descriptions of Patton, M. Q., and others (Patton & McMahon, 2014; Pryor & Bright, 2011) are helpful, there is value in the use of images to represent these processes. The adage, *a picture tells a thousand words*, makes sense. The role of imagery in qualitative studies is well recognized (Banks, 2001; Buckley & Waring, 2013).

In Collins' (2016) studies of complex systems, she used hand drawn diagrams to reflect the practice of openness, use of sensitizing concepts and the pursuit of emerging insights and knowledge. She produced a series of drawings to depict these ideas claiming that hand drawings act

as a medium that reflects the qualities of fluidity, freedom in the design, possibilities of change, and the status of being unfinished. The intention of hand drawings, therefore, is to capture the constant interplay between the representation of complex phenomena, in

How do chance and uncertainty influence the career development of adults?

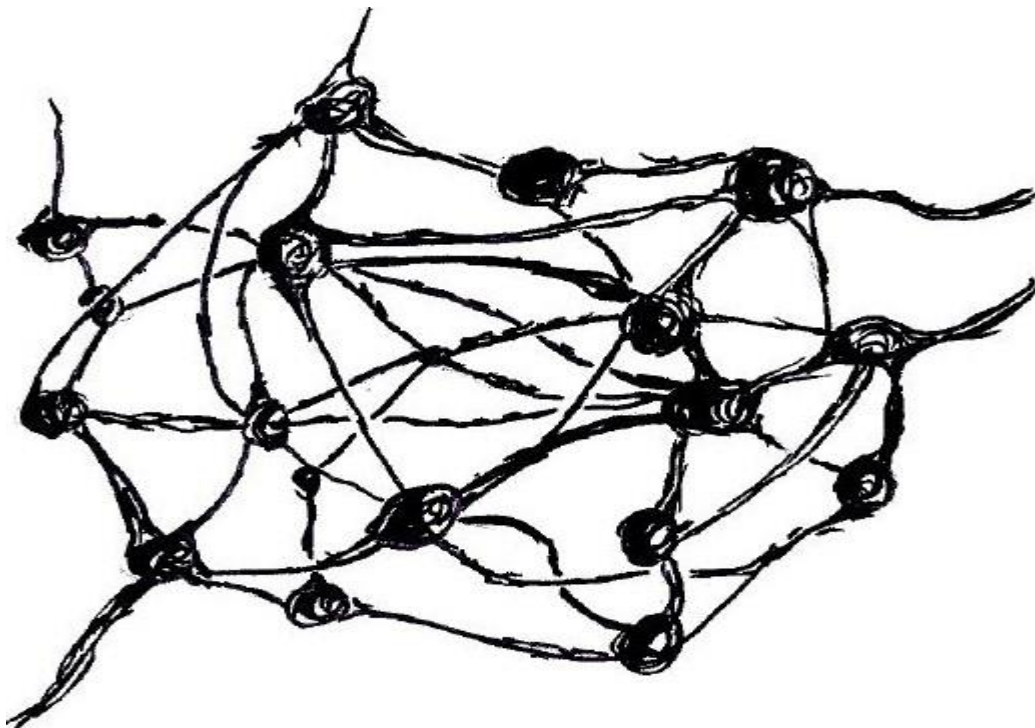
the form of hand drawings, and the actual complex world itself in which the drawer participates (Cilliers, 2001, cited in Collins, 2016, p.66)

Building on these ideas, Collins (2016), inspired by a pictorial image of neurons (p.82), used a series of hand drawn images to simulate the dynamic and iterative processes associated with developing and re-presenting coherent analysis of interactions within complex systems. Collins argues that:

drawings bring attention to the nonlinear connections characteristic of living systems, their unpredictability and their emergent patterns, both enabled and constrained by the actions of those within the system, with the intention of system sustainability. (Collins, 2016, p.83)

Collins' hand drawing which represents a complex system is reproduced here (with permission) as Figure 1.

Figure 1: *Collins' drawing representing a complex system*



Centrepiece of the conceptual framework, (Collins, 2016, p.83)

How do chance and uncertainty influence the career development of adults?

Images such as those used by Collins enable a more interactive method of communication. Words aligned within these images are suggestive rather than directive, and encourage imagination and creativity by both the reader and the author (Collins, 2016). This is designed to encourage a form of co-operative interpretation by the reader. The images created in any of the models approximate the workings of complex systems, but they can never fully replicate what is happening, as is the case with reductionist models. In models replicating complexity, boundaries, hierarchies and networks have vital relevance, but their parameters and operation are dynamical (Cilliers, 2001). Hence, Patton's encouragement of his readers to come to grips with the term "dynamical" (Patton M.Q., 2011, p.135).

These ideas are further explicated in Chapter Five.

3.6 Limitations and Variables

3.6.1 Personal disposition of the researcher

A starting point among the broader limitations to note is the personal disposition of the researcher. My interest in the topic and my avowed support for the principles inherent in the *Chaos Theory of Careers* colours my perception. I am looking for evidence of a truth, which I perceive to be the case. Although this disposition is the result of decades of lived and professional experience, it is important to maintain an open and quasi-objective approach to the research. At all times I attempted to achieve this by wide reading, close scrutiny of the assembled data, and a willingness to follow the path the data was presenting to me. I was continuously looking for evidence, which might disprove my hypotheses or that may lead to alternate hypotheses.

3.6.2 Uniqueness of the individual

Each person sees life from his or her own perspective. Further, many situations are open to variable interpretation. Therefore, the idea of seeking one objective truth is a distraction when investigating a person's career story. Some aspects of the person's life are affected by the undeniable realities of life, (Bright & Pryor, 2014; Pryor & Bright, 2011, p. 115). However, each person's perception, judgement and decision making is also important.

How do chance and uncertainty influence the career development of adults?

It is difficult to extrapolate from one person's experience to the experiences of others. Contextual subtleties will always exist. This needs to be remembered when generalizations are made based on the evidence in the research.

3.6.3 Cultural characteristics

There are several aspects of culture, which limit the generalizability of the research. The Study Two interviews focused on a distinctive cohort of socially able and successful professionals. These are a significant group in all advanced economies. However, it is important to recognize that many other, equally distinctive groups exist in those same economies. All participants in the Study One Survey, Study Two Interviews, Study Three Survey and the Study Six Focus Group had completed an undergraduate degree and had experienced genuine success in their career. They were highly resilient and adaptable, and in many cases had vast life experience and extensive networks.

The broader focus of this research looked at adult workers over 30 years of age. As such, it is not directly comparable with the many studies focusing on school age or undergraduate students whose level of life experience is much less developed. However, a potential value in these studies is that they seek to uncover patterns of behaviour of adults who have been successful in the workforce, especially in dealing with situations involving chance events and uncertainty.

3.6.4 Sample size

Sample sizes are drawn from a specific alumni group (Studies One, Two, Three and Six), and from opportunity samples (Studies Four and Five). This may limit the generalizability of the studies and should be considered before claims based on these studies are made.

3.6.5 Recall

Much of the data was sourced by relying on the recall of the subject. This is a legitimate and unavoidable method for a qualitative study, but the researcher is aware that some recollections may be subject to oversight, omission or attribution bias, or may be subject to reconstruction (Baddeley, 1992). It is also worth noting that the past does not tell us about the future. The insights gained from the data function as a guide only when projecting from them.

How do chance and uncertainty influence the career development of adults?

3.7 Limitations specific to a particular study

3.7.1 Specific to Study One Survey.

The cultural differences of this socially distinctive group – maturity, professional training and broad life experiences – were discussed in the section on cultural characteristics.

3.7.2 Specific to Study Two Interviews.

The researcher used a conversational style to foster openness on the part of the interviewee. The nature and content of each interview varied depending upon each individual's story, the dynamics of interpersonal discourse and the degree of emotional response the recollections drew from each person (Maxwell, 2013). Each of the twenty interviews used a similar theme as outlined earlier (Table 7, Design for Study Two).

3.7.3 Specific to Study Three Survey.

Participants in Study Three were almost identical to those who participated in Study One. The cultural differences of this socially distinctive group – maturity, professional training and broad life experiences – were discussed in the section on cultural characteristics.

3.7.4 Specific to Study Four Survey and Study Five Survey

Study Four and Study Five were distributed online using a convenience methodology. The survey was sent opportunistically to groups using social media and other sources with the intent of gaining a large numerical sample. Some demographic data (age, gender, income and education) facilitated characterization of the responses into discernible groups.

3.7.5 Specific to Study Six Focus Group.

The Focus Group included three members from among the interview participants. Others involved were a moderator and the researcher. The skill, bias and personality of the Focus Group facilitator may also have influenced the functioning of the group. The objective was to test, confirm or reject, and where possible to expand on findings derived from the Study Two interviews.

How do chance and uncertainty influence the career development of adults?

3.7.6 Generalizability of the research

Patton, M.Q. (2005) suggests that “studying information rich cases yields insights and in-depth understanding rather than empirical generalizations” (p.1635). The limitations mentioned above do not preclude generalization. Rather they alert us to the variables inherent in such studies. Results are provisionally limited to business professionals in an Australian work context until further research can expand upon these findings. Nevertheless, valid generalizations are possible while being mindful of the parameters outlined.

Chapter Four - Study One Survey

4.1 Introduction

Study One involved an investigation of the effects of chance events and uncertainty on the career development of college alumni from an Australian university. The focus of the Study One Survey was to replicate the investigations of earlier studies of chance events and career development, and if appropriate to confirm their findings. Data relating to gender, age and income were relevant at the personal level and particularly useful as background and contextual information for interview preparation. This data were not intended for internal or external comparison purposes, rather to understand and describe the nature of the respondents and hence point to the limits of generalizability. Therefore, beyond describing the sample, only occasional and limited use is made of demographic characteristics in reporting the statistical analysis section of the description of the study.

The Study One Survey also invited subjects to indicate their willingness to participate in a follow-up interview. Conducting interviews with subjects reporting the experience of chance events will provide greater depth and understanding of the context within which each of these chance events is experienced. Study Two reports the results of those interviews in Chapter Five. During interviewing, the researcher will be able to probe for details not discernable within survey questioning (Maxwell, 2012; Saldana 2009).

4.2 Aims

The Study One Survey enabled exploration of the literature regarding the frequency of chance events and the level of control experienced by those affected by a chance event. An examination of the literature revealed the gulf between traditional approaches to career development theory (Holland J.L., 1973; Parsons, 1909; Super, 1953, 1957) and the increasing calls for theory pertinent to contemporary society (Baumgardner, 1976; Chen, 2005; Osipow, 1973; Savickas et al., 2009). The predominant models emphasised linearity, cause and effect, and predictability. However, as Cabral and Salomone (1990) pointed out “the particular people who influence an individual, as well as the timing and context within which life events occur, are often unpredictable and subject to chance” (p.5). There have been occasional, (Bandura, 1982;

How do chance and uncertainty influence the career development of adults?

Miller, 1983), and increasingly frequent references to chance events as a factor in career development (Mitchell, Levin, & Krumboltz, 1999; Guindon & Hanna, 2002; Cabral & Salomone, 1990; Scott & Hartalla, 1990). Some of these studies have investigated the effects of chance events on adults (Diaz de Chumaceiro, 2004; Peake & McDowall, 2012; Williams et al., 1998). Other research focused on students (Betsworth & Hansen 1996; Bright, Pryor & Harpham, 2005; Hirschi, 2010). Bright and Pryor (2005), and Pryor and Bright (2007, 2011) drew attention to chaos and complexity theory and its capacity to provide theoretical guidance about change, chance and unpredictability with regard to career development. Their findings indicate that chance events are common, frequently unrecognized, and represent a little understood aspect of career guidance (Pryor & Bright, 2011).

4.3 Design

The Study One Survey was an online survey using Qualtrics Software (Qualtrics, 2014). The sequence and flow of questions is depicted in Figure 2 on page 73. The theoretical premises of the Chaos Theory of Careers (Pryor & Bright 2003a, 2011) guided the research questions and the design of the Study One Survey. By adopting the basic tenets of chaos theory Pryor and Bright (2011, p.27) integrate both nomothetic and ideographic perspectives into a holistic interpretation of career development. Therefore, questions in the survey sought answers to individuals' plans, intentions and experiences, and their understanding of the unpredictable influences that had shaped their careers.

The survey was modelled on earlier surveys prepared by Betsworth and Hansen (1996) and Bright et al. (2009). The survey was developed by trialling iterations of the survey with career counsellors, others interested in the study topic, and supervisor support, until the draft was suited to purpose (Patton, M.Q., 2011).

Qualtrics uses display logic to funnel specific survey questions based on prior responses. This allows responses on one question to lead the subject to further questions based on the responses to an earlier question. For example, the Study One Survey used funnelling to direct subjects reporting a positive effect of a chance event to Question four. Alternatively, those reporting a negative effect of the chance event were directed to Question five.

How do chance and uncertainty influence the career development of adults?

The survey had 35 questions and was divided into three main sections. Section One, Questions one and two, asked for general demographic data, including gender, age, income and details about work history.

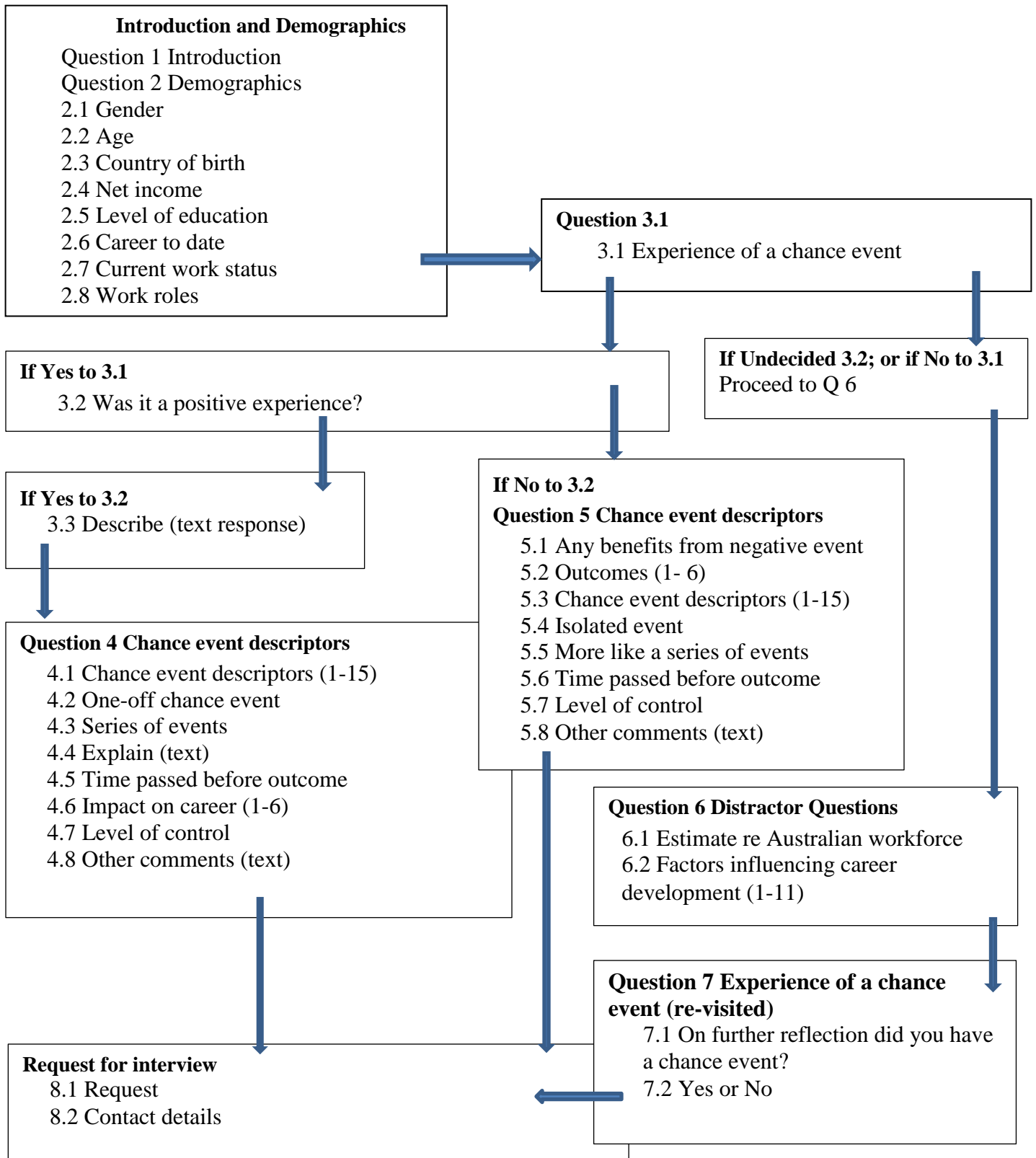
Section Two asked about subjects' responses to chance events. Questions three and four were directed to those who confirmed having experienced a chance event, which they described as being positive for their career. Question five was an alternative question directed to those who had experienced a chance event, but felt that it was a negative for their career development.

Question three read, "Has your career development ever been influenced by a 'chance event'?" Those subjects who reported no experience of a chance event were directed to two other questions at Question six. In Figure 2, these are referred to as distractor questions – partly because they were included to facilitate a loop back to a question that had been asked of them earlier at Question three. At Question seven, they were again asked about whether they had ever experienced a chance event affecting their career. Then they proceeded to Question eight in Section Three.

Section Three, Question eight, asked subjects who were willing to do an interview about their responses to provide contact details. Subjects were then thanked and this ended the survey. The Study One Survey is outlined in Figure 2 on the next page and the complete survey is in Appendix A.

How do chance and uncertainty influence the career development of adults?

Figure 2: Study One Survey Sequence Chart



4.4 Participants

The survey was emailed to a convenience sample of 250 alumni of a university college in Australia. One hundred and eleven alumni opened the survey, and 86 completed the survey, giving a response rate of 34%.

There were 16 female and 70 male respondents ranging in age from 21 years to 86 years (Mean 56; SD 18). The College, which was originally male-only, became co-educational late last century (precise detail withheld to preserve anonymity), which may account for the disparity in the gender response. The ratio of females to males in the alumni email list was approximately 35:65. The majority of participants (91%) were born in Australia; four others (5%) indicated they were born overseas and three did not answer this question. All respondents had completed at least one university degree, and 39% had obtained postgraduate qualifications. Sixty-six per cent, (10 F and 47 M) were in full time or self-employed work. Twenty-three percent, (5 F and 15 M) were in part-time or casual employment at the time of the survey. Eleven per cent, (1 F and 8 M) indicated that they had retired.

Australian Bureau of Statistics income categories were used to record details about the subject's net taxable income in the 2012-13 tax year. Sixty-two per cent indicated that their net income was \$80,000 or higher. While directly comparable ABS figures are unavailable, the median before tax earnings for all Australian workers in August 2013 was \$46,900 (P. Curtis, ABS, personal communication, December 15, 2016). Mindful that 15% of the survey group indicated that they either worked part-time or casually, or were retired, these income and educational responses reflect the higher than average socio-economic and educational status of this group of respondents.

Question 2.8 asked subjects to describe their current work and the range of work roles they had experienced during their career. "Considering the span of your working life, please indicate which kinds of work circumstances you have experienced for a period of 12 months or longer." Eight options were provided: "Full-time Employee, Part-time Employee, Self-employment/contractor, Full-time Parent, Owner, Partner in business, Volunteer, and Full-time Carer." This question allowed the respondent to provide multiple answers reflecting their current work role(s), any changing work status over time, and the multiple roles that mature adults undertake in life.

How do chance and uncertainty influence the career development of adults?

Sixty-six participants (77%) answered this question. They nominated 86 current roles, and suggested they, collectively, had undertaken 166 roles during their adult lifetime. This represents an average of two and a half roles per person. Four also reported in text responses that they had worked in casual employment and one referred to a period of unemployment. These figures reflect the fact that an individual's paid work and other roles can vary over time, and may be blended at a particular time, (Lewis, 2001; Super, 1980). Table 12 shows these responses.

Table 12: Reported paid and unpaid roles of responders

Work role	At survey time	During whole career
Full time	44	74
Part time	14	18
Self-employed	13	28
Full time parent	0	15
Business owner	0	15
Business partner	0	13
Retired	9	0
Volunteer	1	16
Carer	0	0
Other	5	0
Total	86	166

4.5 Results

4.5.1 Frequency of a chance event

Fifty of the 86 subjects (58%), reported at least one experience of a chance event. A further three, whose original answer to Question 3.1 was “No”, changed their mind when completing Question 7, and confirmed experiencing a chance event before they completed the survey. This raised the frequency to 62%. This is consistent with other studies that have confirmed the reporting of chance events influencing career development, (Betsworth & Hansen, 1996; Borg, 2015; Bright, Pryor & Harpham, 2005; Bright, Pryor, Wilkenfeld & Earl, 2005; Hirschi, 2010).

How do chance and uncertainty influence the career development of adults?

4.5.2 Chance event having a positive effect

Participants were asked, “Was the ‘chance event’ experience a positive for your career?” Eighty-eight per cent (N= 44) of those reporting a chance event used response four or five – “Probably yes” or “Definitely yes”. This indicates that the chance events they experienced were perceived as being beneficial for their career development. The remaining 12% (N = 6) were in the “Maybe” category, meaning they were non-committal about whether the event had been a positive or negative effect on their career. No subject used either of the responses, “Definitely not” or “Probably not” to answer this question. Generally, participant responses reflected the strongly positive feelings of the 50 respondents.

4.5.3 Chance event having a negative effect

The questions about a chance event that was a negative experience were in the survey, but were not activated by any of these respondents. This is because no one replied “Definitely not” or “Probably not” to Question 3.2 above.

This is in contrast to other studies such as Hirschi (2010), and Bright et al. (2009) who each reported negative chance events from among those within their studies. Possible reasons for this discrepancy may relate to the nature of the question, or to no relevant negative experiences having affected this group. Further research may be warranted on this point.

4.5.4 Estimate of others’ experience of a chance event

Thirty-five people – those who had said they had not experienced a chance event themselves - answered the question about their perception of others’ experience of chance events. Their estimates ranged from ten per cent to 71%. The mean estimate of 34% (SD 15) indicates that the sample appears to grossly underestimate the likelihood of chance events influencing the career development of the Australian workforce. The 34% mean is more than two standard deviations away from the numbers reported in this and other studies (Betsworth & Hansen 1996; Bright, Pryor & Harpham, 2005). Such a discrepancy represents a significant difference.

How do chance and uncertainty influence the career development of adults?

4.5.5 Characteristics of a chance event

Responses to this series of questions confirmed the relevance of particular categories of chance event. The most commonly selected items were “Being in the right place at the right time”, “A personal relationship”, “Unintended exposure to work that you found interesting”, and “A change of residence”.

Respondents were undecided about the effects of the following seven types of chance events: “Sudden awareness negating an earlier career plan”, “A social event”, “An injury or health problem”, “Unintended exposure to work that you did not enjoy”, “An upturn in the economy”, “A downturn in the economy” and “A change in government or government policy”.

Subjects in the survey also failed to endorse the relevance of certain chance event categories, namely “An act of war or terrorism”, “Use of the internet or social media” and “New inventions or technology”.

These results are included in Table 13: Characteristics of a chance event, and are followed by a brief discussion.

Table 13: Characteristics of a chance event

Type of chance event	Responses	Mean	Standard deviation
Sudden awareness negating an earlier career path	50	2.90	1.47
A social event	45	2.91	1.35
A personal relationship	47	3.83	1.26
A injury or health problem	45	2.18	1.34
Unintended work that you found interesting	48	3.67	1.34
Unintended exposure that you did not enjoy	44	2.73	1.35
An upturn in the economy	45	2.13	1.19
A downturn in the economy	44	2.52	1.41
A change in government policy	48	2.81	1.48
Use of the internet or social media	44	2.48	1.36
New inventions or technology	46	2.65	1.40
An act of war or terrorism	46	2.02	1.21
A change of residence	45	3.13	1.53
Being in the ‘Right place at the right time’	49	4.22	0.89
<i>Note.</i> Do you think any of the following ‘chance events’ have ever impacted on your career development? Likert scale: 1, Very Unlikely, 2, Unlikely, 3, Undecided, 4, Likely, 5, Very Likely.			

How do chance and uncertainty influence the career development of adults?

4.5.6 Frequently experienced categories

The most common categories of chance events reported were:

- “Being in the right place at the right time” (88%)
- “A personal relationship” (75%)
- “Unintended exposure to work that you found interesting” (73%)
- “A change of residence” (51%)

These results broadly accord with the findings of Bright, Pryor, Wilkenfeld and Earl (2005), who found significant reporting among 651 university students of chance events relating to “work or social experiences”, a “personal or work relationship”, and a “positive work experience” (p.30). Betsworth and Hanson (1996) had found “Right place/right time” and “Professional or personal connections” (p. 95), to be frequent categories of reported chance events.

4.5.7 Least commonly experienced categories

Subjects completing the survey rejected several categories as being influential chance event occurrences. Seventy-two per cent felt that “war or terrorism” was “Unlikely” or “Most unlikely” to have affected them. The other two items firmly rejected as a chance event factor were “Use of the internet or social media”, and “New inventions or technology”.

As a cohort, this group was undecided about the role the remaining seven categories play in chance events. Each of these categories received neutral responses.

4.5.8 One-off or concatenated chance events

Seventy-four per cent (N= 37) described their interpretation of the chance event as a “one-off” experience. Twenty-six per cent (N=13) disagreed with the term “one-off” and, of these, eighteen per cent (N= 9) felt it was more like “a series of events”.

4.5.9 Time passed before outcome of chance event

Forty-three per cent (N= 21) selected “almost immediately”, 35% (N= 17) selected “within 12 months”, and 22% (N= 11) selected “gradually over time”.

How do chance and uncertainty influence the career development of adults?

4.5.10 Level of impact of the chance event

Survey respondents were asked about the personal impact of the positive chance event they experienced. Each of the items was endorsed as a likely outcome subsequent to the chance event as indicated by Table 14.

Table 14: *Effect of a positive chance event*

Type of effect	Responses	Mean	Standard deviation
It boosted my confidence	42	7.55	2.23
It opened up networks	42	7.60	2.29
It provided me a job option	43	8.44	2.06
It confirmed my thinking	39	5.64	2.93
It changed my thinking	39	17.05	2.44

Note. How did the 'chance event' impact on the development of your career?
Ten point Likert scale ranging from 1, "A little" to 10, "A lot"

4.5.11 Level of control

Sixty-seven percent (N= 32), claimed a significant level or almost total control over the effect of the chance event. Ten per cent (N= 5), claimed some sense of control, while 23% (N= 11) suggested they felt little or no control.

4.6 Discussion

4.6.1 Frequently experienced categories

Sixty per cent of the sample reported chance events influencing their career development. A chance event is, by definition, unpredictable. However, in this study, some categories of chance event are reported much more commonly than others suggesting that the frequency of particular kinds of chance events is variable. This reinforces earlier findings (Betsworth & Hanson, 1996; Bright, Pryor & Harpham, 2005; Bright, Pryor, Wilkenfeld, & Earl, 2005; Bright et al., 2009). This consistency with other studies suggests that chance events are ubiquitous with respect to career development and blind to many dimensions of demographic measure. This raises the following questions:

How do chance and uncertainty influence the career development of adults?

- Which types of chance event having an impact on career development are the most common?
- Do common chance events occur equally to all demographic groups?

In this survey, being “in the right place at the right time” was the most strongly supported category. This descriptor can generally be taken to infer good luck, serendipity, or that the event had a positive outcome. The term “the right place at the right time” is often used colloquially and generically to explain successful outcomes related to uncertainty. However, it does not provide specific analysis of the features to which it refers. In the text responses in the Study One survey responses, mention was made that being willing to work hard is a vital factor in each subject’s success at work, and to their overall career development as well. Subjects also observed that the acquisition and development of skill sets creates opportunities for those who are aware of this. In contrast, the term *in the right place at the right time* is applied generically to many situations when they are being referred to positively, without offering any more detailed analysis of what they are referring to.

Being in the right place at the right time encapsulates much of the phenomenon of responding successfully to an opportunity. Issues of terminology such as this arise regularly in career development research (Arthur & Rousseau, 1996). As Bright et al. (2009) suggest, “One of the major consequences of the comparative lack of research on chance events in vocational behavior is a paucity of ways to operationalize terms” (p. 22). In the context of the research question in this Study, the meaning of the terminology “being in the right place at the right time” warrants deeper investigation.

4.6.2 Unexpected exposure to work one finds interesting

The realization of opportunities associated with unexpected exposure to work one finds interesting aligns with the adaptability and openness messages referred to by Bandura (1982), Hall (2004), and Pryor and Bright (2011). Sound career development needs a flexible and adaptable mindset, which encourages seeking opportunity, and then responding capably to that opportunity.

A common theme in the literature is that both traditional career planning and openness to new ideas and circumstances are relevant to sound career development (Bright & Pryor, 2005; Hirschi, 2010; Krumboltz, 2015; Patton & McMahon, 2014; Pryor & Bright, 2003a, 2011;

How do chance and uncertainty influence the career development of adults?

Williams et al., 1998). While ideas of openness and flexibility had been mentioned in earlier decades (Bandura, 1982), the level of theoretical attention to these principles has often been below what has been desirable in counselling practice (Pryor & Bright, 2011). The reverence for linear and planned models of career guidance has eased as the recognition of complexity, non-linearity and uncertainty as significant factors in career development gained traction in the 21st century (Bright, Bright, Pryor, Wilkenfeld, & Earl, 2005; Brown, 2002). The increasing use of constructivist styles of counselling (Savickas, 2012) and the recognition of the relevance and role of complexity in peoples' lives (Patton & McMahon 2006, 2014) have created conditions more amenable to new insights and methods including those espoused within the *Chaos Theory of Careers*. Consequently, spotting and acting upon opportunities and in so doing constructing a new career path or narrative (Savickas, 2009) is to be expected with the majority of people reporting unexpected events influencing their career.

4.6.3 An unexpected change of residency

A further prominently endorsed category in the survey responses was the role played by an unexpected change of residency. This is a little understood aspect of chance events affecting careers. Over 50% of respondents suggested that “a change of residence” had been a factor for them. Given the globalized world of the twenty-first century (Castells, 2011), and the increasingly mobile and casualized work force it promotes, this is a trend that is likely to continue to grow.

The need to change jobs because of a change of residence is of great significance for those affected. This is especially so for young people in rural and remote areas, workers in a co-habiting relationship and those with children as the dimensions of the chance event are likely to have greater repercussions for a larger number of dependents. Additionally, the degree of flexibility or negotiating room available to an employee may vary depending on the circumstances of his or her employer. A national or multinational firm with hundreds or thousands of employees in many different locations may be able to offer far more options to an employee than a small local firm with much more limited resources.

How do chance and uncertainty influence the career development of adults?

4.6.4 Least commonly experienced categories

Among the categories rejected by most respondents were two items referring to chance events due to new technology. The Study One Survey focused on highly skilled adults who have been in the work force for at least ten years and in many cases for several decades. Almost 56 % of the subjects in the survey were over 50, (M 56, SD 17). Less than 33% were under 30. It is possible that older workers were more established in their careers and take the changes in information technology as normal, and therefore did not perceive these as relating to chance events. The survey did not seek more details about the reasons for these answers.

The respondents also rejected as significant the category referring to war or terrorism. This survey was completed in 2014, and on a world scale since WWII, Australia has experienced a low or zero incidence of war or terrorism on its own territory or very close by – nor many terrorist acts. This item was included in research conducted in the United States of America by Betsworth and Hansen, (1996, p.95). It is possibly more aligned with conditions in the USA. This item was omitted from future surveys in this research.

4.6.5 One-off or concatenated chance events

This item raises an interesting point about the perception of chance events. It is common for people to think of chance events as one-off, dramatic, unpredictable events, such as a motor vehicle accident, a lottery win or a sudden illness. The idea that one chance event may lead to another chance event is reported in the survey by almost 20% of respondents. Although referred to in earlier studies (Guindon & Hanna, 2002; Williams et al., 1998), the concept of multiple chance events is a little understood or researched aspect of chance events relating to career development. Bright et al. (2009) reported the “prevalence and significance” (p.20) of multiple chance events. They found that “concatenated chance events” (p.21) were more influential than multiple but seemingly independent chance events.

The role of sequential chance events impacting on a person’s career development warrants further investigation. This situation was confirmed by 18% of subjects and a further eight per cent indicated that their chance event was not a one-off activity but then gave no more details. This suggests that a sequence of chance events is the experience for one quarter of this cohort. It seems that concatenated chance events are an under recognized dimension within the spectrum of chance events. If this approximately 25% figure were to be applicable for broader

How do chance and uncertainty influence the career development of adults?

populations, it has implications for cognitive learning career theory in particular. Educating people to recognize and benefit from concatenated chance events may be necessary.

In this context, Gelatt (1989) speaks of “positive uncertainty” (p.252), and Mitchell, Levin and Krumboltz (1999) refer to the development of “curiosity”, “persistence”, “flexibility”, “optimism”, and “risk taking” (p.118) as skills to be fostered to assist people to negotiate their future pathway. This educative approach using planned happenstance has already been successful with Taiwanese students (Chien, Fischer & Biller, 2006). Other theories to promote learning as a counselling tool are *Social Cognitive Career Theory* (Lent, Brown, & Hackett, 1996, 2002), and *Cognitive Information Processing*, which proposes a CSAVE model (Peterson, Sampson Jr, Lenz, & Reardon, 2002). .

Career counselling using these theories and the methodologies arising from them would assist people to expect one chance after another and learn skills to enable them to be alert to such chance events and to be better able to respond opportunistically. This item warrants deeper investigation in the Study Two interviews.

4.6.6 Time passed before outcome of chance event

The survey responses indicate that the outcome of a chance event does not always become clear immediately and that the repercussions of the chance event are time sensitive. The suggestion from 57% of the subjects in the survey indicates that it took “up to 12 months” or longer for the outcome of the chance event to become clear to them. This is in contrast to common perceptions of chance events as being discrete and immediate in outcome. Not all chance events have an immediate impact. In this survey, only 47% selected the “almost immediately” category to describe how quickly they perceived the outcome of the chance event. So the critical question arises: How does the impact of a chance event play out in a person’s life?

If, as suggested by the Study One Survey, 57% of the group was not aware of the outcome of the chance event for several months and even longer, and 25% suggested that the initial chance event was followed by further related chance events, the question arises: How do people manage the concern and ambiguity they experience during this period?

It is possible too, that chance events are being under- reported at least half the time as it is plausible that people will fail to appreciate the link between their changed circumstances and the original chance event.

How do chance and uncertainty influence the career development of adults?

The Study One Survey frequently asked subjects to give simple “Yes” or “No” responses and used Likert scales and some open-ended text responses to further explore some areas. Subjects used these options spasmodically. However, the use of interviews may offer a means of obtaining deeper insight into the more subtle and individual aspects of how people respond to an initial chance event and its aftermath. Interviews offer the possibility of investigating the strategies individuals use to manage their way through the attendant uncertainty.

4.6.7 Type of impact of the chance event

While reports of positive effects of the chance event were reported in the results section, despite attempts to elicit responses about negative chance events, no subject reported a negative effect of a chance event. Scenarios depicting negative chance events have been interpreted as significant, especially when the chance event is dramatic such as an accident (Bright et al., 2009). It is not clear why this group did not report negative chance events in the survey responses. Qualitative investigation may reveal more detail about this.

4.7 Level of control

The demographic data collected in the survey suggest these subjects are used to successful outcomes in their chosen pursuits. They are degree educated, economically advanced, and in desirable employment. Mostly they are confident, resilient successful people. The responses in the survey suggest that subjects in the group are independent and able to turn opportunistic situations to their advantage. These characteristics may explain the absence of any reporting of negative chance events. Other studies have found a connection between external locus of control and reporting of negative chance events. Hirschi (2010) studied 423 students in a Swiss school, and suggested that “chance events are perceived as more influential by people who experience less agentic possibilities to affect their own careers” (p 45). Williams et al. (1998) found that, among the 13 psychologists they interviewed the older and more qualified showed greater locus of control.

Nisbett and Ross (1991) suggest subjects have a tendency to report positives when using recall. Subjects in the survey appeared to show a strong tendency toward internal locus of control and the reporting of positive chance events. A strong internal locus of control may be an explanation for the non-reporting of negative events, but it seems unusual that from a database of

How do chance and uncertainty influence the career development of adults?

86 people, there is no report of a negative chance event. However, qualitative investigation of the deeper story behind the chance event experience of these respondents may assist in clarifying whether any negative chance events occurred.

4.8 Estimate of others' experience of chance events

The estimate about the proportion of the Australian workforce that might experience a chance event of significance to their career development raises a further question of interest. This estimate of 34% is more than two standard deviations away from the numbers reported in this and other studies. This difference could represent a reporting response style – these people may just generally under-report chance events. They have been academically trained in an era dominated by reductionist mentalities. They may perceive events as significantly more predictable and controllable compared to the population as a whole. However, the data suggests that many in the community grossly underestimate the frequency of chance events as reported commonly in the literature. Are these people unable to identify recognizable chance events? Are there differing perceptions within the community about what constitutes a chance event? Do people see chance events affecting themselves differently from those that they perceive to be affecting others?

An alternative rationale is that it may reflect a form of cognitive dissonance (Festinger, 1957), where people rationalize their own experience as being representative of the norm. If that is true and extends to others beyond this segment of the Study One respondents, it has counselling implications for individuals in denial in relation to chance events.

4.9 Terminology

A question for future investigation within this research is whether the terminology used to describe chance events can be improved. Language is a constant concern in careers research and communication about career matters in general, (Brown, 2012; Patton & McMahon, 2014). It also bedevils discussion of chance events in particular, resulting in “a paucity of ways to operationalize terms” (Bright et al., 2009, p.22). In this regard, the following questions are pertinent:

- Is the idea of a chance event clear in the mind of the average Australian worker?

How do chance and uncertainty influence the career development of adults?

- Can the meaning of the term, “being in the right place at the right time”, be more clearly articulated?
- Is it possible to build a typology for “right place right time”? This term certainly refers to luck and good luck particularly. However, it is a catchall. It would help to clarify its characteristics.

Chapter Five - Study Two Interviews – experiencing and responding to chance events

5.1 Introduction

This chapter presents the results of interviews with selected participants who had completed Survey One. A set of qualitative interview questions were prepared to examine in greater detail some of the most important themes to emerge from Survey One. Respondents were asked to elaborate on the experience of a chance event, which they had reported in Survey One. They were asked about the level of control over their situation that they experienced, and whether they had any feelings of uncertainty in these circumstances.

Early literature in the career development field, reflecting the cultural values of the era, portrayed a mono-cultural society and a mostly male breadwinner as the key worker (Parsons 1909, Super, 1980). Contemporary literature reflects the pluralist definition of family (Estin, 2004) and the recognition of a much more diverse society (Blustein et. al., 2008). Additionally, research such as that by Lewis (2001), and Clark (2000) indicates the increasingly complex arrangements arising to combine care giving and paid work commitments in peoples' lives.

5.2 Design

Each of the interviews followed a consistent structure (Chapter Three, Table 7, Design for Study Two). The interview covered key areas related to chance events, based around three probe questions (see Appendix B).

The initial question invited the participant to give an overview of her or his work history. The purpose of this was to provide context, assist in the development of rapport and memory recall (Witzel, 2000) and to gain further background understanding of the participant.

Following the introductory question, the first probe question was “In responding to the survey, you referred to a chance event being a factor in your career development. Can you elaborate on that?”

The second probe question was, “Another aspect of this chance event is the level of control which you had at this time. Can you describe your experience of how much control of the situation you had at this time?”

How do chance and uncertainty influence the career development of adults?

The third probe question sought to explore aspects of complexity: “When dealing with chance events do you experience a level of uncertainty about the situation?”

The final question towards the completion of the interview was, “Is there anything else you would like to add to complete our understanding of the experience you had?” This question was designed to allow free expression on the part of the interviewee (Saldana, 2009). Several interviewees continued the conversation for some minutes at this point and this content was included in the transcript. On other occasions, the participant indicated that they had no other relevant thoughts and that marked the end of the interview.

Interviews in Study Two were designed to elicit information from a discrete group in as non-directive a way as possible, mindful of the researcher’s background and interest in the subject matter. This required an open-minded disposition by the interviewer to enable the participant to tell the story of their experience from their perspective (Saldana, 2009).

It was important to ask open-ended questions using a semi-structured flexible approach to discover and explore the experiences, feelings and any opinions and values the interview participants held, which had influenced their behaviour. For this reason, a conversational style was used to foster openness on the part of the interviewee (Fontana and Frey, 1994). This approach facilitates open and free responses on the part of the respondents (Witzel, 2000). Each participant in the interview was encouraged as much as possible to act as a co-inquirer during the conversation. This encouraged exploration of the “sensitizing concepts” (Blumer, 1954, p. 7) which form part of the background and context of the situations the participants were describing. Patton, M. Q. (2011) sees sensitizing concepts as critical to the abductive process (pp. 284-85), and inherent in investigations dealing with complexity (p. 148-151).

Patton, M.Q. (2011) also suggests that questioning and insights evolve and develop over the course of data gathering. The semi-structured nature of the interview allowed for a deeper focus to occur on matters not predicted prior to the beginning of the interview, especially where these may have been of relevance to the research topic (Maxwell 2013; Saldana, 2009). Consequently, the nature, content and flow of each interview varied depending upon each individual’s story, the personal style of each individual and the associated dynamics of interpersonal discourse; and the degree of emotional and or intellectual response the recollections drew from each participant.

How do chance and uncertainty influence the career development of adults?

Survey One had included sections with open text responses, which enabled respondents to provide some detail about their work experience. This was beneficial to the research in constructing the themes to explore within the interviews. It also provided the interviewer with background material relevant to the interviewees' experiences.

Chapter Four reported results of Survey One, which sought details of the experience of chance events that had impacted on the career development of 86 graduates from an Australian University. Sixty per cent of subjects reported such chance events. This is consistent with previous studies (Betsworth & Hansen, 1996; Borg, 2015; Bright, Pryor & Harpham, 2005; Salamone & Slaney, 1981; Scott & Hatalla, 1990). However, Survey One suggested that only 34% of the Australian community at large would experience a chance event during their career. This response indicates that the level of awareness of the frequency of these chance events may be grossly underestimated in at least some sections of the Australian workforce.

The nature of chance event experiences reported in the Survey One Study was overwhelmingly positive. This was at variance with other studies, which reported both positive and negative effects of chance events (Bright et al., 2009; Hirshi, 2010, 2017). The survey respondents also reported a high level of control compared to the levels reported elsewhere (Hirshi, 2010). This may be due to a strong sense of self-efficacy and internal locus of control among the subjects (Cabral & Salomone, 1990), but Bright et al. (2005) concluded that locus of control accounted for only a small amount of the variance in their study. In survey one in this study, chance events had occurred both as one-off events and as a series of events, and participants reported that the outcome of the chance event was not always obvious within the first 12 months after the chance event.

Qualitative research has been used in previous studies on the role of chance events in career development to seek a deeper understanding of individual experiences and motivations. For example, Williams et al. (1998) established detailed categories of behaviour and practice among 13 counselling psychologists based on in-depth interview analysis (p.382). Interviews with South Asian doctors emigrating to Britain in the 1960s enabled Bornat, Henry and Raghuram (2011) to gain a deeper understanding of the luck and chance involved in these doctors' work experience while they established medical careers in geriatrics within the National Health Service. Peake and McDowall (2012) used narrative analysis of interviews of seven workers experiencing "significant mid-career transition" (p.398) to delve more deeply into the

How do chance and uncertainty influence the career development of adults?

relationship between chance events and the subject's career story. They indicated the need for an awareness of context to better understand a person's motivations and behaviour, and concluded that "a more detailed examination of the nature of such impacts, including antecedent conditions and consequent outcomes, would benefit career counsellors, coaches and others who support individuals through career transitions" (p. 407). Similarly, Mallon and Cohen (2001) while studying career transitions rather than chance events per se, focussed on the "subjective meaning" (p. 221) that the subjects revealed during interviews "to illuminate the rich and at times ambiguous sense-making process of situated individuals" (p.221). The interviews reported in this chapter provide similarly rich detail.

5.3 Aims and purpose

The motivation for this study was to look qualitatively at individuals' experience of the chance events affecting career development as identified in Study One. Each interview was used to explore in detail the range of experiences of a distinct group of mature workers with reference to the work history of the interviewee. It looked at the nature, frequency and context within which any chance event occurred, including whether the chance event had been a one off or a series of events.

Each interview explored the occurrence of the first chance event and any subsequent chance events with reference to the career development of the interviewee. It explored the level of control that the person experienced in the midst of the chance event and its consequences. The interview also explored the role of complexity, ambiguity and uncertainty with reference to each individual's career development, and any other factors at play when they made decisions about these situations. Participants were encouraged to explore and reflect upon aspects of the chance event that they may not have considered prior to those ideas arising during the course of the interview (Patton, M. Q., 2011; Witzel, 2000).

The interviews were structured with the intention of using a pragmatic style of analytical coding (Saldana, 2009). Manual analytical coding was used to identify themes and trends within the responses (Miles and Huberman, 1994). Themes were established which provided a set of nodes and sub-sets of nodes enabling analysis and description of the factors involved in each person's experience of chance events and the inherent complexity occurring within that context. This process is elaborated upon shortly.

5.4 Participants

Survey One specifically sought subjects who had reported experiencing a career relevant chance event, and who were willing to participate in an interview about this experience. Fifty-three respondents to Survey One indicated that they would be willing to participate in an interview about their responses. However, those who had not reported experiencing a chance event were not suitable for the research purpose, leaving eleven males and two females being selected from those in the original survey. Each of these participants had confirmed experience of a chance event affecting their career development. One male and one female from this group were subsequently unavailable for an interview, leaving ten males and one female from the original Survey One alumni group. The alumni completing Survey One were predominantly male due to the transition by the College to co-educational status in the last quarter of the twentieth century.

Snowballing techniques were used to extend the number of female interviewees (McMurray, Pace & Scott, 2004). Other female workers who had experienced a chance event were identified by contacting existing interviewees, professional colleagues and associates. Before participating in an interview, each non-alumni female completed Survey One. This confirmed their experience of a chance event affecting their career development and provided career background and demographic data similar to that provided by the alumni group. Each of these females was a graduate of an Australian or New Zealand university and had been active in the workforce for ten years or more. Ultimately, all 20 interviewees were graduates, and had at least ten years work experience in a profession. The average age of the women was 46.6 (*SD* 12.8), and the average age of the men was 63.8 (*SD* 16.4), (see Table 15).

All participants agreed to the recording and transcription of the interview for research purposes and were assigned a pseudonym and code number to protect their identities. Early in the interview with Colin, (pseudonym) a doctor, an unexpected work issue arose and the interview was withdrawn from the study, leaving 19 interviews for analysis. This resulted in the final sample of interview transcripts being from ten females and nine males.

5.5 Biographical synopsis of interviewees

Brief circumstances of each participant are included in Table 15. Participants are listed in alphabetical order according to their non-de-plume.

How do chance and uncertainty influence the career development of adults?

Table 15: Biographical synopsis of interviewees

Pseudonym	Age	F/M	Work circumstances
Andrew	50	M	Andrew prompted his superiors to notice him early in his career by suggesting innovations at his workplace. He used adept strategic behaviours to stay ahead of the workplace politics as his career evolved.
Bernard	59	M	Bernard was a senior administrator who moved to the finance industry after being unfairly treated in his original place of work. Bernard recalled frequent chance events during his interview.
David	43	M	David responded to family needs and left his metropolitan employment for a rural-based family enterprise. He found he enjoyed it, and decided to remain permanently in the family business.
Francis	66	M	Francis began his career as an employment officer in Sydney and rose to senior ranks in the public service. His wide network led to offers of work in Central Australia. Later, a cancer scare interrupted his work for several years.
Grant	66	M	Grant moved to an expanding area of TAFE education at an opportune time and responded to positive and negative chance events to foster and manage his career.
Harry	82	M	Harry was able to accept an urgent appointment as a judge due to a sudden vacancy. This unexpected opportunity meant abandoning admittance to the Bar, which had been previously long held ambition.
James	80	M	James discovered opportunities in archaeology by accident while still an undergraduate. This led to a 50-year career in a cultural anthropology, researching aboriginal languages.
Kevin	87	M	Kevin used opportunities to forge a career as a research scientist, blending skills acquired by chance and hard work. Kevin became a world authority in agricultural science in his area of plant species.
Olga	65	F	Olga experienced multiple job changes as she juggled family needs, her husband's political career, and later his illness. After beginning work as a teacher, Olga was successful in a range of management areas and continues to work in academia.
Paula	29	F	Paula suddenly realized that her existing career in optometry no longer appealed to her. Paula changed jobs spontaneously and opportunistically within a week and is now in a career in retail management.
Rita	46	F	Rita left a successful career in computing when a combination of chance events rendered this work incompatible with her values and family commitments. Rita became a teacher sacrificing income but enabling time management compatible with her family needs and her desire to contribute to society.
Nola	45	F	Nola experienced an epiphany during her first job interview when the practicalities of the legal profession suddenly dawned on her. Nola negotiated more chance event challenges as she developed an administrative career in the public service.
Susan	31	F	As a young engineer, Susan received an appointment to a remote location in Australia to a dysfunctional mining project severely impacted by the Global Financial Crisis. These chance events created challenges, which Susan took 12 months or longer to resolve.

How do chance and uncertainty influence the career development of adults?

Pseudonym	Age	F/M	Work circumstances
Therese	50	F	Therese worked as an engineer with a major company for many years before resigning, partly due to concern with company priorities and values. She became a teacher, and is now deputy principal at a high school.
Ursula	42	F	Ursula trained in engineering before opportunities in Human Resource Management emerged. This exposure resulted in a change of employer and location, and a more interesting career with even more change and challenge to follow.
Wanda	48	F	Wanda faced challenges as a teenager when her family relocated from Hungary. This meant her studies for a musical career were suspended, and she had to resume secondary school in Australia. She excelled in subjects not previously open to her, and eventually became a doctor, a pathway previously blocked to her by prejudice.
Zara	48	F	Zara balanced family needs with commercial administrative jobs, using restructuring and retrenchment programs to personal advantage on two occasions.
Zoe	69	F	Zoe abandoned plans of an academic career in Melbourne when her partner was transferred in his employment to Sydney. Zoe became a successful, innovative manager in Sydney, before returning to academic life in Melbourne.

5.6 Procedure

Each of the interviews was scheduled at a time convenient to the participant. He or she nominated a suitable, quiet location for the interview. This was typically the boardroom or an office at the interviewee's current workplace, and allowed for privacy and recording of the interview.

The interviews were face-to-face when possible, but in five cases with male participants, the interviews were conducted by telephone because the participant was living and working interstate. In these cases, each interviewee was encouraged to ensure that their location was comfortable and in a private setting to avoid being overheard or interrupted. Literature on the relative merits of telephone and face-to-face interviews indicates that either technique is useful to gain data for a wide range of research purposes (Sturges & Hanrahan, 2004). Given the use of a purposive sample in this study, the preference was for face-to-face but the essence of the data collection was viable using either method.

All participants were informed of their right to withdraw from the interview at any time and they each gave their consent for the interview to be recorded and transcribed for research purposes. All interviews were recorded on two independent devices, a laptop and a smartphone, thus providing a back-up copy if required. The interviewer transcribed interviews verbatim, and a copy of the transcript was returned to the participants for verification. This resulted in one

How do chance and uncertainty influence the career development of adults?

change of minor factual content about a location in one transcript. Thus, it can be asserted that the transcriptions are valid and provide a reliable basis for further analysis. The time allowed for each interview was one hour. Interviews lasted between 26 and 85 minutes with the average duration being 49 minutes ($SD = 14 \text{ min}$).

In the two weeks prior to the interview, each interviewee received a formal notice of interview and an outline of the proposed areas for discussion, including the three probe questions (see Appendix B). Several interviewees remarked that the confirmation email assisted them in reflecting on the interview topic prior to the interview.

The interviews began with each person asked to describe their work history and the conversation proceeded from there. The interviewer maintained the conversational style, asking occasional questions about matters pertinent to the research, including the three probe questions as and when appropriate.

5.7 Analysis – developing themes, nodes and sub-sets

Coding analysis was used to interpret the data. Nuances and patterns among the stories of the 19 interviewees were identified using detailed manual coding (Maxwell, 2013; Richards, 2009; Saldana, 2009). The use of manual coding involves cycles of intensive reading, re-reading and reflecting of transcripts, lines of text and even individual words used by the participants until the coder is thoroughly familiar with the content in the transcripts. In manual coding a process of successive cutting and pasting of selected text is employed to facilitate the detection and building of patterns between the multiple stories contained in the transcripts (Saldana, 2009).

The manual coding process was augmented by using NVivo coding in the later stages of analysis (NVivo qualitative data analysis Software; QSR International Pty Ltd. Version 10, 2012). NVivo uses a system of major and minor codes, and sub-sets of the minor codes. NVivo calls this hierarchy of concepts “Parent Nodes” and “Child Nodes” (terminology which will be used in this chapter). A hierarchical system of parent nodes, with subordinate child nodes was built to reflect the processes and influences experienced and reported by the participants during the interviews. At the same time as these nodes are being refined, the coder writes memos about the transcript content to develop and deepen an understanding of the transcripts (Bazeley, 2013). Coding analysis generates patterns, frequencies and relationships, which can then be represented as a series of themes used to describe what is happening in the participants’ lives.

How do chance and uncertainty influence the career development of adults?

During the interviews, the key focus was on the challenges the participants were facing and the processes involved in the decisions they were making. Maxwell (2013) suggests “the real strength of a qualitative approach is in understanding the processes by which things take place” (p.82). This is achieved by asking questions about:

- (1) the *meaning* of events and activities to the people involved in these events,
- (2) the influence of the physical and social *context* on these events and activities, and
- (3) the *processes* by which these events and activities and their outcomes occurred (Maxwell, 2013, p.83).

In using this approach, two distinctive forms of analysis occurred. When the focus of the discussion was on a chance event, it was common to speak about a moment or a discrete event. When attention turned to the context within which the event arose, the processes associated with the chance event became the focus of attention. Recognizing Blumer’s dictum of “sensitizing concepts”, Patton, M. Q., (2011) has explicated the variety of concepts involved in interpreting complex environments. He suggests complexity involves aspects of non-linearity, emergence, adaptation, coevolution, dynamic interactions and uncertainty (p.148). When contemplating the effects of complexity during both the interviewing and subsequent coding analysis, each of these principles needs to be entertained. Eventually, a dual lens approach to analysis proved beneficial. This involved a focus using both discrete time - *moments*, and complexity – *processes*, to interpret the behaviours and responses of the participants to the chance events.

Analysis using the *discrete time* perspective enabled the identification and recording of individual chance events. Analysis using the *processes* perspective provided understanding of the context within which the chance events occurred. This enabled different insights and interpreted the dynamical aspects of what was happening in the person’s life amid the impact of a chance event (Patton, M.Q., 2011; Pryor & Bright 2011).

Process analysis resulted in a nodal structure which reflects the themes inherent in the coding. These themes assist in interpreting the balancing act occurring in individuals’ lives as they live with uncertainty and respond to chance events.

Process analysis prompted multiple categorizations of individual chance events, and multiple perspectives of the dynamical circumstances occurring at any one time, and over time. It

How do chance and uncertainty influence the career development of adults?

enabled context and perspective to colour the interpretation, and capture the mixed emotions and delicate judgements that participants discussed. These themes are reported in the next section.

Memo writing during analysis facilitated the detection of connections between the behaviours and response styles of the participants and the chance events recorded in the interview transcripts (Bazeley, 2013; Maxwell, 2013; Saldana, 2009). The sensitizing concepts described by Patton combined with the principles identified in the Chaos Theory of Careers (Pryor & Bright, 2011) guided the drafting of memos during coding. The memos explored how individuals functioned during their experience of living and coping with ambiguity and uncertainty, and described the patterns of responses to chance events that flow from the dynamical environment that uncertainty creates.

5.7.1 Dual perspectives - moment and processes

The stories being told by the participants revealed the multidimensional impact of chance events. Interviewees could be seen as describing individual moments in their lives; or as describing opportunities and challenges, which were occurring to, and being negotiated by them. These alternate perspectives became pivotal as analysis of the content in the interviews developed. The language in the interviews described both the *moments* of chance events and the *experiences* of those same people over time, as they negotiated their way through issues of complexity. A focus on the discrete occurrence of a chance event points to the moment when the perception of the change of circumstance in the person's life occurs. The instant of the chance event itself presents as a discrete situation. Something unexpected happens. This perspective fosters the perception of chance events in terms of frequencies and categories. The chance events are contemplated as independent, discrete happenings.

Alternatively, contextualizing the chance event as part of a process refers to a more continuous situation – something that takes place over time. The chance event occurs and is perceived within a broader framework of multiple experiences. The ambiguity and the volatility of such a situation often creates a sense of anxiety and/or excitement in the person. This is how uncertainty, and the unpredictability associated with it, is experienced (Nowotny, 2015). Nowotny suggests that the tangible aspect of uncertainty that a person senses often reveals itself as a chance event.

How do chance and uncertainty influence the career development of adults?

Using these two different methods of interpreting the data enabled significant themes to emerge. Participants spoke of instances of chance events as moments; and they spoke of their experiences of chance events. These terms distinguish between analysis of the interview content in a quantitative way - that is, as a chance event. And analysis that interpreted occurrences in a more qualitative sense - that is, as the individual's experience of contemplating, coping, strategizing and acting to somehow move forward within a phase of uncertainty, or in response to some unexpected challenge or opportunity which has arisen in the form of a chance event.

5.8 Findings and preliminary discussion

These will be presented in sections one, two and three.

5.8.1 Section one - Two methods of analysis

Two methods of analysis were vital to interpretation of interview transcripts. Eventually, a dual lens approach using discrete time - *moments* - and complexity - *processes* - was used to interpret the behaviours and responses of the participants to the chance events. I have described these as *momentary analysis* and *process analysis*.

Analysis using the discrete time perspective of momentary analysis enabled the identification and recording of 110 individual chance events. The most common of these are discussed in section two.

Process analysis prompted multiple categorizations of individual chance events, and multiple perspectives of the dynamical circumstances occurring at any one time, and over time. Process analysis enabled context and perspective to colour the interpretation. It captured the mixed emotions and delicate judgements which participants discussed.

The themes arising from process analysis are reported in Section three.

5.8.2 Section two - Momentary analysis - The six most common categories

This cohort was interviewed because they had reported experiencing chance events in their work life, and this is supported by the 110 chance events identified in the transcripts of interview. The six most frequent categories accounted for three-quarters of the chance events, and each of these is now discussed separately.

How do chance and uncertainty influence the career development of adults?

i) Unexpected opportunity

Participants frequently referred to recognizing and acting upon an unexpected opportunity. Sometimes participants used adaptive behaviors as a response, including accepting an element of risk. David used the term “fortune favors the brave” in describing how he constantly responded to unexpected opportunities as he expanded the family business using a strategy of measured risk. Wanda, who at seventeen had no choice but to emigrate to avoid the prejudice and discrimination her family experienced in an Eastern bloc communist country, saw possibilities early on in her adopted country,

But in that six months that I had between arriving which was in June 1991, and January when I could apply for the College of the Arts, I actually started enjoying doing normal subjects at school. And I was very good at maths and sciences and I looked at all the girls around me and I thought, ‘Why am I not as good as they are?’ And I should be able to go and do something more with my life. Because, back in Hungary, I had no hope of getting to university. It wasn't something that was available.

When her scores were appreciably higher than she anticipated, another appealing opportunity arose and Wanda changed her university course from Engineering to Medicine.

The opportunity may exist, but the individual, having recognized the opportunity, has to do something about it - to act! Without action, the opportunity will most likely disappear or evaporate. Therefore, self-efficacy, commitment, courage and sound judgement are required to exploit the opportunity (Bandura, 1994; Krumboltz, 2009; Pryor & Bright, 2011).

In some instances, the existence of an opportunity can be exploited to maximum advantage. Both Andrew and Zara spoke of accepting redundancies and then moving seamlessly on to a new job as the next phase of their career. Zara explained how she managed one job change to her advantage.

When (the) Colonial (Bank) was taken over by the Commonwealth Bank, a lot of the positions weren't really... a lot of the positions had changed, and what they were offering me I wasn't really interested in. So I asked for a redundancy that time.

Zara then moved on to other work more interesting to her. Andrew, who sensed his circumstances in his current job were tenuous, put his feelers out for alternative work before a restructure in his original workplace was finalized.

How do chance and uncertainty influence the career development of adults?

And I was lucky in the sense that, then, the company said, ‘No. We're going to give it (Andrew’s job) to somebody else’. And I was able within a week to say, ‘Thank you for the redundancy. I've now got a job at Shell.’

Another way in which an unexpected opportunity can be beneficial is to add it to one’s repertoire of experiences and skills, which may be useful in the future. The diversity of work roles early in Ursula’s career generated opportunities for increased self-awareness, leading her to become aware of her interest in people. This led eventually to a change in career direction from engineering into human relations and security management. Susan saw an unexpected opportunity as a chance for self-growth and learning. “You are developing yourself” she said. Others spoke of using unexpected opportunities to increase networks and gain experience in areas of interest, such as Kevin who was incidentally “learning about horticulture” while studying agriculture, which later contributed significantly to his skill as an agricultural researcher.

ii) Barriers to a previous career plan

Participants reported that their thinking about their career development changed on occasions because a premise, which they had previously used to determine their plans, no longer held after the occasion of a particular chance event. Barriers such as these can take many forms. There were several references to perceived prejudice or negativity toward an individual that prevented an otherwise expected opportunity from ensuing. Grant was given no reason for the non-renewal of an expected contract. He explained “One of the associate directors, I don't know for what reason, but he just said that he wasn't going to renew my contract for the following year.” This threw Grant’s plans into disarray for a short time. Olga had to cope with the repercussions of her husband’s political work as it prompted prejudice and negativity toward her in her workplace, eventually leading her to resign from two employers. “Angelo (my husband), was well known. It was very negative. Some people were incredibly supportive, but some weren’t. It was very obvious that I wasn't going to get promotion there whatever”, she said.

Bernard experienced the negative effects of favoritism by a manager. This eventually led him to leave a long standing and successful career, despite last minute attempts by management to retrieve the situation. Bernard explained to his senior manager why he was leaving,

How do chance and uncertainty influence the career development of adults?

... it's because of your Deputy and his treatment of me, and the decisions he made and the way he behaved. I have simply lost respect for him; and refuse to work for him anymore. And then, he (the senior manager) said. 'Well it's interesting you should say that, I've just fired him for that.'

Two participants explained that the relocation of a workplace meant they had to find new jobs. Wanda, having suddenly emigrated from Eastern Europe while studying a vocational music course, described her predicament, "It just happened that we arrived halfway through the year and in June there was no intake into the College of the Arts in Melbourne". This resulted over time in Wanda abandoning her chosen career in music and, after years of hard work, and fortunate academic opportunity, becoming a doctor. Zoe moved to Sydney when her partner accepted a promotion. This meant giving up an academic opening at a local university, "It would've been a very good job, and they wanted me to stay on and do a PhD. They could see I had a flair for tapping into the needs of the client". Zoe's academic career was on hold for over thirty years as she used her client skills in other fields, finally completing a PhD in 2016.

The incidental effects of health were often a barrier to participants' plans. Poor eyesight prevented Francis from passing a medical to become a train driver. Rita had to adjust her work to accommodate the health needs of both her son and her husband. Olga took time out from work when nursing her dying husband.

An interesting barrier to linear career progress occurred with two subjects reporting an epiphany effect – a sudden insight about oneself, which leads to a dramatic and instant re-appraisal and change in career direction. Paula says, "I woke up in the morning and I thought, 'I don't want to go - and I don't want to do this anymore'". Paula then set about finding other work and began a different job a week later, switching from optometry to retail management.

Nola's first job interview after graduation for a position in a legal firm resulted in a sudden insight and subsequent change in career direction. She described it in this way:

And I sat in the interview and I had - it might sound a bit extreme, but I literally had an epiphany. I was sitting there thinking, 'I don't want to do this! This is not for me at all!' Oh no!' And I know my head was nodding, like being polite. But inside I was going, 'No! No! No! No!

Nola then abandoned her original career goal based on her legal training, and used the skills she had gained during her coursework to secure work as an administrator.

How do chance and uncertainty influence the career development of adults?

This form of barrier to previous thinking may also arise gradually, as an insight about oneself grows over time. Ursula, a highly successful businessperson, was greatly affected by the death of a close friend in her early forties. She reflected this in these words:

Look, it's probably more a series (of things). That (her friend's funeral), was probably just a culminating event if you like. But it also builds on previous losses. My mother passed away just after my 12th birthday from cancer. Then, losing my grandmother who was my surrogate mother for many years. I lost her about four years ago at the ripe old age of 88. Those deaths sort of build on each other in terms of an impression...

I guess it changes your level of conviction about how strongly you want to live your values. I was very committed to career. And sitting at my friend's funeral and having eulogies with people saying what she meant to them, there was very little about the work context. And yet, she had been a professional woman. No children, but very, very strongly active in her local community in various aspects. It just brought home to me that what you are worth, and who you are, is so much more than the person who pays your bills.

Shortly after returning home from the funeral and that sudden realization, Ursula took steps to reorient her work and other life commitments. Ursula reassessed her priorities with her husband, and proceeded to negotiate with her employer to enable her to become a mother while remaining in her work role.

In Ursula's case, the seeds of change in the form of chance events had occurred over a lengthy period. As reported by Ursula she connected three bereavements, spanning more than a twenty-year period, which culminated in her sudden realization and re-orientation of values.

Many barriers to existing plans arise because of inconsistencies between a person's belief systems, supported by their values, and the circumstances perceived to be prevalent in the workplace. Where barriers are insurmountable, a common response is to resign from an untenable position. Nola persisted under difficulties for many months, before abandoning her preferred place of work because a manager whose leadership she questioned was not likely to leave, "So in the end, I resigned from the position".

Where such a conflict becomes too difficult, a person will commonly explore alternatives. Paula put it starkly:

How do chance and uncertainty influence the career development of adults?

I woke up in the morning and I thought, ‘I don’t want to go - and I don’t want to do this anymore.’ And I thought, ‘Oh this is interesting’. And I remember, I ditched the professional development seminar and jumped onto Seek and I thought, ‘I wonder what is out there?’

Resignation like this may occur spontaneously, as with Olga or Paula; after a period of persistence and attempted negotiation, as in Nola’s case; or as part of a broader strategy of re-employment. Andrew, anticipating an overseas posting in conflict with his family priorities, pre-empted his employer’s perceived intent by securing another local job and resigning. Bernard, unhappy with unfair favoritism shown by his boss, sought work elsewhere and resigned. Susan received a transfer to a remote location, tried to make it work, but found both the job and the isolation from friends were wearing her down. She reflected:

I can say I was really wishing my life away. I mean I did a few other things. I did tennis lessons, not that I'm good at it. I'm a clay shooter now. My weekends were fantastic, but going in to work was a massive struggle.

A vital skill in this adjustment process is the use of imagination to assist in generating viable alternatives. Gelatt (1989) refers to this as “creative remembering and imagining” (p.254). Kevin, Ursula, Ed and Rita each recounted examples of such imagining. In cut and dried circumstances, where an original plan is debarred, as with Francis, Zoe, and Therese, they each used their accumulated resources to assist them to identify and secure passage to a viable work alternative. These accumulated resources are referred to in later discussion as *embedded systems*.

As far as can be ascertained, the insights reported here are unique within career literature. Other qualitative studies seem not to have focussed on the motivational disposition of the subjects to this extent (Mainemelis et al., 2015; Williams et al., 1998). The instances reported indicate that there are multiple causes of barriers to previous career plans. Barriers are referred to by Bright et al. (2005) and Betsworth and Hansen (1996), but the nature and range of barriers appears to be little explored or understood within the literature on career development.

iii) Being in the right place at the right time

Those reporting being in “the right place at the right time” are generally reflecting on the occurrence of some event that they perceive to be of benefit to them. However, a person may recognize, but not act upon many opportunities. This is particularly so when he or she decides

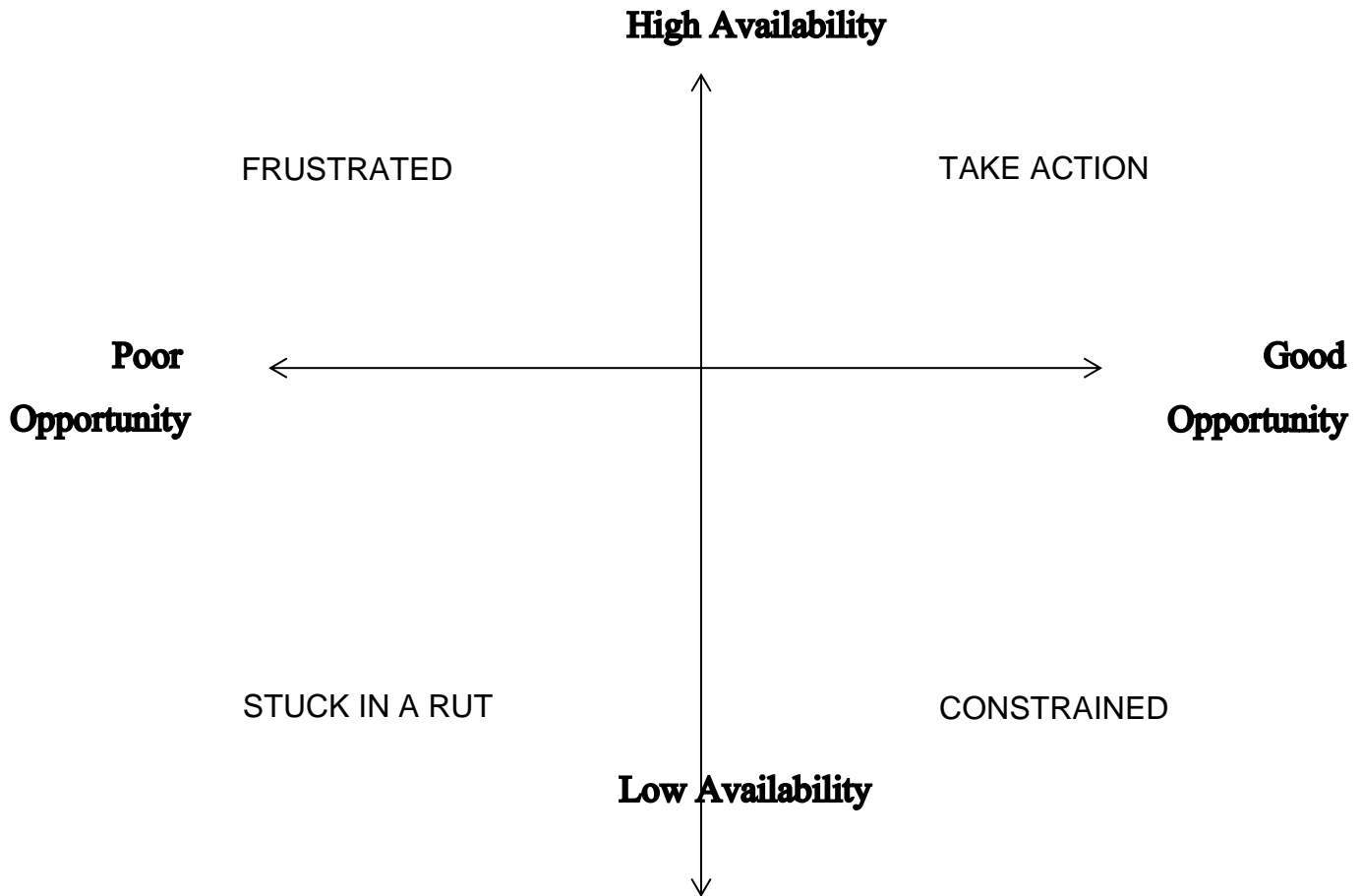
How do chance and uncertainty influence the career development of adults?

that the timing is not suitable. This could be seen as “being in the right place at the *wrong* time”. Being available to take up an unexpected opportunity is a major part of being in the right place at the right time. If a great opportunity arises but a person determines that he or she is unavailable, that situation does not reflect being in the right place at the right time.

In this sense, two circumstances occur. An opportunity that appeals to them is present; and they are in a position to avail themselves of it. Figure 3 illustrates this.

How do chance and uncertainty influence the career development of adults?

Figure 3: *The coincidence of availability and opportunity*



In the model presented in Figure 3 four scenarios of availability and opportunity are presented. The area depicted in the upper right-hand quadrant depicts the coincidence of desirable opportunity and ready availability, that is, being in “the right place at the right time”. The person is more likely to consider, evaluate and pursue the opportunity. In an environment where the person senses a high level of availability or openness toward an opportunity and an appealing situation arises, the sense is that he or she is in “the right place at the right time”, and the person is likely to take action to exploit the opportunity.

In a second circumstance, the opportunity may appeal but the availability may be low, as in the lower right-hand quadrant. This person feels *constrained* rather than free to show any initiative about an opportunity. This was the case with Zoe, who chose to forgo her interest in PhD studies to be with her partner in Sydney following his career promotion.

In the third situation, a person may be searching for, or open to an opportunity, but an appealing opportunity may not emerge. This is reflected in the upper left-hand quadrant and

How do chance and uncertainty influence the career development of adults?

could leave the person *frustrated* about the situation. Andrew could foresee opportunities coming his way; but they were likely to be overseas and therefore not suitable.

The fourth situation occurs where a person feels they must maintain their current work circumstances for whatever reason, and they foresee no immediate prospect of an opening or suitable opportunity arising. This is depicted in the lower left-hand quadrant. The person may be described as *stuck in a rut* and needing a circuit-breaker to progress. Susan described this experience in one job before she finally resigned saying, “Yeah I can say I was really wishing my life away”.

The commonly used expression, being in “the right place at the right time” is used to refer to many varied circumstances (Betsworth & Hanson, 1996; Bright, Pryor, & Harpham, 2005; Hirshi, 2010). Being in the right place at the right time can appear to be a series of coincidences, as reported by interviewees Bernard, Francis and Kevin. Kevin described it in these words: “Can you see what I'm trying to get at? That chance invitation cropped up because somebody had known someone and I'd been there at the time - so in the right place at the right time!”

It can seem just like luck. David suggested, “It's having a lot of contacts...”, when referring to various opportunities that had come his way in his family business. Olga remarked, “My timing was impeccable” in reflecting on her good fortune in gaining a scholarship to study computing at an opportune moment. Being in “the right place at the right time” can refer to a situation where the environment is conducive to the outcome. James suggested that a less bureaucratic and more lax regulatory environment in the 1970's assisted his early career. “When I did it (archeology), it was much easier to start doing something,” he said. Harry sensed that being born at a time of low birth rates in the 1930's had facilitated his legal career due to less competition for opportunities, “Well, I think I was lucky to be born at a time when there was a low birth rate,” he said.

The common response emphasized in the interviews is to run and grow with the unexpected opportunity arising from being in the right place at the right time, a strategy endorsed in the literature (Bandura, 1994). Having made a commitment to action, participants believed in their capacity to succeed. In a general sense, once the participant had determined that he or she is open and available to the opportunity – no matter how it arose, nor how surprising it seemed to be – it was then embraced. Several authors have indicated the relevance of this to an individual's

How do chance and uncertainty influence the career development of adults?

career development, (Arthur 1994; Gelatt 1989; Hall, 1996, 2004). This openness to opportunity can subsequently be a cause of great joy, as one becomes free to pursue one's passion. James, reflecting on his initial volunteering, recalled, "I expected it to be something like two months at that time and it would have been very easy to have dropped back to my previous type of work". In fact, James enjoyed working in the fields of archeology and anthropology, which he discovered by chance, for 48 years.

James' situation raises another aspect of chance events that featured in both the surveys and interviews - sometimes an initial chance event gave rise to a series of chance events. Events unfold in a series of unpredictable instances of emergence (Goldstein, 2010; Pryor & Bright, 2011).

iv) Personal or work relationship

Every person has a *network* of people they know, or are aware of somehow. Each person also has a reputation, which functions a little like his or her personal brand. These contacts and reputation(s) can be critical to the generation and emergence of opportunity through chance events.

Interviewees reported reaching out to both close and more distant contacts to advertise their interest in, or to generate an opportunity. This behaviour is more common when the person's availability for opportunity is higher than usual. This can arise through a company restructure, disenchantment with the current work role or work relationships, or a wide range of other factors. In each case, the contact is the conduit toward the opportunity, but the commitment to action rests with the individual who seeks out or is exposed to the opportunity.

Sometimes, a personal experience of an unexpected opportunity will seem to the recipient to occur randomly. As Bernard put it, "Suddenly I got a call from this guy saying, 'You don't know me but I'd like to talk to you.'" However, this is often an example of the person's reputation expanding beyond his or her immediate horizons. After being recruited for one position, Andrew reflected, "The headhunter didn't know me from a bar of soap." In this case, other contacts of the broader community, either of the recruiter or of Andrew, had mentioned Andrew's suitability for the position to the headhunter who then decided to make contact with him. Ursula was recruited by her current employer after consulting with the company on several projects over a five year period.

How do chance and uncertainty influence the career development of adults?

A personal or work contact may also mention an opportunity. Zara commented, “And a friend said, “Oh, I actually know somebody who's working as a psychologist at Sydney University and why don't you have a chat to her?” Making this connection gave Zara two years of work before she moved overseas. Kevin’s career story as an agricultural researcher is replete with contacts and acquaintances who later became work colleagues through connections first made at conferences. Sometimes an individual will ask existing contacts. On arrival in Australia, Wanda used nationals from Hungary to assist her. Nola moved from place to place within her large employer, sourcing opportunities from other co-workers. Having heard on the grapevine that there were openings of interest to her, she enquired about her suitability with a colleague in the section, as illustrated by this comment, “So I called her and I said, ‘Do you think somebody with my skills would be any good?’ And she said, ‘Oh yeah, you'd be great!’” Another productive method of developing opportunities that was reported is to create new relationships. Zoe did this when she moved to Sydney, contacting those active in the desired field to see if they could assist her to find a suitable opportunity.

Whether relationships arose from personal, social or work connections, they were often an important resource in enabling the person to develop a suitable response to an unanticipated and disruptive situation.

v) *Influences of family*

There were many examples of the influence of family considerations in the judgements this cohort made about paid work commitments and lifestyle. Various dimensions of family life exert influence on other aspects of a person’s life, especially the individual’s approach to paid or market work (Hakim, 2000; Lewis, 2001). Many adults expect disruption to career progress due to the influence of family, and incorporate this into their strategic thinking as a normal part of life. People juggle their priorities and make judgements accordingly. David relocated to a brother’s workplace several hundred kilometers away to help solve a family crisis. Nola spent more than a decade combining unpaid care work and paid market work to co-raise children with her partner. This balancing act between care and market work was spoken of commonly among interviewees including Nola, Harry, Andrew, Brendan, David and Zara among others. Most participants take a long view and adopt a strategic approach guided by the mutual family priorities of the partners.

How do chance and uncertainty influence the career development of adults?

Andrew actively sought to change employers rather than be forced into accepting an overseas posting. David left a flourishing career to address family health concerns. When the opportunity arose, Harry, mindful of his family commitments, abandoned aspirations as a barrister to accept the security of a judicial appointment. Rita, Nola, Olga and Ursula, all adjusted their level of work commitments to allow time for child caring and health issues, which influenced their capacity to manage full-time work commitments. Zoe and Zara both spoke of arranging their availability to pursue paid work around the care needs of their children. Nola described how she and her partner each worked part-time to enable management and nurturing and active involvement in the raising of their young children.

Lewis (2001) describes six family earner structures illustrating the realities of everyday life for many people with families (p. 157). She includes single breadwinner and dual income work styles, as well as those with full-time and part-time work commitments. Many commentators emphasise the complications that care commitments for children, the disabled, the ill and the elderly can add to a person's lifestyle and work commitments (Blustein et al., 2008; Hakim, 2000; Keeney, Boyd, Sinha, Westring, & Ryan, 2013; Richardson & Schaeffer, 2013). Besides this, there are multiple stages and transitions in an individual's life. The influence of family will vary as a function of age, gender, relationship status as well as education and income (Super, 1990). In the instance of emigration recounted by Wanda, as a dependent child of 17 years, she lacked any independent control over her situation and her career development had to adjust after her unexpected relocation to Australia.

While the factors are isolated in the discussion here for presentation purposes, it is important to recognize that each of these operates interdependently and with varying levels of significance at different times. They function as part of a dynamical system, and the relevance of even minor factors cannot be discounted (Cilliers, 2001; Pryor & Bright, 2011).

Negotiation with the employer will sometimes provide a means of resolving multiple family priorities. This tactic or strategy is common and can be successful. Ursula generated a personal restructure of her work commitments with her employer after her family priorities altered. She explained:

It led to my husband and I to make decisions that it was time to start a family. My husband and I decided that, 'Yes, it was time to start our own family.' Now was the time to start our own family rather than progressing careers. We both had time at home as full-

How do chance and uncertainty influence the career development of adults?

time parents and my husband is now part time four days a week; and I've just come back from four days a week to five days a week. My new role started a week ago. I've been very lucky in that I had a line manager who was very supportive of me through all that process. He and I have worked together for ten years now and he has gone above and beyond in terms of making it easy for me to be the parent that I want to be in the early years, compared to basically being driven by my career. That's been good.

Rita arranged her work schedule around her family commitments when she realized the gravity of her child's educational needs. Her young son had recently been diagnosed with autism. Rita continued,

So that made me sort of think, 'If that was the situation, if that was potentially what was going to happen, how can I be holding down a full-time job in IT?' And again, I can't remember what order it happened, but clearly if I was going to support this child to the extent that some of these kids obviously are, either I wasn't going to be able to work, or I had to work reasonably flexible hours, part time, close to home.

Obviously, children are a major source of chance event influence on a parent's career development. Andrew used his initiative when anticipating the birth of twins by pursuing a strategy designed to enable his family to remain in their existing locality, rather than have to respond to a likely overseas posting. 'I could see that happening and it was something really didn't really want to contemplate at that time...' he said. This involved using networks and eventually resigning from an existing job to maintain work in a suitable location. Similar adaptations can occur to facilitate needs around schooling, illness and disability, where acute or long-term care for a child can arise unpredictably.

A partner's flexibility is a continuing issue regarding work arrangements. Ursula recognized her good fortune when accepting a posting involving a major relocation. "Luckily for me my husband is an electrical engineer and was able to transfer to the Sydney office of his consulting firm. So it was a relatively easy shift". Such a smooth transition for a family unit is more likely the exception rather than the norm. Adjusting work arrangements based upon a partner's work commitments is likely to be an increasingly important issue as our globally oriented society grapples with concerns about who adjusts for whom within the two-income family of the 21st century.

How do chance and uncertainty influence the career development of adults?

Participants with dependent children alluded to many combinations of market and care work arrangements as indicated by Lewis (2001, p.157). Olga's career history of forty-five years is replete with stories of care work for her own children and a husband with a terminal illness. Over this time, she has included several senior roles in major companies juggling priorities as care needs changed. Her matter of fact manner is evident in this comment: "But eventually I wanted to get out. And one of my old bosses, he had moved to the National Australia Bank. And he sort of talked to me about going and working there."

The attitudes of Zara, Rita and Zoe are other examples where the type and amount of paid work being committed to was governed by considerations including their partner's level of commitments related to paid work.

Sometimes family influences are influential but not directly related to care work. Susan changed employers to be closer to family in a metropolitan area, rather than continue working in remote mining centres. Paula felt free to abandon her optometry career because of the support of her partner. The breakdown of a partner relationship can also function as an unexpected chance event in a person's life. This can have major repercussions for career development as the need to re-establish a comfortable personal identity and rebuild one's finances may become more significant. Ed commented:

It was separation from my wife at the time, which in one sense had two consequences really. Because of the financial consequences of that, I did need to get secure work, which was the main, the prime reason, why I went back to work for the government on a contract for three years.

Both Bernard and Ed spoke about how they had to reconstruct their finances after divorce. After his separation, Francis, who had a fascination with the Outback, felt able to work in Alice Springs because he felt free of family commitments.

Family relationships can extend well beyond the immediate dimension of the nuclear family. This may be a culturally based, or even an idiosyncratic circumstance unique to any one individual and his or her family. David responded to the needs of elderly parents; Ursula was greatly affected by a conversation with her grandfather when she was just fourteen. Both participants referred to these chance events as influences on the long-term development of their careers. Counter-intuitively, Rita, whose immediate family lived in New Zealand, mentioned the absence of proximate, extended family as an influence in her seeking work closer to home to

How do chance and uncertainty influence the career development of adults?

enable her to alternate between her care work and market roles more easily, “I had to work reasonably flexible hours, part time, close to home,” because she had no family back-up nearby.

Blustein (2006) has raised concerns about the need for the counselling profession to develop a broader and more empathetic perspective about the way work, in all its forms, impacts on lives. People undertake many work roles in their normal daily routines. Richardson (2012) argues that work is part of a broader mosaic of social contexts within which people function. “The four major social contexts are market work, personal care work, personal relationships, and market work relationships” (p. 191). Awareness of these dimensions of career guidance does not simplify these issues, but rather, challenges the counsellor at both levels of individual counselling and public policy advocacy and development. Technological advances, such as robotics’ consumption of repetitive work tasks, compound these issues. The modern worker needs to be nimble and adaptable to survive (Ashforth, Kreiner, & Fugate, 2000).

vi) An injury or health problem

A classic form of chance event is an unexpected injury or health problem. Chance events arising as health events may occur to the individual such as Bernard, who stated “And at the same time I discovered I had a brain tumor”. Alternatively, a health crisis of a loved one close to the individual may have just as significant an impact. Rita, reflecting on how she was affected by a friend’s illness, said:

And then somebody who was a friend of mine that I had worked with was diagnosed with breast cancer. And within about 10 days of the diagnosis she’d had a double mastectomy. She gave up work, and it made her completely rethink her life.

Rita went on to explain that the impact this health crisis in someone she loved had on her. Speaking of her friend and her scare with breast cancer, she said:

And her priorities changed. And I obviously hadn’t gone through something like that, but that was another thing that got me thinking about...(voice trails off). Her view was, she had been thinking about how much time she had left. She’s all good now - it has been a happy ending. But she looked at it as, ‘What am I going to do with the rest of my time?’ thinking that it might now be limited. And there were now much higher priorities than a high-paid executive job. So that was another thing that happened.

How do chance and uncertainty influence the career development of adults?

This experience with her friend's health scare was one of a series of chance events that culminated in prompting major changes in Rita's priorities eighteen months later.

For the individual, a health problem may be personal – meaning that the problem happens to them. Both Bernard and Francis survived a serious cancer. The other circumstance that can be equally dramatic occurs when a loved one's health is seriously affected as was reported by Olga, Rita and Theresa. In either situation, fatigue and great stress is experienced by those involved. However, a significant health condition can rarely be ignored, meaning denial is a counter-productive strategy.

Good health is essential for the normal functioning of a person's life. It is not unusual for a person to step-back from a work role as Francis did, to focus on regaining full health. Often one's other accumulated resources such as family, work colleagues, work leadership, and health insurance will facilitate this. Bernard, Andrew, Rita and Ed all reported the benefits of significant support provided to them during times of elevated stress. Rita's three year old son was diagnosed with autism before she had become aware of any unusual behaviour. Olga cared for her husband over a prolonged period when, after some ill health, he was found to have early onset, terminal cancer.

Strategies and plans relating to health issue chance events are paramount as part of coping measures. There is often a state of constant uncertainty during periods of serious health events. However, any plans may need to change frequently, as circumstances and needs change constantly. This is true for both the individual beset by a health problem and for those in a carer role. In such a situation, new work roles and/or carer roles may be adopted over time in response to the chance events. Rita, Therese and Ursula rearranged their work commitments after a re-evaluation of their work and other priorities due to an unexpected health event.

Although people are aware of the potential for a health issue to suddenly interrupt a person's career journey, there is generally an element of surprise or shock associated with a chance event affecting health. The nature of such a chance event is usually perceived as a negative. However, this negative aspect was overlooked by subjects responding in Survey One. Several incidents of health issues were referred to in text responses in Survey One, but in answering the survey, no one associated them with being a negative chance event. It seems responses to a major health issue vary widely depending on a vast range of contextual and psychological factors (Gelatt, 1989), and these responses may change over time as part of normal

How do chance and uncertainty influence the career development of adults?

human coping mechanisms. For those who resolve the challenges presented by negative chance events, the negative side of the original event may fade from memory. The satisfactory resolution through hard work and determination of challenging circumstances may become a source of pride and continuing self-belief (Weiner, 1986).

5.8.3 Negative chance events were reported in the interviews

In Survey One responses no subject chose to categorize any chance event experience as negative. This result differed from the findings of earlier studies (Bright et al., 2005; Bright et al., 2009; Hirschi, 2010). However, closer inspection of the interview transcripts referring to the 110 chance events indicated that as many as twenty chance events could have had varying levels of negativity associated with them. During the interviews, mention of these chance events usually arose as part of a larger story. The specific events ranged from quite traumatic happenings - two instances of severe cancer, and an accident where a partner was rendered a paraplegic – as well as other events that had less severe negative connotations, at least in the immediate and short term. However, by the time subjects were responding to the survey, the negativity associated with the chance event may have subsided significantly, leading the subject to focus on the subsequent outcome when answering the survey. This may explain the survey response that no one had experienced a chance event that was negative.

It may be that the context of the event and its aftermath provide an explanation for the apparent downplaying of the negative aspects of these events. Years later, issues have been largely resolved, and the person reports more on the present and continuing situation than on the past (Bandura, 2005; Borg, 2015; Salamone & Slaney, 1981; Weiner, 1986).

Blaine and Crocker (1993) suggest that a common behaviour is for people to reduce awareness of negativities over time, and to attribute their own resourcefulness to beneficial situations and outcomes. The interviewees were reflecting on crises and challenges in their lives, which had long since been resolved, and only referring to the negative chance events as a contextual part of the story.

5.8.4 Section three - Process analysis - Managing chance events

This section uses process analysis to look at the broader contextual circumstances within which the chance event was perceived and managed by the individual. Nowotny (2015) suggests

How do chance and uncertainty influence the career development of adults?

that uncertainty often reveals itself in the form of a chance event, and all participants discussed how they reacted to the surprise of a chance event. Once the chance event is revealed, the participant is challenged to function and manage within a changed set of circumstances, regardless of the level of awareness or preparation that they may have achieved beforehand.

By using a more continuous and contextual approach to the analysis of the transcripts, process analysis revealed how participants lived in the midst of uncertainty. The perspective or sensitizing concepts used within the analysis (Blumer, 1954; Patton, M.Q., 2011), guided the interpretation of the patterns of behaviour among the participants. This approach fosters multiple interpretations of participant behaviour (Collins, 2016). When a decision is required, the judgements may often be tentative at best, with contingencies being entertained continuously as events unfold and a new context emerges (Prior & Bright, 2011). This unpredictability creates a sense of ambiguity and uncertainty in the individual. This can be a source of anxiety or excitement, or both, depending on the situation and the temperament of the individual.

In this sense, interpretations and coding reflect the dynamical features that are characteristic of chaotic environments (Collins, 2016). Participants are coping with, responding to and managing change within an uncertain and unpredictable environment. Pryor and Bright, (2011) suggest chaos theory offers an understanding of this process. They speak of “change in terms of adaptation and resilience” (p. 28), and how “a complex dynamical system tries to maintain its stability in the face of influences to change” (p 28). They go on to point out that “because change can be non-linear, iterative and unpredictable, there remains the perpetual possibility that new outcomes for the system may emerge” (p 28).

Collins’ drawings explored the representation of the interaction of processes in complexity systems by visual means (Collins, 2016), a field pioneered by Taylor, Micolich, and Jonas (1999) and their discovery of the fractal patterns in Pollack’s art. Collins’ hand drawings depict the multiple dimensions and forces operative within a chaotic environment. Visual representation such as this can make it easier to resist reductionist thought patterns of analysis, and move toward a less definitive, but more sensitive understanding of that which is continuously emerging (Collins, 2016; Patton, M.Q, 2011; Pryor & Bright, 2011).

How do chance and uncertainty influence the career development of adults?

5.8.5 Coding derived from process analysis

Using the multiple perspectives fostered by process analysis gave rise to five themes whose characteristics are discussed in this section. These themes and their associated nodes relate directly to the participant stories reported earlier in this chapter. Italics are used in the text to indicate themes and nodes. After this discussion, one aspect of the themes will be more deeply explored by adapting Collins' model to the data in the interview transcripts.

The five main themes identified during the process analysis of the 110 chance events are referred to as "Parent Nodes" within NVivo coding. They are *complexity*, *control*, *embedded systems*, *opportunity* and *satisfaction*. There are three child nodes within each of these parent nodes. These relationships are depicted in Table 16 and an elaborate nodal structure is in Appendix D.

Table 16: Processes and relationships - nodal structure of the five process analysis themes

Parent Nodes	Child Nodes
Complexity	Ambiguity and insecurity Chance events Multiple roles
Control	Level of control Leadership No control
Embedded Systems	Strategy Network and relationships Accumulation
Opportunity	Openness Measured risk Epiphany
Satisfaction	Values Saying No! Flexible work

The five Parent nodes representing the major themes are described below:

How do chance and uncertainty influence the career development of adults?

- *Complexity* refers to the broad context within which the individual and the chance event coexist. The features of complexity are consistent with those referred to in Chapter Two, and regularly throughout this thesis (Pryor & Bright, 2011). The three Child nodes identified in this realm are *Ambiguity and insecurity*, *Chance events* and *Multiple roles*.
- *Control* relates to the feelings, thought patterns and reflections the person experienced because of the chance event. The Child nodes in this realm are *Level of control*, *Leadership* and *No control*. Level of control is different from locus of control – the latter referring to self-efficacy (Rotter, 1966), while level of control refers to the degree of influence the participant felt they had at any time during the events that they were discussing.
- *Embedded Systems* refers to the way in which the passage of time generates an acquired history of life experience, skills and knowledge unique to each individual. These accumulated resources may be deployed in response to a chance event. Child nodes in this realm are *Strategy*, *Networks and relationships* and *Accumulation*. Embedded systems will be explored in more detail shortly, using Collins' (2016) model representing complex systems.
- *Opportunity* refers to the attitudinal and decision-making disposition and experiences of the person. To a large extent, opportunity resides in the perceptual characteristics of the beholder. Participants referred to their agentic behaviour in exploring, judging and executing strategies to realize desired opportunities. Child nodes in this realm are *Openness*, *Measured risk* and *Epiphany*.
- *Satisfication* refers to the rationale that participants used to describe their management of a chance event, and the implications it had on their career and life more generally. *Satisfication* is described as the principle that people and organizations seek to obtain a satisfactory solution, not necessarily the optimum one (Simon, 1972; Tversky & Kahneman, 1989). Satisfication can be seen as a contiguous behaviour of the participants responding as they are to ambiguity and wishing to create a greater level of predictability going forward. Child nodes in

How do chance and uncertainty influence the career development of adults?

this realm are *Values*, *Saying No!* and *Flexible work*. These are like signposts guiding the judgements within the satisfaction behaviour.

5.8.6 Nonlinear and disproportionate impact

Each of the themes describes a dynamic, all of which co-exist in the person's schema. Within this conceptual design, each theme absorbs a series of nodes and sub-nodes. When dealing with uncertainty, even a small sub-node may be the catalyst for a series of thoughts, feelings and behaviours which otherwise may have remained dormant. Such sensitivity to initial conditions can be either a response to a feeling or to an objective reality. This is consistent with the Chaos Theory of Careers suggestion of the disproportionate potential of chance events to effect change (Pryor & Bright, 2011). The coding of the five main themes in Table 16 suggests one functional relationship between these themes and nodes. In a hierarchical sense, the themes in the nodal structure branch out from the Parent to the Child nodes and then into sub-sets of ideas relating to how each of these processes occurs. However, as Grigsby and Osuch (2007) point out, the functional relationships occurring within the brain are much more dynamical than this.

Each of these themes will now be discussed independently, and then one of these – Embedded Systems - will be explored using the Collins' (2016) model of complexity. Italics are used to indicate themes, nodes and sub-nodes

5.8.7 Managing chance events – Theme: Complexity

Section Two of Chapter Two discussed how modern western culture maintains an increasingly complex lifestyle (Castells, 2011). *Complexity* captures the essential features of these lifestyles. An individual has *Multiple roles* to manage, often on a daily and simultaneous basis. Challenges can arise within a work, personal or family context often presenting dilemmas and circumstances requiring decision-making under perplexing conditions. *I didn't know what to do* was a common sentiment conveyed by many participants reflecting on their initial reaction to the chance event. The logistics associated with resolving competing challenges is very tricky, time sensitive and emotionally demanding.

These situations create and maintain *Ambiguity and insecurity*. Common chance events that prompt these situations are restructures, health issues and the rate of change common in

How do chance and uncertainty influence the career development of adults?

modern society (Castells, 2011). Common effects of the ambiguity and insecurity are uncertainty, anxiety, despair and reactionary behaviour.

Chance events arise in a complex environment. The stories recounted in Section Two of this chapter described participants' responses to the six most commonly reported chance events. Participants' spoke of "being in the right place at the right time"; of taking an "opportunity", of "sensing change", of taking a "fork" in the road, and of "luck" both good and bad.

As a theme, Complexity provides a contextual overview of the dynamical circumstances within which the participant lives. The agentic qualities of the individual are only one aspect of this complex system, but they are central to this study and can be highly influential, (Bandura, 1994; Krumboltz, 2009).

5.8.8 Managing chance events – Theme: Control

Control as the parent node captured the range of feelings experienced by the interviewees. The *Level of control* a person experienced varied dramatically and dynamically under the wide variety of experiences and circumstances that were reported. In a sense, the level of control experienced functioned like a pendulum. It swung from absolute control to no control depending on the story the participant was reporting, and the changing context as emergent qualities unfolded within each process. Nowotny (2015) refers to this as the "ever-changing tension between the two poles of a dynamic spectrum, of being in control and exposed to uncertainty" (p.1). The level of control the participant reported experiencing depended greatly on the context of each situation. In response, some participant behaviours were spontaneous and desperate; others were considered and strategic.

All types chance event could have an impact on the level of control experienced by the participants. The six most common types of chance events were discussed earlier in this chapter. As an example among these, corporate restructures were a common cause of loss of control in the workplace. The mere hint of a restructure creates uncertainty and ambiguity in the workplace. This is accompanied by a sense of loss of control as the employee second guesses the possible motives and actions of management, while managers themselves are not immune from sudden dismissal or redeployment. The person uses self-belief, alertness and other resources to assist in coping during this phase. However, once a person commits to a chosen course of action, as

How do chance and uncertainty influence the career development of adults?

depicted in the earlier representation of being in the right place at the right time, a sense of loss of control ensues. One exchange with Bernard reflects this:

Interviewer:

Can you describe your experience of how much control of the situation you had?

Bernard:

I'd had a bad experience and it resulted in me missing a promotion that I was regarded as having worked for, qualified for and in fact had been selected for. To me, professionally that was very hard to accept. I could in fact, go elsewhere and get that promotion and go another path.

So there was some control... and some lack of control over that circumstance. I still had a solid career ahead of me. In fact, I was being made a very attractive offer and one that I would have been keen to take up under normal circumstances. So there were things I could control where I was.

The initiative to move on and indeed reach out to other people as I started saying 'I would like to move on'... That was within my control, although it was a matter of putting myself forward and making my candidacy or availability known. Then the control lessened as the process continued.

Interviewer:

So it's like a pond with ripples?

Bernard

Correct.

And in fact during this process another person approached me with a different opportunity and was really pressing me to take that one up. So in fact when the offer was made to go to Qantas, I had this other offer as well. And I had to say 'Look, I'm very sorry but I'll have to think about this for a few days'. So there was an element of control and an element of chance in that space. In the part of taking up the job with Qantas, that was entirely in my control to say, 'Yes. This is what I want!'

Child nodes within the theme of *Control* were *level of control*, *headhunted*, and *leadership*. Several of these nodes had further subsets. Level of control included aspects of having *no control*, *low control*, or *high control* and *managing control*. Headhunted included ideas of *shock*, *encouragement* and *low control*. Leadership included *wise counsel*, *poor leadership*, *respect* and *communication*.

How do chance and uncertainty influence the career development of adults?

5.8.9 Managing chance events – Theme: Embedded systems

Embedded systems is the term used to describe the continual growth of skills, knowledge, experiences and networks which a person develops over time as they mature both in life generally and in the workplace. The full extent of embedded systems is not always apparent to the person themselves, nor to the colleagues around them.

Embedded systems function like a quiet partner in the person's work life. For much of the time, embedded systems lay dormant in the background of the person's work - a resource that may be needed and can be called upon as required. These resources prove a great benefit to a person in negotiating challenges and seeking opportunities. In times of crisis and challenge, these systems operate like a *scaffold* providing multiple layers of support against the dangers of a work crisis; and they can act as a source of serendipity and opportunity through things like direct encouragement, or even incidental referral, either with or without the active awareness of the beneficiary. The child nodes within embedded systems are *strategy, networks and relationships, and accumulation*. Embedded systems involve honesty and *mutual respect*.

A feature of embedded systems is that, over time, they build on and complement one another. For instance, sub nodes within accumulation included, *knowledge, professional development and training, resources and resilience*. . The continuous and interwoven building of these embedded systems may be used to generate opportunities, or to assist when one is trying to cope with challenges. An example of this is networks and relationships, which can involve *reaching out, mentoring*, and the exercise of *mutual respect, recognition* and on occasions, job creation. Such relationships, which depend upon honesty and mutual respect, are a vital aspect of self-managing in this environment.

5.8.10 Managing chance events – Theme: Opportunities

Many instances of calculated or measured risk taking were recounted during the interviews. These reflected a heightened skill among the interview participants. They were alert to opportunity and how to respond to it. Williams et al. (1998), would say their “antenna was up” (p.385). Many others would agree that this alertness is critical to successful career development in complex environments, (Cabral & Salomone, 1990; Chen, 2005; Gelatt, 1989; Hall, 1996, 2004; Krumboltz, 2009).

How do chance and uncertainty influence the career development of adults?

Within *Opportunities*, child nodes of *measured risk*, *openness* and *epiphany* were evident. Measured risk had a further subset of *level of control*, which implies that the taking of risk involved the release of at least some of the control that a person had previously sensed about their situation. To some extent, this suggested that as the *level of control* sensed by the individual decreased, their locus of control moved more towards external rather than internal at that point. Openness was vital to achieving a successful response to Opportunity. The sub-nodes under the Opportunity theme reflected a level of interest in (*curiosity*), awareness of (*possibility*), and eagerness for (*searching*) opportunity among those interviewed. Other sub-nodes included *chance events* and *mutual benefit* (see Appendix D).

5.8.11 Managing chance events – Theme: Satisfaction

Satisfaction is described as the principle that people and organizations seek to obtain a satisfactory solution, not necessarily the optimum one (Simon, 1972; Tversky & Kahneman, 1989).

In many situations where several or more competing factors need to be reconciled by the worker, the person will settle for a suitable, but not necessarily the most preferred, solution. The principle driving this decision is pragmatism. Sometimes the person is inclined to generate some certainty to resolve the level of ambiguity being experienced (Simon, 1972). Ed put it starkly: “I just didn't know what to do. Didn't know what to do. Didn't have a bloody clue. Just grabbed the first thing I could which was this job in Darwin. Just grabbed that.”

Ed had determined that he could make the chosen course of action work, resolving at least some aspects of the uncertainty which was causing him great anxiety. With satisfaction, compromises are involved, but part of the objective is that no major concern is compromised to an intolerable degree. The juggling or balancing act that *satisfaction* describes enables the person to decide, act and to move forward.

Within this theme of satisfaction were concepts such as *values*, the act of *saying 'No!'*, and *flexible work* – work that is flexible enough to accommodate other priorities. Sometimes, one of these child nodes revealed even more information on deeper analysis. The idea of values contained subsets such as *compassion*, *priorities*, *disorienting*, and *transparent*.

How do chance and uncertainty influence the career development of adults?

5.9 Discussion

5.9.1 How process analysis aligns with chaos theory

Using a process analysis approach when analyzing and coding the transcripts enabled the interpretation of the content to go beyond the information gleaned from an analysis conducted using a static mentality. The imagery and conceptualizing is more dynamic. By adopting the methodology of sensitizing concepts (Blumer, 1954; Patton, M. Q., 2011), the interplay of differing elements are entertained as nuances within a dynamic mosaic, rather than being marginalized by a more structured or mechanistic approach. This holistic, dynamic approach is consistent with chaos theory, which epitomizes the potential for unpredictable and disproportionate influences.

5.9.2 Interplay of forces

In this context, each of these major themes has been discussed independently of the others to this point. However, while reading these descriptions, it is important to be aware that they are operating simultaneously, iteratively and interactively within the often volatile and indeterminate environment that we label as uncertainty (Cilliers, 2001).

Sometimes an initial chance event gave rise to a series of chance events. As mentioned previously, this is a little reported phenomenon in the career literature (Bright et al. 2009). However, as illustrated by the following examples, it arose frequently as a pattern in the stories of the participants.

- Bernard noted a series of chance happenings after he initiated a search for a job change.
- Rita recounted several illnesses as chance events which followed one another and affected her career development;
- Ursula recalled bereavements of loved ones, which though many years apart, led her to reflect on her life values, resulting in significant career-defining changes in her priorities;
- Both David and Kevin spoke separately of the way in which opportunities unfolded in front of them after an initial chance event was acted upon;

How do chance and uncertainty influence the career development of adults?

- Zara reported actively creating opportunities as part of her strategy to find work that accommodated her commitments in other aspects of her life.

These examples are consistent with the findings of Bright et al. (2009) who reported details of concatenated chance events.

A unique feature of a *series of events* is the difficulty of analyzing its effect. A clear assessment may be achieved only after combining analysis of:

- The actuality of each discrete event – its timing, sequence and level of significance
- The perception of the event by the individual
- The response by the individual to the event
- The repercussions of the response
- Other (unpredictable) factors that may intervene

In reality, this is an impossible task. As Nowotny (2015) explains,

Complex systems mark the new edge in our understanding of the world. In a non-trivial sense, the more complex a system, the harder it is to understand. This holds for those engaged in the study of complex systems and even more for the actors in a system and their positions in the networks which are the result of emerging and co-evolving multiple interaction. (p.128)

Under these circumstances, the emphasis Nowotny places on “muddling through” (p. 167) begins to make sense. The concept of incrementalism, first introduced by Lindblom (1959) provides an authentic approach to managing complex issues (Rothmayr Allison & Saint-Martin, 2011). Pryor and Bright (2011) suggest using frequently monitored, short term plans (p.108). The sensitivity of complex systems to initial conditions and unpredictability makes managing chance problematic. Predicting any likely *series of chance events* over a longer period becomes even more implausible. Within this context, the application of satisficing techniques as reported by the interview participants, facilitates planning and decision-making.

The potential for emotions, rather than a more objective reality to be the primary motivator of decision-making (Kahneman, 2003), means that both the challenge of prediction and the assigning of cause are fraught.

How do chance and uncertainty influence the career development of adults?

The agency of the person during the period of uncertainty that they are experiencing is a crucial aspect governing the direction and dynamics of the unfolding environment (Bandura, 1994; Krumboltz, 2009; Pryor & Bright, 2011). Over time, this interplay occurs in an environment susceptible to many random forces or influences, including:

- The circumstances as perceived by the individual (Savickas, 2012).
- Practical realities, whether perceived or not on the part of the individual (Pryor & Bright, 2011).
- Individual agency - raising issues of level of control and locus of control (Chen, 2009).
- Non-linearity, rather than direct cause and effect linkages, (Pryor & Bright, 2011).
- Emergence, and its recognition by the individual and associated parties (Patton, M. Q., 2011)
- Imagination and creativity, including the recognition and co-evolution of opportunity (Gelatt, 1989; Krumboltz, 2009; Patton, M. Q., 2011)

The individual functions within this environment as an agent capable of using each of the parent nodes to his or her benefit or disadvantage. Nowotny (2015) stresses the critical role timing plays, emphasizing that, “knowing when is the right moment to act, delay, or forgo action are different ways of embracing uncertainty” (p.172). On occasions, the interview participants reported this skill. As was described earlier in this chapter, Andrew behaved proactively to arrange to change jobs before an unacceptable overseas promotion was presented to him. Olga won a scholarship providing sound remuneration just as she was looking to re-invent her career. In these and other cases reported, the exercise of agency and the timing were ideal.

5.9.3 A closer look at the functioning of Embedded Systems using the Collins model

Presenting the coding structure of the nodes within Embedded Systems in a tabular form orients the interpretation toward a mechanistic rationale. Relationships appear fixed and static, more ordered and less capricious. In comparison, the coding structure of nodes can be depicted in a symbolic way using illustrations, as described by Collins (2016). I will compare and contrast these methods using the parent theme, Embedded Systems, presented earlier.

How do chance and uncertainty influence the career development of adults?

The theme of Embedded Systems is presented in tabular form in Table 17.

Table 17: Embedded Systems - nodal structure of theme

Parent Nodes	Child Nodes	Sub-sets
Embedded Systems	Strategy	Use of scaffold Support Planning Motive Hope Control Action
	Networks and relationships	Recognition Reaching out Mutual respect Mentoring Job connection
	Accumulation	Knowledge Professional development and training Gift Attitude Resources Resilience

In a simplistic interpretation, this tabular construct reflects many of the relationships and possibilities reported by participants in the interviews. There were three main techniques used by participants, *strategies*, use of *networks and relationships*, and resourceful behaviour arising out of their *accumulation* of techniques and knowledge gained through time and experience. However, the depiction is structured and mechanistic.

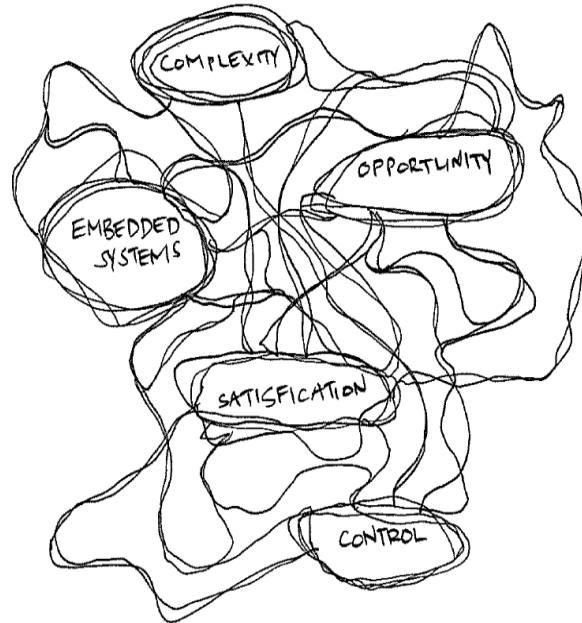
Collins (2016) developed a series of drawings depicting the relational and dynamical features of chaotic environs relevant to her research. She used photos of neural activity derived from brain research to generate images equivalent to those of a living, self-organizing system. Her diagrams present a more fluid and inter-relational concept of the dynamical processes articulated by Pryor and Bright (2011, p.27) and described in detail by the interview participants. A sample of Collins’ hand drawings was included in Chapter Three (see Figure 1).

How do chance and uncertainty influence the career development of adults?

In the following series of Figures (Figures 4, 5, and 6), the theme of Embedded Systems and its sub-nodes is presented using hand drawings inspired by Collins' understanding of complex systems (Collins, 2016). They have been adapted to the concepts derived from momentary and process analysis in this study. Figure 4 represents the five themes or parent nodes revealed in the interviews. Figure 5 and Figure 6 represent more intricate levels of detail in the complex system.

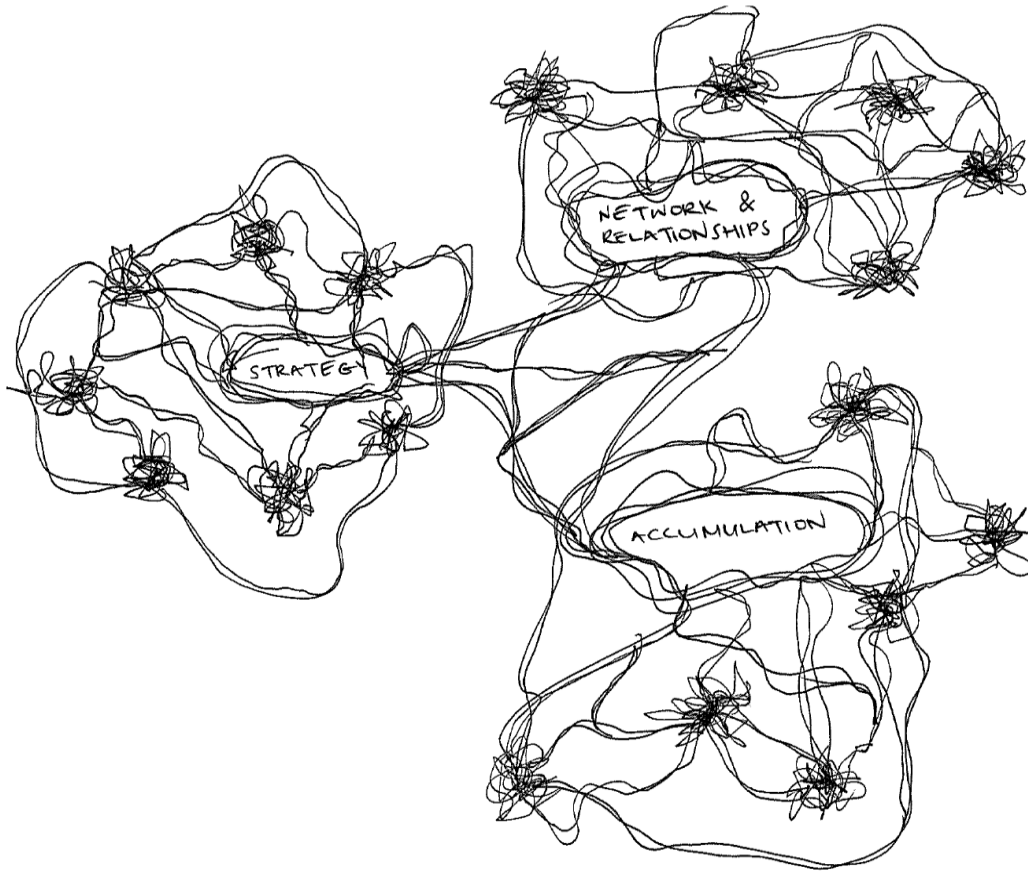
How do chance and uncertainty influence the career development of adults?

Figure 4: *The five parent nodes that emerged from the interviews*



How do chance and uncertainty influence the career development of adults?

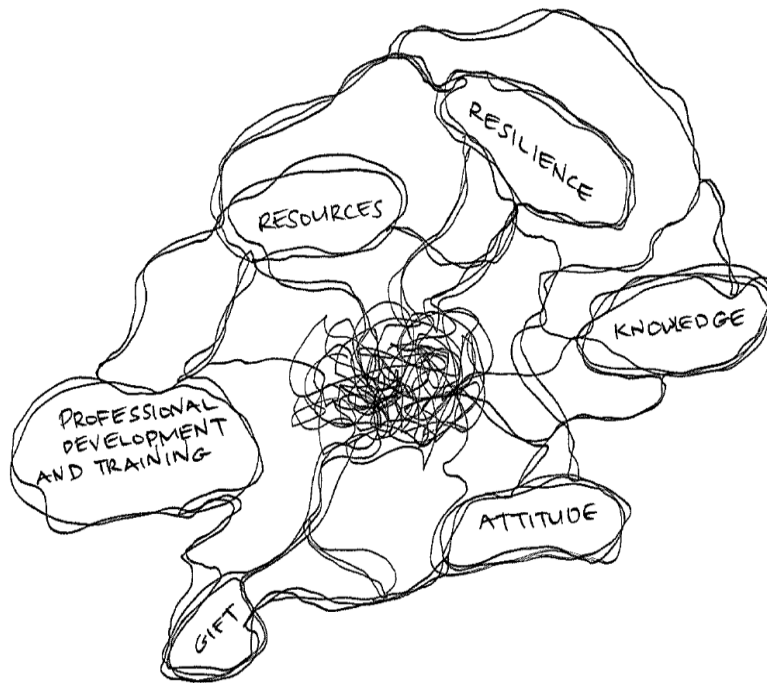
Figure 5: *The Three Child Nodes within Embedded Systems*



Note: The dark spots represent the sub-sets of nodes as indicated in Table 17 and Appendix D.

How do chance and uncertainty influence the career development of adults?

Figure 6: *Subsets within the Accumulation Child Nodal Structure*



This imagery conveys the subtleties, nuances and irregular potentials inherent in the processes being described by the participants. Pryor and Bright (2011) trace ten changes in thought processes characteristic of modern science (p.27), which have led to far more open and interconnected understandings of how systems function. Responding to those insights, the drawings represent a more open, non-linear and flexible, interpretive approach than traditional

How do chance and uncertainty influence the career development of adults?

methods supported. These diagrams can balance our tendency toward needing structure when engaging with complex systems and allow for strange attractor thinking rather than the more limiting attractors to prevail. Once this type of awareness is encouraged, educational strategies for career enlightenment, such as those referred to by Borg (2015), Chien, Fischer and Biller (2006), Loader (2009, 2011), Pryor and Bright (2015), and Schlesinger and Daley (2016), and can be more easily promoted and absorbed.

5.10 Summary and direction of further studies

At this stage, it is worth reviewing the main points taken from the interviews. To varying degrees, everything is inter-related and unpredictable. However, in attempting to cope, humans often make plans and use strategies; even though they are aware of how tenuous they may need to be at times. Muddling through is becoming a legitimate strategy in a world of continuous change.

Openness and contingency are vital to achieving an effective balance between plans and strategies and the ongoing emergence typical of our lived environment. Understanding the role of perception and individual agency is critical in interpreting these conditions. People need to be alert to opportunities, and to be able to balance the competing demands of modern lifestyles to manage change and all it delivers in the form of challenges and opportunities.

5.11 Development of further studies

Several key questions arising from the analysis of interviews were addressed using a series of surveys and a focus group. The title and main question of each of these is presented below.

5.11.1 Study Three Survey

Do other alumni share the same ideas about chance events as the interview participants?

This question is reported in Chapter 6.

5.11.2 Study Four Survey

Do those in the broader population identify chance events and categorize them in the same way as the college alumni group?

This question is reported in Chapter 7.

How do chance and uncertainty influence the career development of adults?

5.11.3 Study Five Survey

Do those in the broader population identify chance events in the same way as the researcher and those familiar with chance event theory?

This question is reported in Chapter 8.

5.11.4 Study Six - Focus Group

Does the researcher's analysis represent a valid interpretation of the opinions of the interviewees?

This question is reported in Chapter 9.

Chapter Six - Study Three Survey – Identification and categorization of chance events by College Alumni

6.1 Introduction

The cumulative evidence from Study One and Study Two suggests that some people recognize some circumstances as chance events, while others of similar background and socio-cultural experience do not. Consequently, further exploration of the differences between alumni perceptions of chance events is warranted.

Study Three was devised to explore two aspects of findings from Study One and Study Two. The survey in Study One suggested that there was variation amongst alumni in their level of recognition of chance events. A second reason for the Study Three survey was to explore the level of consistency in categorizing such chance events among the peers of interview participants.

In Study One, sixty percent of respondents reported the existence of a chance event in their career history. This was consistent with previous studies (Bright, Pryor & Harpham, 2005; Betsworth & Hansen, 1996; Scott & Hatalla, 1990; Williams et al., 1998). However, 40% reported no incidence of a chance event in their career history. Over 25% of the sample in Study One also indicated that chance events were not just one-off occurrences, something which has been reported previously in the literature (Bright et al., 2009).

Alumni in Study One who had reported no experience of a chance event had significantly underestimated the likelihood of a chance event occurring in other people's lives. Their estimates of the frequency of chance events occurring in the careers of other Australians were more than two standard deviations below the rate of those who reported experiencing a chance event. These estimates were also significantly lower than the frequency of occurrence of chance events reported elsewhere in the literature (Betsworth & Hansen, 1996; Scott & Hatalla, 1990).

In Study Two, a low level of recognition of chance events was evident as a result of the analysis of the interviews. Frequently during interviews participants reported more chance events than they had indicated in the Study One survey. Coding analysis in Study Two revealed 110

How do chance and uncertainty influence the career development of adults?

chance events in the transcripts of the 19 interviews which were analysed, with the six most common categories accounting for three quarters of these events. This increased recall of chance events seemed to occur because of greater reflection by the participant, including the act of re-telling their experiences. The most commonly cited categories were:

- A personal or professional relationship
- A barrier to a previous career plan
- Being in the right place at the right time
- An unexpected opportunity
- An injury or health factor
- Unexpected influence of family

All alumni who were interviewed had reported at least one chance event in the Study One survey. Discussion during the interviews confirmed the relevance of uncertainty and ambiguity as an important factor influencing decision making in the context of chance events. Several participants remarked that their awareness and understanding of chance situations had evolved as time passed and their perspective on those circumstances varied and matured. This process continued during the course of the interview, as they grew in their understanding of the circumstances upon which they were reflecting. Patton, M.Q. (2009), argues that co-learning by both the researcher and participant is a common aspect of qualitative research.

Study Three sought to clarify whether the opinions of alumni who had not participated in interviews were consistent with the reported experiences of the alumni participants in the interviews. The question then became “Do other alumni share the same ideas about chance events as the interview participants?”

These research questions evolved into two hypotheses.

Null Hypothesis 1

There will be no difference among alumni in the perception of the occurrence of a chance event affecting career development.

Null Hypothesis 2

How do chance and uncertainty influence the career development of adults?

There will be no difference among alumni in the categorization of a chance event affecting career development.

The survey used in Study Three was prepared to investigate these hypotheses.

6.2 Design

These questions were addressed by using vignettes from the transcripts of the interviews to develop another survey. Elliot (2005) suggests that when a qualitative study seeks to understand individual behaviour, the stories of those individuals “provide an ideal medium” (p.26) which the researcher can use to gain a deeper insight. Others support this position (Barter & Reynold, 2000; Hughes & Huby, 2012; Schoenberg & Ravdal, 2000; Wilks, 2004).

Verbatim transcripts were used to depict the chance event where possible. Modifications were made to names, industry sector, location and employer to protect the identity of each interview participant whose story was being used. Some minor adjustments to grammar also occurred. Otherwise, the restructured story or scenario corresponded precisely with the original interview transcript.

Vignettes were taken from transcripts of six interview participants. These vignettes were identified as AA – FF to maintain the anonymity of the participants. Vignette EE was used as a control vignette to confirm that subjects were persisting with the content of the survey. It was the fifth of six vignettes in the question sequence. Responses for EE are included in the results but were not referred to in the analysis.

At least one instance of a chance event was included in each transcript. For example, DD recalls her dilemma with the words, “When the Global Financial Crisis happened, we heard that the project was slowing down”. CC reporting his good fortune says, “They needed somebody quickly, and I was free”. AA, reflecting the uncertainty about his employment says, “The next likely opportunity for me was probably going to be overseas”. FF says, “My mother was diagnosed with cancer”; and later, “I could move back home to help them out”. Complete vignettes are in Appendix E.

6.3 Participants

Two hundred alumni from the same College as had participated in Study One were invited to complete the survey. Alumni who had participated in the Study Two interviews were omitted from this survey. Responses to the survey questions ranged from 41 to 31, with 31 alumni completing all questions in the survey. The demographic profile was consistent with that of those who completed the survey in Study One. The decline in the response rate from the earlier survey, while not desirable, was attributable in part to purposeful sampling, and tempered by the need to be respectful toward the courtesy afforded the researcher by the sample group (Gliner, Morgan & Leech, 2011).

6.4 Materials

The Study Three Survey used Qualtrics software (Qualtrics, 2014) and was distributed online via an alumni mailing list.

6.5 Procedure

The survey asked subjects to read each vignette before answering a series of questions about chance events. This enabled the researcher to compare the opinions of other alumni with the opinions of those who had participated in the interviews.

The vignettes were prepared with the objective of describing circumstances surrounding chance events that alumni had reflected upon during the one on one interviews. During interview coding completed in Study Two, six categories of chance event had accounted for 75% of the 110 chance events which were identified. Two independent raters with extensive experience in career counselling and a sound awareness of chance event theory collaborated with the researcher to confirm that the vignettes represented coherent and transparent representations of a chance event. Both raters checked each vignette independently to determine whether the vignette included a chance event. The raters and the researcher all agreed that each vignette described at least one chance event.

Each rater then categorized the nature of the chance event independently using the most frequent categories, which had been identified during the Study Two coding analysis. Each vignette drew more than one categorical descriptor from the independent raters. This was consistent with the perception, which the researcher had gained during interview coding, that one

How do chance and uncertainty influence the career development of adults?

chance event could be viewed as having characteristics consistent with several of the descriptors used within the literature (Tversky & Kahneman, 1973; Kahneman, 2003). The raters and the researcher then compared their allocation of categories and discussed the relevance of each category with reference to each vignette. Raters and the researcher then agreed by consensus on a final allocation of categorical descriptors applicable to each vignette. This process allocated an average of three descriptors per vignette, with the least number of categories being two for CC, and the maximum number being four for FF.

These categories, with the frequency of the type of chance event described in the vignettes included in parenthesis, were: a personal or professional relationship (three); an unexpected opportunity (four); being in the right place at the right time (four); a barrier to a previous career plan (three); an injury or health factor (one); and an unplanned influence of family (three). The rater assessments for the categories are in Table 18.

Table 18: Rater assessment of chance event categories

Vignette	AA	BB	CC	DD	EE	FF
A personal or professional relationship	Yes	Yes			Yes	
An unexpected opportunity		Yes	Yes		Yes	Yes
Being in the right place at the right time		Yes	Yes	Yes	Yes	
A barrier to a previous career plan	Yes			Yes		Yes
An injury or health problem						Yes
An unplanned influence of family	Yes			Yes		Yes

The first question about each vignette asked the subject whether the vignette depicted a chance event. To assist the subject in his or her judgement, the Rojewski (1999) definition of a chance event was included above each vignette. It read, “Chance events are **unplanned events** (e.g. accidental or unintentional events; or involve being in the right place at the right time or the wrong place at the wrong time) **that have an impact on careers**” (p. 269). Part of the definition was written in bold type to assist the survey respondent.

The Rojewski definition was followed by the question, “Is this an unplanned chance event?” The subject used a 5-point Likert scale, 1 strongly agree, 2 somewhat agree, 3 neither agree nor disagree, 4 somewhat disagree, 5 strongly disagree.

How do chance and uncertainty influence the career development of adults?

Six further questions asked how the subject would categorize the chance event using each of the most common chance event descriptors identified in Study Two. Responses were recorded using the same 5-point Likert scale. The survey is included in Appendix E

6.6 Results

6.6.1 Alumni recognition of chance events

Subjects reported that the description within four of the five vignettes did include a chance event (see Table 19). Alumni agreement was most evident in the responses to the vignette describing the circumstances CC and FF. Over 78% of the responses to CC's and FF's scenarios were either 'agree' or 'strongly agree'. Subjects also confirmed the existence of a chance event in the story of each of BB, CC and DD.

Table 19: *Alumni recognition of a chance event*

Category	Vignettes					
	AA	BB	CC	DD	EE	FF
M	3.00	2.35	2.13	2.68	1.48	2.06
S D	1.41	1.47	1.43	1.45	0.57	1.12

Note. Likert scale: 1 = strongly agree, 2 = somewhat agree, 3 = neither agree nor disagree, 4 = somewhat disagree, 5 = strongly disagree.

Strong support for the existence of a chance event also resulted in subjects responding consistently to vignettes CC and FF, where there was a low level of divergence of opinion among the alumni. Although there was majority agreement amongst alumni in responding to the vignettes for BB (65.71%), and DD (59.38%), the stories of BB and DD generated greater variation in subjects' responses. Twenty-three agreed there was a chance event in BB's vignette while 11 felt there was no chance event and one remained unsure. In DD's case, 19 felt there was a chance event, 12 felt there had not been a chance event, and three were unsure.

Responses to AA's vignette reflected a greater divergence of opinion among alumni about whether a chance event had been described. Sixteen of 41 (39%), felt there had been a chance event; 21 (51.22%) felt there had not been a chance event; and four (9.76%) indicated they were unsure.

How do chance and uncertainty influence the career development of adults?

6.6.2 Alumni categorization of chance events

Alumni were also asked to categorize chance events using the most common descriptors identified in Chapter Three. Results of these responses including means and standard deviations are in Table 20.

Table 20: Alumni categorization of chance events

Category	Vignettes					
	AA	BB	CC	DD	EE	FF
An unexpected opportunity	2.50 (1.20)	1.81 (1.05) R	1.87 (0.96) R	4.43 (1.04)	1.37 (0.49) R	2.48 (1.31) R
Being in the right place at the right time	2.42 (1.12)	2.00 (1.10) R	1.58 (0.92) R	4.33 (0.96) R	1.73 (1.05) R	2.71 (1.32)
A barrier to a previous career plan	2.71 (1.30) R	4.39 (0.92)	4.07 (1.02)	1.97 (1.25) R	4.58 (0.77)	3.87 (1.31) R
An injury or health factor	4.68 (0.95)	4.77 (0.67)	4.90 (0.40)	4.77 (0.67)	4.94 (0.36)	1.97 (1.64) R
An unplanned influence of family	3.00 (1.37) R	4.63 (0.81)	4.84 (0.45)	3.65 (1.43) R	4.94 (0.36)	1.31 (0.66) R

Note. 1 Standard Deviations appear in parentheses below means. 2 ‘R’ indicates the categories allocated by the raters for each vignette. 3 Due to a technical error, responses to the category a personal or professional relationship were not included.

Subjects’ responses showed a high level of internal consistency in 21 of the 30 categories available for analysis. In 20 of these 21 responses, the alumni interpretation was similar to that given by the raters. The one difference was with regard to DD being in the right place at the right time. Subjects strongly disagreed that DD had been in the right place at the right time.

Alumni interpreted some questions about categorization in a more definite and consistent manner than others. In response to the question about an injury or health problem, vignettes for AA, BB, CC and DD generated *strongly disagree* responses from alumni, with a mean of 4.68 or higher, and standard deviations of 0.75 or lower. This indicates that, in the stories other than

How do chance and uncertainty influence the career development of adults?

FF's, the majority strongly disagreed with this description. Alumni strongly agreed that an injury or health problem had influenced the career development of FF ($M = 1.97$, $SD = 1.64$).

There were nine instances where alumni categorization reflected some confusion, resulting in variability in their interpretation of the vignette. These were: unexpected opportunity (AA and FF); being in the right place at the right time (AA and FF); a barrier to a previous career plan (AA, CC and FF); unexpected influence of family (AA and DD).

An example of this was the response to the question of whether FF was in the right place at the right time. Of the 32 responses, eight, (25.00%) strongly agreed, and 4 (12.50%) somewhat agreed; three (9.38%) answered somewhat disagree and four (12.50%) answered strongly disagree; while 13 subjects, (40.63%) answered neither agree nor disagree.

6.7 Discussion

The purpose of Study Three was twofold: to establish the degree of consistency among alumni with regard to the identification of chance events; and, secondly, to explore the consistency in the categorization of those chance events within a pre-determined range of descriptors commonly used in the literature (Betsworth & Hansen, 1996; Rojewski, 1999).

6.7.1 Comparison of Rater and Alumni assessments – Recognition of a chance event

On the question of whether a chance event had occurred, alumni agreed with the raters that five of the vignettes described a chance event. Two of the vignettes (CC and FF) were identified clearly as depicting a chance event. There was some divergence of opinion about the story of BB and DD, but in each case, a majority of responses recognized a chance event (see Table 19).

However, AA's decision was not uniformly perceived by alumni as being influenced by a chance event, with less than half the respondents choosing "agree" or "strongly agree" ($M = 3.00$, $SD = 1.41$). The response by the subjects to the vignette regarding AA's story is indeterminate. In contrast to the rater assessment, subjects in the survey equivocated about whether AA had experienced a chance event, neither agreeing nor disagreeing about the situation. There are several possible reasons for this response.

Some chance events are totally unexpected, while other chance events such as those in AA's story might be considered by some to be more likely to happen because AA had spoken to

How do chance and uncertainty influence the career development of adults?

his colleague. AA's action did not cause the job opportunity to arise. If anything, it prompted his colleague to contact him when a relevant job arose.

Is the chance event the fact that the job arose or that AA's friend contacted him about it? Some may consider the latter situation is not really a chance event according to the Rojewski (1999) definition, because it is not “unplanned” (p. 269). However, chance is a factor because a job came up in a timely way. This is reflected in the general response by the subjects to later questions about AA being in the right place at the right time ($M = 2.42$, $SD = 1.12$), and AA having experienced an unexpected opportunity ($M = 2.50$, $SD = 1.12$). These responses by alumni imply that a chance event had occurred. The subjects recognised this latter description of a chance event. However, earlier in the survey, when they were asked directly whether a chance event had occurred, there was ambivalence in their responses ($M = 3.00$, $SD = 1.41$).

Interestingly, this story introduces an element of the concatenated chance events referred to in the introduction to this chapter (Bright et al., 2009). Some subjects may have noticed the connections between AA's actions and the subsequent job opportunity, which AA found at the bank. This survey did not seek to identify if the alumni made such a connection but the variation among their responses does reflect the complexity inherent in AA's vignette.

The interview coding used in Study Two and discussed in Chapter Three, identified themes of *Complexity*, *Control*, *Embedded Systems*, *Opportunity and Satisfaction*, which describe behaviours such as those reflected in AA's vignette. AA's story implied undertones of uncertainty, conjecture and ambiguous signals from his employer. There are multiple layers of thoughts and possibilities on his mind. AA is deciding a course of action, which has to satisfy many objectives. If he waits too long to act, he may become a victim of, or a pawn in his employer's machinations. However, he cannot act until an opportunity arises. The use of specific categories to describe such a situation is rendered problematic by the uncertain nature of the events (Nowotny, 2015), the vagaries of language and definition (Patton, M. Q., 2011; Rojewski, 1999; Simon, 1955, 1972), and the nuances of human perceptual functioning (Tversky & Kahneman, 1973; Kahneman, 2003).

The variability evident in the responses from raters and the subjects regarding Ron's vignette aligns with Kahneman's suggestion that the same situation can be perceived differently either by a group of individuals, or by the same individual within differing contexts (Kahneman, 2003).

How do chance and uncertainty influence the career development of adults?

6.7.2 Comparison of Rater and Alumni assessments - Categorization of a chance event

With regard to the allocation of chance event categories, survey subjects and the raters agreed in 23 of the 30 responses (76.67%). In three instances (10.00%), the median response of subjects was directly opposite that of the raters. These were for AA (unexpected opportunity, and being in the right place at the right time), and for FF (a barrier to a previous career plan). There were three occasions (10.00%), when the median response of the subjects was *neither agree nor disagree*. These were regarding whether AA had experienced an unplanned influence of family; whether DD had experienced an unplanned influence of family; or whether FF had been in the right place at the right time.

In determining their categories, the raters did not use the ‘neither agree nor disagree’ response. The preference for this response within the alumni cohort reflects the lack of clarity perceived by the survey subjects when asked to categorize some particular events as they are described in the vignettes.

One other situation created some confusion among respondents, and the survey question was adjusted in a subsequent survey. This related to whether DD was in the right place at the right time. As is clear from a reading of the vignette, DD had been in the *wrong* place at the *wrong* time. The wording of the question associated with this response seemed to confuse respondents. The Rojewski (1999) definition sought to associate being in the right place at the right time and being in the wrong place at the wrong time as similar, in that they reflected the effect of luck, good or bad. Separate questions about being in *the right place at the right time* or being in *the wrong place at the wrong time*, were both included in a subsequent survey to provide greater clarity to respondents regarding this question.

Alumni responses to each of the categories will now be discussed.

i) Unexpected opportunity

The raters and the subjects in the survey agreed in four of the response assessments, those of BB, CC, DD and FF. With regard to AA's vignette, subjects agreed that he had experienced an unexpected opportunity. However, the raters allocated two other categories to AA's story, but did not use this category to describe it. AA's vignette reflects an element of the ambiguity

How do chance and uncertainty influence the career development of adults?

associated with chance events and uncertainty. AA was unsure of his ongoing employment status, and had initiated strategies to manage his situation.

How these subtleties are interpreted in terms of chance event categories differed between the raters and the subjects reviewing the vignettes. The survey subjects, whose information is limited only to the vignette, are at some disadvantage compared to the researcher and the raters who have access to richer context than the subjects. Nevertheless, this disparity tallies with the analysis of uncertainty given by Nowotny (2015), the theoretical position described by Pryor and Bright (2011) and the vagaries of perception as elucidated by Patton, M. Q. (2011), Simon (1955, 1972), and Kahneman (2003).

ii) Being in the right place at the right time

There was some variation between the rater assessment and the alumni regarding this category. The vignettes for BB and CC were recognised in the same way by the raters and the alumni. In DD's case, the raters had categorized her circumstances as equating to the right place at the right time or wrong place at the wrong time response. The wording in this question seemed to confuse the survey subjects and a question referring to being in the wrong place at the wrong time was added in a following survey to provide greater clarity.

Two vignettes drew responses that differed from those of the raters. Subjects were unsure about whether the story about FF reflected a situation of her being in the right place at the right time ($M = 3.00$, $SD = 1.32$). However, the raters allocated three other descriptors to FF's vignette, but did not consider being in the right place at the right time as an accurate description of FF's circumstances.

Alumni considered AA ($M = 2.42$, $SD = 1.12$), to have been in the right place at the right time. This response by the subjects is inconsistent with their median response to whether AA had actually experienced a chance event. The raters used two categories to classify AA's story, but did not include being in the right place at the right time among those.

The divergences between the opinion of the raters and the subjects responding to the survey further illustrates the difficulty of applying precise descriptors or categories to matters of opinion (Simon, 1955, 1972). This brings into question the issue of applying defined categories to these matters. Patton M. Q. (2011) emphasizes the role of "sensitizing concepts" (p 146) in seeking to understand matters of heightened complexity.

How do chance and uncertainty influence the career development of adults?

iii) Barriers to previous career plan

Both subjects and raters concurred in their assessment of the suitability of this category for four of the five vignettes. The divergence of opinion related to FF. Raters identified her story as describing a barrier to a previous career plan. However, survey subjects disagreed with this ($M = 3.87$, $SD = 1.31$). FF was in the early stages of a career in accounting based in Sydney. When family members faced challenges to do with illness and work stress, she sought leave from her Sydney job to return home to assist. After several months, she found that she enjoyed the work and preferred to remain in Bateman's Bay. FF left her work in Sydney simply because of family illnesses and stress. She decided to stay in the family business after previously beginning a career in an accounting business in Sydney. Many alumni interpreting the vignette did not identify a barrier to FF's original plan of remaining in Sydney, while to the raters the use of this category appeared appropriate.

iv) An injury or health problem

This was the only category where the opinions of the raters and the subjects were completely aligned for each of the five vignettes. Health issues were directly referred to in FF's vignette and were recognized by both raters and alumni as a chance factor. An injury or health problem was not mentioned in any other vignette. There appears to have been greater clarity in the subjects' minds about whether a chance event had been prompted by an injury or health problem than with any of the other five categories.

v) Unplanned influence of family

The subjects interpreted two vignettes differently from the way the raters had done. These were the cases described by AA ($M = 3.00$, $SD = 1.37$) and DD ($M = 3.65$, $SD = 1.43$). The complexity reflected in the case of AA's vignette may account for the variability. In DD's case, raters felt that DD's chance event had occurred in part because of the distance she was away from her family. The subjects could have been aware of this from reading DD's vignette. However, the mean (3.65) and standard deviation (1.43) of their responses suggest that many of the alumni did not prioritize this information in their thinking when answering this question.

How do chance and uncertainty influence the career development of adults?

6.7.3 Clarity facilitated categorization

Raters and subjects generally concurred on the incidence of chance events and the use of descriptors to categorize the types of those chance events. However, some situations were more uniformly categorized. Others, where the description involved greater complexity, were more likely to result in a divergence of opinions between the raters and the alumni.

When given vignettes with greater clarity, subjects allocated categories consistently with the categories used by the raters. For example, a major period of CC's career was spent in Immigration. This situation arose, not by design, but simply by coincidence. CC was ready to relocate from Singapore to Canberra within the Commonwealth Public Service. There happened to be an opening in the Immigration Department. It was not an opportunity he was looking for, but one that was available to him at a time that was suitable to him. He took it, and stayed in that Department for decades. This unexpected opportunity is apparent to both the subjects and the raters.

DD's story provides another example of clarity enabling classification. DD's employer moved her from Sydney to a remote rural location. Here, she was isolated from friends and family and experienced a low level of job satisfaction. She eventually resigned and returned to Sydney. The alumni and raters both assessed DD's scenario as *not* describing an unexpected opportunity. This is an example of logic providing a clear and coherent response from subjects.

BB achieves her goal partly because a neighbour happens to hear of her interest in learning about computers. The two circumstances - the scholarship at Woolworths and BB's interest in studying computers - were occurring in tandem. They were linked by the chance occurrence of the neighbour connecting them. Without this intervention, BB may never have connected with Woolworths. It was clear to the subjects and the raters that an unexpected opportunity had been described.

The subjects' responses to some other vignettes were not so consistent, nor as clear-cut. In the case of AA's career development, 64% agreed that an unexpected opportunity was relevant. However, over 50% of subjects had earlier answered that they *disagreed* with the idea that AA had experienced a chance event. These interpretations are inconsistent, yet understandable to some extent because of the added complexity inherent in the vignette.

AA showed proactive behaviour in advertising his interest in an alternative position located in Brisbane. In the normal course of events, the job at the bank most likely would have

How do chance and uncertainty influence the career development of adults?

arisen, but the possibility that he would have heard about it is remote. It was by contacting his former employer and letting him know of his interest that mention of the job opening at the bank reached AA. The chance of the opportunity occurs because of AA's behaviour. He is being "positively uncertain" (Gelatt, 1989, p.252), and applying the principles of planned happenstance (Mitchell et al., 1999). The emergence of a job at the bank was, in a sense, always going to happen quite independent of AA's behaviour. The chance event is the co-incidence of AA being available and his becoming aware of the job opportunity. His proactive behaviour did not produce the chance event. If anything, his imagination created the circumstance of AA being available for the job opportunity, as depicted in Figure 3, (Chapter 5). Use of imagination to facilitate development of satisfactory options to a perplexing career dilemma is reflected in the *Control* theme as reported in Study 2, Chapter 5.

This question in the survey sought to identify whether subjects could perceive these unexpected opportunities. In each case other than AA's, subjects analysed the vignette in the same way as the raters had done.

This situation of ambiguity amid uncertainty arises again in response to the question about being in the right place at the right time. In three of the vignettes, subjects concur with the opinion of the raters. These were the stories of BB, CC and DD. However, when the description offers a greater level of complexity, a divergence of opinion occurs. For instance, 60% of respondents agreed that AA was in the right place at the right time, but less than 40% agreed that he had experienced a chance event. Raters assigned two other categories to AA's story, but did not include being in the right place at the right time as an appropriate category.

In FF's case, subjects diverged in their judgment about how to categorize her story. This is evident in their answers regarding being in the right place at the right time and a barrier to a previous career plan. Twelve responses supported the former category, while 13 were unsure and seven disagreed. With regard to the injury or health category, only six supported the idea, three were unsure, and 22 disagreed. Interestingly, the raters confirmed the barrier category in FF's vignette, but 68.75% of alumni disagreed with this, and a further 9.75% were unsure. The raters identified a clear barrier to FF's previous career plan of staying in Sydney. The existence of a family crisis modified FF's behaviour. This was implied by the vignette, rather than stated clearly. It seems that many of the subjects did not make this connection when they contemplated their response to this question.

How do chance and uncertainty influence the career development of adults?

When determining the applicability of the descriptor regarding an injury or health problem, subjects were consistently and uniformly able to distinguish between FF's circumstances and those of the four other individuals represented in the vignettes. FF's actions were motivated by her concern for the health of her family. This is quite explicit in the way the vignette was expressed. In this case, the transparency within the vignette tends to reinforce the clarity of the chance connections, and increases the internal consistency of categorization among those assigning descriptors.

These two vignettes illustrate the semantics involved in definitional approaches to matters of complexity, something more recent literature cautions against (Patton, M.Q., 2011; Kahneman, 2003; Shanahan & Porfeli, 2006).

6.8 Conclusion re hypotheses

Null Hypothesis 1 suggested alumni will not differ in their perception of the occurrence of a chance event affecting career development. The null hypothesis was not supported. Study Three found that there was variability between alumni in their recognition of chance events.

Null Hypothesis 2 suggested that alumni will not differ in their categorization of a chance event affecting career development. The null hypothesis was not supported. There was a divergence of responses, particularly when alumni were asked to interpret scenarios that were more complicated. This indicates that individuals from similar backgrounds will differ in their interpretation of the same information when asked to recognise and categorise chance events affecting career development.

6.9 Concluding remarks

Use of categories is effective in simple situations, but is problematic when issues of complexity, ambiguity or language arise. This is illustrated by the fact that subjects and raters agreed on 80% of the questions. Categorization works efficiently when circumstances as described in the vignettes provide clarity.

Chance events may occur on a spectrum, ranging from plainly obvious for most people to recognize, to the more obscure. The analogy of black, white, and shades of grey illustrates this point. Some situations are quite clearly at one end of the spectrum or the other. For example, in

How do chance and uncertainty influence the career development of adults?

the instance of the control vignette, alumni and the raters agreed that a chance event occurred, and that it could be categorized as an “unexpected opportunity”. In categorizing this chance event, subjects are more likely to use a binary, black or white, approach. Situations such as these frequently resulted in a concurrence of opinion among alumni and between alumni and the raters

In a situation reflecting greater complexity and requiring more subtle interpretation, categorization becomes increasingly variable and subject to individual opinion. In such a situation, the shades of grey are more likely to arise. This is reflected in the answers to the more complex vignettes presented to the alumni. This resulted in more diverse categorization within the alumni group and between the alumni and the raters. The principle explaining variation in categorizing chance events applies equally to the recognition of chance events. This explains the diversity of perception about whether AA had experienced a chance event.

Vignettes with a clearer description of events resulted in a more stable interpretation between raters and subjects, and within the subject group. Vignettes with a higher level of ambiguity generated greater variability in response. To summarize, raters and subjects generally concurred on the incidence of chance events and the use of descriptors to categorize the types of those chance events. Both raters and alumni more uniformly categorized some situations described in the vignettes. However, a divergence of opinion between the raters and alumni, and within the alumni cohort was more likely to result when the description involved greater complexity.

The work of Simon (1955, 1972), Patton M. Q. (2011), and Tversky & Kahneman (1973), suggests that the adoption of sensitizing concepts rather than strict adherence to categorization may provide useful insights in developing a richer understanding of chance events and their impact on career development.

This gives rise to two questions that lead to further research. Does the broader population *recognize* chance events in the same way as the two alumni groups? And, does the broader population *categorize* chance events in the same way as the two alumni groups? These questions are addressed in Chapter 7.

6.10 Limitations

This study used a purposeful sample to enable comparison of the attitudes of a unique cohort (alumni who participated in interviews), with those of their peers (other alumni) to

How do chance and uncertainty influence the career development of adults?

vignettes representing real life situations of the interview participants. There is no way of determining how frequently alumni completing the survey referred to the vignettes. Furthermore, the survey is seeking an immediate response from the subjects, who were not as emotionally invested in the stories, as were the interview participants.

Notwithstanding these limitations, Study Three indicates that individuals will differ in their interpretation of the same information. The comparability of these results with those of an opportunity sample of a wider population may provide deeper insights into the usefulness of these descriptors.

6.11 Research progress to this stage

To this point in the research, a survey (Study One) has been conducted to establish the validity of claims in the literature that 60% of subjects report experiencing chance events in their career development. Study One also identified participants willing to discuss their experience of the influence of a chance event on their career development in a one to one interview.

These interviews were the basis for Study Two. This enabled the researcher to analyse 19 interview transcripts and, using coding analysis, to develop themes and sub-themes describing the interviewees' experiences (Chapter Five). The interviews and the earlier survey also prompted the researcher to investigate the level of consistency in the perception of individuals about the recognition of chance events, and categorization of the most commonly occurring chance events. This led to Study Three, a second survey, which has been reported upon in this Chapter.

Three further studies prompted by results from earlier studies will be reported. Study Four is a survey similar to that used in Study Three, but distributed to a random group of the Australian workforce. This will extend the data beyond the narrow socio-economic and cultural group represented by the alumni cohort. Study Five is a survey directed to a random group of the Australian workforce. This survey contains 20 vignettes depicting chance events. It seeks subject responses with the aim of establishing whether a random sample can consistently identify a chance event. Study Six uses a Focus Group of participants who were in the Study Two interviews. The Focus Group will enable the researcher to test and refine his interpretation of the Study Two interview data. It will also enable further exploration of the influence of ambiguity and uncertainty as factors affecting behaviour in conditions producing chance events.

How do chance and uncertainty influence the career development of adults?

Chapter Seven - Study Four – Recognition and categorization of chance events by an opportunity sample of Australians

7.1 Introduction

Study One (Chapter 4), confirmed the high frequency of chance events influencing career development among a specific cohort within the Australian workforce, a finding that was consistent with previous studies. Study Two (Chapter 5), used one-to-one interviews to explore individuals' understanding of these chance events and their behaviours arising from the chance event. This study found that the frequency of chance events influencing the participants careers' was greater than previously reported, that many situations involved concatenated chance events, and that the outcomes of the chance event and its effects were diverse and complex rather than linear and predictable. Study Three (Chapter 6), sought opinions from the general college alumni, enabling a comparison of the views of interview participants with the opinions of their peers. This revealed a divergence of opinions among the broader alumni group about what constitutes a chance event. A similar divergence of opinion was evident when alumni were asked to categorize chance events according to common descriptors used in the literature.

This raises the question of whether the observed variability of perceptions of chance events is peculiar to the alumni samples or is a more widespread phenomenon. This is important to understand, because given the apparent ubiquity of chance events in people's careers, an understanding of how they are perceived by Australians more broadly is likely to be very helpful in providing career development assistance to people confronting chance in their careers. Further, it can advance our knowledge of the mechanisms of and reactions to chance events in careers.

Study Four (presented here), asked a more diverse group of subjects, an opportunity sample of Australians, the same questions as were used in Study Three. The Study Four survey investigated whether a broader population recognizes chance events in the same way as the two alumni groups. In addition, it investigated whether a broader population categorizes chance events in the same way as the two alumni groups. The null hypotheses in Study Four were:

How do chance and uncertainty influence the career development of adults?

1. That a sample population of Australians will not vary in their recognition of chance events; and
2. That a sample population of Australians will not vary in their categorization of chance events

A series of vignettes was presented to subjects and they were asked if they could recognize a chance event presented in the vignette. They were given further questions asking them to categorize the type of chance event using specific descriptors. The results of this survey were compared with the results from the alumni group.

7.2 Design

The six vignettes used to construct the survey in Study Four were the same as those used in Study Three, (see Appendix E). The same design and protocols, as described in Chapter 6, were used in Study Four. The category of *a personal or professional relationship* was included in Study Four. As explained in Chapter 6, vignette EE was used as a control to confirm that subjects were persisting with the content of the survey. It was the fifth of six vignettes in the question sequence. EE responses are included in Tables, but they were not used in the analysis of results.

Table 21 lists each category and the accompanying response prompt for the vignette.

Table 21: Questions re categorization of chance events

Category	Response prompt
A personal or professional relationship	An unplanned personal or work relationship influenced XX's career change.
An unexpected opportunity	An unexpected opportunity influenced XX's change of career
Being in the right place at the right time	You could say XX was in the "right place at the right time"
A barrier to a previous career plan	XX experienced a barrier to his previous career plan
An injury or health factor	An injury or health problem influenced XX's career
An unplanned influence of family	Unplanned influence of family influenced XX's career

Note. 1. Likert scale, 1 "strongly disagree", 2 "somewhat disagree", 3 "neither agree nor disagree", 4 "somewhat agree", 5 "strongly agree"

7.2.1 Inclusion of *wrong place at the wrong time*

In Study Four, an additional question was included with reference to the chance event described in vignette DD. The description of a chance event indicated that DD had been in *the wrong place at the wrong time*. In the responses to this question in Study Three, the absence of a response option offering about being in the wrong place at the wrong time appeared to create some confusion among respondents. Therefore, an extra question about nature of the timing of the chance event in vignette DD was included in this survey. Both alternatives, “You could say DD was in the right place at the right time?” or, “You could say DD was in the wrong place at the wrong time?” were included in the survey. This resulted in vignette DD having seven questions about chance event categories, with each of the other vignettes having six questions referring to categorization of chance events.

To recap, the vignettes were constructed to reflect the most frequently mentioned types of chance events that emerged from analysis of the interviews conducted in Study Two. Six categories of chance event were identified that accounted for 75% of the chance events reported. The vignettes were developed such that each vignette contained at least one of the six types of chance event. Independent raters verified this manipulation (See Chapter six for details).

7.3 Materials

The Study Four Survey was built using Qualtrics software (Qualtrics, 2014). It was distributed online to an opportunity sample of respondents.

7.4 Participants

One hundred and five individuals comprised of 56 females and 49 males completed the survey. They ranged in age from 23 years to 79 years ($M = 55.04$, $SD = 14.65$). All respondents were born in Australia. Thirty-six respondents (34.29%) had completed a degree or postgraduate course. A further 34 (32.38%) had completed a TAFE certificate or Diploma. Twenty-nine (27.62%) had not completed other training after Secondary School. Six others (5.71%) had done an apprenticeship or some other form of on-the-job training.

Thirty-seven (35.24%) were in full-time employment. Twenty-three (21.91%) were in part time work. Sixteen (15.24%) were self-employed, and 29 (27.62%) were retired.

How do chance and uncertainty influence the career development of adults?

Respondents were asked to indicate their net income in the 2015-2016 Tax year. Thirty-one (29.52%) were in the \$0 – \$37,000 bracket. Forty-three (40.95%) were in the \$37,001 - \$80,000 income bracket, and 27 (25.71%) in the \$80,001 to \$180,000 bracket. Three respondents chose the “Prefer to skip” option, and one registered in the Over \$180,000 bracket.

7.5 Procedure

Rater opinions about the existence of a chance event and the suitability of six categorical descriptors assisted in construction of the survey.

There were 105 responses in the opportunity sample. Data was cleaned prior to analysis in the following manner. Three subjects used the “Prefer to skip” response about income, and only one person reported earning over \$180K. These four responses were excluded from analysis relating to income. They were included in the aggregate sample statistics.

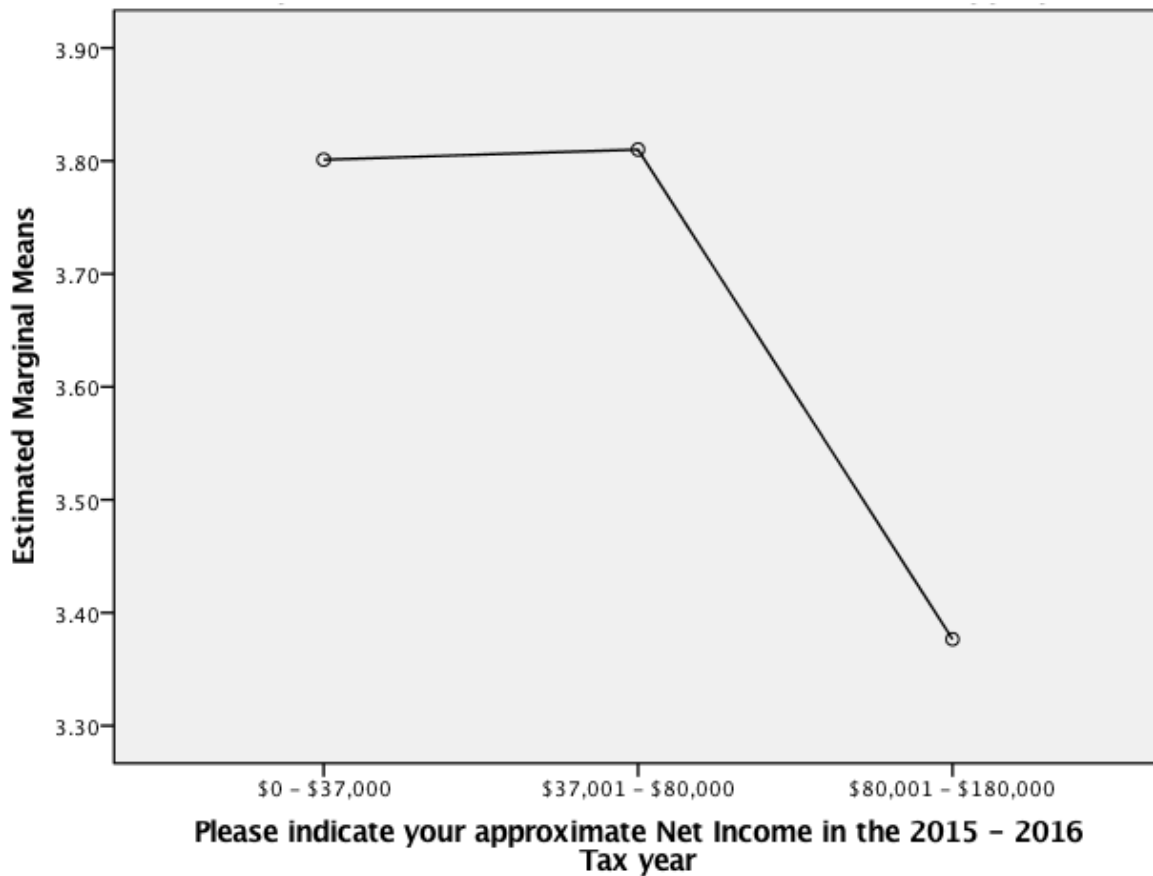
7.6 Results

7.6.1 Demographic variables - Recognition of a chance event

The mean across all chance event categories was collapsed into a general mean to establish a mean aggregate for chance events. Two groups of responses, the *prefer to skip* (N = 3) and *income over \$180,000*, (N = 1) were dropped from the data for this analysis due to very low sample sizes leaving three income groups.

The test of Between-Subjects Effects showed a level of significance of .013 for those in the higher income group. This indicated that those in the salary group \$80,001 - \$180,000 appear less likely to recognize a situation as a chance event. This is illustrated in Figure 7

Figure 7: *Estimated Marginal Means of mean chance event identified aggregate*



A difference also occurred in subjects' responses by occupational status. Those in full-time employment appear to be less likely to recognize a chance event ($M = 3.45$, $SD = 0.56$). This may be because, being in full-time employment, their current experience of work involves continuing and relatively predictable work circumstances. This contrasts with the experience of many part-time and self-employed workers who are often under-employed and more inclined to search for opportunities than are those in full-time work (Blustein, 2008; Lewis, 2001; Super, 1980). Other demographic variables of gender, age or educational level showed no significant differences of opinion in subjects' answers about the recognition of a chance event (see Table 22).

How do chance and uncertainty influence the career development of adults?

Table 22: Aggregate chance event - mean, standard deviation and sig

Category	Mean	SD	Number	Sig
Female	3.70	.70	53	.836
Male	3.68	.61	48	
Age				
23 - 49			38	
50 – 64			35	
Over 64			31	
Occupational Status				
FT	3.45	.56	34	.023
PT	3.98	.68	22	
RET	3.74	.58	29	
SE	3.72	.79	16	
Educational Level				
SS	3.71	.55	28	.538
TAFE	3.76	.73	33	
DE	3.62	.50	24	
PG	3.52	.85	10	
Income				
Under \$37	3.80	.63	31	.013
\$37 - \$80	3.81	.55	43	
\$80 - \$180	3.38	.75	27	

Note. Occupational Status: FT = full-time, PT = part-time, RET = retired, SE = self-employed; Educational Level: SS = secondary school, TAFE = certificate or diploma, DE = undergraduate degree, PG = post graduate degree.

7.6.2 Demographic variables - Categorization of a chance event

Those on higher incomes were also likely to categorize chance events less often. This difference was significant in their response to the *right place at the right time* category (M = 3.38 SD = .61). There were also significant variations by occupational status, with *unexpected opportunity* (M = 3.95 SD = .56), and *right place at the right time* (M = 3.88 SD = .61), being reported more frequently by those in part-time employment. No other variations demographic regarding categorization of chance events were observed.

How do chance and uncertainty influence the career development of adults?

Means and standard deviations for each vignette are in Table 23.

Table 23: Survey 3 - Recognition and Categorization of chance events - Means and Standard Deviations

Vignette	AA		BB		CC		DD		EE		FF	
	M	SD	M	SD	M	SD	M	SD	M	SD	M	SD
Was there a chance event?	3.50	1.07	3.77	1.08	3.74	0.98	3.20	1.20	4.14	0.93	3.83	1.11
A personal or work relationship	3.43	1.20	3.18	1.23	3.84	1.63	3.38	1.73	4.70	1.29	4.86	1.42
An unexpected opportunity	3.71	0.44	3.93	1.06	3.89	0.89	2.83	1.22	4.30	0.80	3.72	1.02
Being in the right place at the right time	3.92	0.47	4.06	0.99	4.26	0.77	2.45	1.12	4.25	0.76	3.36	1.06
Being in the wrong place at the wrong time							3.69	1.10				
A barrier to a previous career plan	3.29	1.02	2.50	1.09	2.27	1.10	3.77	0.97	2.27	1.02	2.70	1.18
An injury or health problem	1.83	1.02	1.67	0.94	1.73	1.02	1.73	0.96	1.79	1.04	3.66	1.39
An unplanned family event	3.40	1.14	2.19	1.22	1.96	1.12	2.53	1.34	2.05	1.24	4.20	0.99

Note. Being in the wrong place at the wrong time: Only Sandra's vignette was offered this option.

7.6.3 Variability in the recognition of a chance event

In most cases a majority of the subjects recognized the chance event which had been described in the vignette. Subjects' responses varied by function of their income and occupational status in their level of recognition of a chance event.

The majority of respondents confirmed the existence of a chance event in four of the five vignettes. The exception was for vignette DD, where 46.70% agreed there had been a chance

How do chance and uncertainty influence the career development of adults?

event. In the other four vignettes, subjects confirming the chance event ranged from 63.80% to 72.40%. The average mean response for the complete sample was 3.65 (see Table 24).

Results for the median and mode response for each vignette indicate majority recognition of a chance event. The median was 4 (agree) for all categories other than for vignette DD, where the median was 3 (neither agree nor disagree). The mode for every vignette was 4 (agree) or 5 (strongly agree). These results indicate that almost two-thirds of the sample recognized a chance event in each case but vignette DD. Even in vignette DD, almost 10% more subjects chose *agree* than any other response.

Table 24: Recognition of a chance event

Vignette	Mean	Median	Mode	% Agree	% Disagree	Unsure
AA	3.43	4	4	63.80	21.90	14.30
BB	3.77	4	4	68.60	17.10	14.30
CC	3.84	4	5	70.50	14.30	15.20
DD	3.38	3	4	46.70	32.40	21.00
EE	4.14	4	4	83.80	7.70	8.60
FF	3.83	4	4	72.40	14.30	13.30
Average	3.65	4	4	64.40	20.00	15.62

Note: % **Agree** combines 4 – agree and 5 – strongly agree; % **Disagree** combines 4 – disagree and 5 – strongly disagree.

However, subjects varied in their recognition of a chance event. While the majority recognized the chance event, there was a range of responses among the cohort about whether there had been a chance event. Those disagreeing or unsure about whether there was a chance event ranged from 29.00% to 53.30%. Mean scores for the five vignettes ranged from 3.38 to 3.84.

Vignette CC and vignette FF generated the most consistent responses about whether there had been a chance event. Here, over 70% agreed, while only 14.30% disagreed. The diversity of responses was most evident with regard to vignette DD. Here, 32.40% disagreed that there had been a chance event and a further 21% were unsure. Across the survey, more than 35% of responses disagreed or were unsure about whether a chance event had occurred. Details in Table 23 indicate that, in each case, a significant minority of more than a quarter did not confirm the existence of a chance event.

How do chance and uncertainty influence the career development of adults?

7.6.4 Variability in the categorization of a chance event

Two features in the questions asking subjects about the categorization of a chance event were that more than 80% of the subjects gave committed responses, rather than opting for the non-committal response, *neither agree nor disagree*; and, that subjects did not always agree on the allocation of category for a vignette (see Table 24). In a sense, individuals had firm opinions, but they did not always agree. These points are discussed below:

- **Definite responses**

Mean scores suggest that subjects agreed about categorization in only nine of the 30 questions - 30% of the responses. Answers recording one (strongly disagree) and two (somewhat agree), or four (somewhat agree) and five (strongly agree) were interpreted as a definite response. They indicate clearly that the subject agrees or disagrees with the prompt in the question. This occurred for only 30% of questions asking subjects to confirm or reject a category descriptor. Mean responses on the other 70% of occasions were in the neither agree nor disagree range, between $M = 2.18$, and $M = 3.92$ (see Table 25).

However, use of the median and mode scores provided a clearer perception of the cohort's responses. Using the median score, subjects gave a definite response for 26 of the 30 questions. The mode result provided a definite response on 29 of 30 occasions. The median and mode scores each indicate most subjects gave definite rather than unsure responses, at a rate of more than 90% of their answers.

With regard to specific categories, respondents were definite about four categories and less clear about two: *a barrier to a previous career plan*, and *being in the right place at the right time*.

How do chance and uncertainty influence the career development of adults?

Table 25: Categorization of chance events within the vignettes

Category	Vignette	Mean	Median	Mode	% Agree	% Disagree	Unsure
Personal or work relationship	AA	3.43	4	4	58.00	28.60	13.30
	BB	3.23	4	4	51.40	30.40	18.10
	CC	3.84	4	5	44.80	30.50	24.80
	DD	3.38	4	5	39.30	43.80	17.10
	FF	4.86	5	5	77.10	12.20	10.50
Unexpected opportunity	AA	3.71	4	4	68.60	14.30	17.10
	BB	3.95	4	4	75.30	10.50	14.30
	CC	3.89	4	4	75.30	7.60	17.10
	DD	2.83	3	2	36.20	45.70	18.10
	FF	3.72	4	4	66.70	12.40	21.00
Being in the right place at the right time	AA	3.92	4	4	72.40	8.60	19.00
	BB	4.09	4	5	77.20	7.60	15.20
	CC	4.26	4	4	87.60	3.80	8.60
	DD	2.45	2	2	18.10	53.40	28.60
	FF	3.36	3	4	47.60	21.90	30.50
Barrier to a previous career plan	AA	3.29	3	4	48.50	27.60	23.80
	BB	2.50	2	2	20.00	54.30	25.70
	CC	2.27	2	2	15.30	61.90	22.90
	DD	3.77	4	4	66.70	12.40	21.00
	FF	2.70	3	2	29.50	48.50	21.90
An injury or health problem	AA	1.83	2	1	8.60	78.10	13.30
	BB	1.68	1	1	7.60	80.90	11.40
	CC	1.73	1	1	8.60	81.00	10.50
	DD	1.73	1	1	7.60	79.00	13.30
	FF	3.66	4	4	69.50	20.90	9.50
An unplanned family event	AA	3.40	4	4	47.20	24.80	18.10
	BB	2.18	2	1	18.10	65.70	16.20
	CC	1.96	2	1	14.30	74.30	11.40
	DD	2.53	2	1	30.50	51.40	18.10
	FF	4.20	4	5	83.80	6.70	9.50

Note. 1. Likert scale, 1 “strongly disagree”, 2 “somewhat disagree”, 3 “neither agree nor disagree”, 4 “somewhat agree”, 5 “strongly agree”

How do chance and uncertainty influence the career development of adults?

- **Unsure responses**

Seventy percent of questions asking subjects to confirm or reject a category descriptor recorded a mean in the *neither agree nor disagree* range. However, the average of the unsure responses for the six vignettes was 17.39% - less than one-fifth of responses. The mean was impacted by the variation in the cohort's response to questions, with a majority deciding one way, but a significant number making an alternate decision. This is evident in the variation in the percentages in the *agree*, *disagree* and *unsure* columns in Table 25.

The experimental addition of the *wrong place at the wrong time* option in vignette DD in this survey resulted in the following scores: M = 3.69 SD = 1.10; Median = 4; Mode = 4. This response contrasted with the question for the same vignette using the original *right place at the right time* option: M = 2.45 SD = 1.12; Median = 2; Mode = 2.

- **The Level of Agreement among the cohort**

Several vignettes drew consistent responses from the cohort. The most consistent agreement about the suitability of a category for a vignette was with regard to *an injury or health problem*, which subjects consistently rejected in four of five vignettes. Subjects consistently disagreed with this descriptor for four of the vignettes, and agreed that it was appropriate for Vignette FF. The average level of agreement among the cohort over the five vignettes in this case was 77.70%. This level of consistency varied from 67.64% (right place right time) to 55.02% (personal or work relationship), for the other vignettes.

- **Variation among the cohort by chance event category**

Seventy percent of responses asking subjects to confirm or reject a categorical descriptor recorded a mean in the *neither agree nor disagree* range. This was most obvious with regard to *a barrier to a previous career plan* (aver M = 2.90), where the average use of the unsure response was 23.08%. The least confusing category was *an injury or health problem* (aver M = 2.13). Here, the average use of the unsure response by subjects was 11.60%.

In six questions subjects were divided to the extent that each of the *agree*, *disagree* and *unsure* responses received at least 20% support from the cohort. This indicates a significant divergence of opinion within the cohort about how to categorize a chance event.

How do chance and uncertainty influence the career development of adults?

- **Comparison of rater and Australian worker assessments**

There were 30 items regarding the assigning a category (5 vignettes by 6 categories). Raters allocated categories 15 times, although the raters had not used the *neither agree nor disagree* response when determining their allocation. Rater allocations are in Table 18 (Chapter 6). Alumni responses allocated categories on 14 occasions and did not allocate them for the remaining 16 situations.

On 11 of these allocations, raters and the alumni agreed that the descriptor was an appropriate category for the chance event. Alumni and raters also agreed in rejecting the descriptor as an appropriate category on 15 occasions. This suggests the raters and alumni agreed on 25 of 30 occasions (83.33%). Alumni allocated categories in three cases where the raters had not done so, (vignette FF twice, and vignette AA once). Alumni took the opposite opinion from the raters on one occasion – vignette DD, *an unplanned family event*, which alumni rejected. Alumni's responses were unclear in three cases, twice with regard to *a barrier to a previous career plan*, and once with regard to *an unplanned family event*.

In four of the five vignettes, over 60 percent of subjects supported the existence of a chance event. The exception was vignette DD, where less than 50% agreed that there had been a chance event. There was also majority agreement in the allocation of categories for each vignette. The average level of agreement about the use of the six categories ranged from 55.02% (*a personal or professional relationship*) to 77.70% (*an injury or health problem*).

However, despite majority support, there was variation in the interpretation of the vignettes with regard to the existence of a chance event. An average of 20% had an opposite opinion from the majority view (see Table 24). Each of the vignettes also recorded an average of more than 15% of unsure responses, with the highest of these being just below 20% (vignette DD). These figures indicate that in each of the five vignettes, a significant minority failed to agree that there had been a chance event.

The experimental addition of the *wrong place at the wrong time* option in this survey resulted in the following scores: $M = 3.69$ $SD = 1.10$; Median = 4; Mode = 4. This response compares favourably with the question for the same vignette using the original *right place at the right time* option: $M = 2.45$ $SD = 1.12$; Median = 2; Mode = 2. This aberration between the results may have arisen in part because of subjects' misinterpretation of the Rojewski (1998) definition. This is one of the difficulties of constructing and conducting quantitative research

How do chance and uncertainty influence the career development of adults?

with a large number of variables subject to interpretation. It is difficult to be precise on matters of complexity (Patton, M. Q., 2011), and opinion (Kahneman, 2003).

It is clear from the results that a majority of subjects identified chance events. However, a significant minority disagreed with the majority interpretation, and another group within the cohort were unsure about both the recognition of a chance event, and the use of categories to describe chance events. Raters had adopted binary approach to categorization and did not use the non-committal category *neither agree nor disagree*. In contrast, subjects were offered the option of remaining undecided about whether a chance event had occurred, and about whether a chance event was described by a particular category. The use of a non-committal response in the survey revealed the difficulty subjects had in determining their opinion.

There are many possibilities for the variations in interpretation. Subjects may have lacked concentration while answering the survey; they may have misunderstood some content within the vignettes or the survey directions. Besides these administrative possibilities, a plausible explanation for the diversity of response is the significance of context. Tversky & Kahneman (1973; 1986) and Kahneman (2003) suggest reasons for the variation in responses evident in the survey. Their contention is that people viewing precisely the same material will perceive it differently due to framing of the content that they are considering. Such framing involves the context of the information, the personal background and experience of the individual, and the individual's state of mind at the time of the perception and response activity. Demographic data suggested some variation of responses. Higher income respondents were less willing to categorize events as being caused by chance. This could be a function of attribution bias, where people are inclined to assign credit to themselves in beneficial circumstances (Blaine & Crocker, 1993; Weiner 1986). Part-time workers were more inclined to categorize chance events as unexpected opportunities or being in the right place at the right time. It is possible that the framing they used to interpret the data was skewed by the interest they had in obtaining more or better work opportunities during a period of part-time employment.

When subjects were presented with stark or more tangible situations in the vignettes, they committed to decisive responses. Raters adopted a binary approach to categorization and did not use the non-committal category "neither agree nor disagree". In contrast, subjects were offered the option of remaining undecided about whether a chance event had occurred, and about whether a chance event was described by a particular category. A forced choice, binary

How do chance and uncertainty influence the career development of adults?

assessment, such as that completed by the raters, may have achieved a clearer set of responses. However, this may have hidden the deeper insecurity people have about making decisive judgements. The regular use of response 3, *neither agree nor disagree*, suggests many respondents in the absence of certainty, opted for the unsure response.

The possibility of attribution bias (Ross & Nisbett, 2011; Zuckerman, 1979) may be a factor in the responses of higher income earners. Demographic correlations pointed towards an inclination among higher income earners to be less inclined to support the existence of a chance event. These results provide tentative evidence only, and warrant further investigation. However, if confirmed, this tendency may be explained by attribution bias. Highly earning respondents may be inclined to attribute success to their own endeavors and attribute less credence to matters of chance (D. T. Miller, 1976). Williams et al. (1998) report that older and more established psychologists in their study were aware of chance events altering “their self-concepts” (p. 385), rather than providing opportunity per se. This contrasted with younger participants who reported a greater awareness of opportunities arising from chance events. It may be that early career stages are more prone to awareness of opportunity, and by extension, opportunity via chance events.

Study Three had reported on the internal variation in response among subjects. A similar level of variation occurred in the broader Australian citizen sample. This indicates that the tendency for a cohort to have a range of opinions about the existence and categorization of chance events may extend to populations in general. Further research is needed to establish this conclusively.

The pattern of responses in Study Four highlights the concerns of Mitchell et al. (1999), who suggest that planned happenstance can be learned, and that chance event skills can be augmented. People need to be aware that chance events are occurring for them to increase their likelihood of benefitting from them (Borg, 2015; Gelatt, 1989, Pryor & Bright, 2011). The minority dissenting views in Study Four prompt consideration of the finding in Study One, that those who felt they had not experienced a chance event in their career development also estimated that a lowly 34% of people in Australia would be likely to do so. It is possible that some in the community are less likely to identify a chance event, and are less likely to anticipate that a chance event could influence their career.

How do chance and uncertainty influence the career development of adults?

Data in this study suggests that a lower level of awareness of chance events may be more common among those in full-time employment. These issues warrant further investigation and highlight the appropriateness of career intervention to alert young people and workers of the reported frequency of chance events impacting on career development.

7.7 Concluding remarks

Study Four investigated two null hypotheses:

1. That a sample population of Australians will not vary in their recognition of chance events; and
2. That a sample population of Australians will not vary in their categorization of chance events

Subjects were able to recognize chance events. In four of the five vignettes, a definite majority of the cohort confirmed that a chance event had occurred, and in vignette DD the mode result was *somewhat agreed* with the existence of a chance event. In vignette DD, 32% disagreed, with 21% unsure. In all other cases, 60% or more confirmed the existence of a chance event.

Despite this majority opinion, there was variation among the group in their recognition of a chance event. As instanced above, DD's vignette divided opinions among the cohort. In each of the other vignettes, at least 14% disagreed with the majority opinion, and another 14% were unsure about whether a chance event had occurred. In each vignette, at least one third of the cohort chose differently from the most common response.

The sample also varied in their categorization of each vignette. It was common for the cohort to give divergent responses about categorization. The only category to generate consistent responses over 75% was *an injury or health problem*. The regular result was that the cohort diverged in its opinion about the use of categories to describe what had occurred.

In essence, Study Four confirms the hypothesis that Australians will vary in their recognition of a chance event; and Study Four confirms the hypothesis that Australians will vary in their categorization of chance events.

Despite this variation in opinion, it is productive to use descriptors to categorize chance events. Previous studies show that the types of chance events that people experience vary in context and impact (Betsworth & Hansen, 1996; Peake & McDowall, 2012; Williams et al.,

How do chance and uncertainty influence the career development of adults?

1998). Shanahan and Porfeli (2006) emphasise the subjective nature reports of chance events. Career counsellors seeking to advantage their clients' understanding of work environments and real world experience need and use such classifications (Patton & McMahon, 2014). Study Four has indicated the usefulness of classifications, but also highlights the complexity inherent in their construction and development.

Chapter Eight - Study Five Survey – Identification of chance events by a purposive sample of Australian citizens

8.1 Introduction

Study Five was developed to assess the capacity of a sample of Australian citizens to identify a chance event. Data from earlier analysis suggested that the capacity of individuals to identify a chance event was problematic. This had been indicated by results in Study Two where interview analysis revealed a greater frequency of chance events affecting career development than was reported in the survey results in Study One. Further evidence of this arose in the results of Study Three and Study Four. These surveys indicated majority recognition of a chance event, and variability in the capacity of individuals to recognize a chance event.

It seems from the data analysis to this point, that there is a degree of variability concerning how individuals interpret the existence of chance event affecting career development. If this were the case, it would also seem that the same event as reported in vignettes would receive different levels of affirmation as a chance event by a range of Australian citizens.

Therefore, the hypothesis in Study Five is that individuals exhibit significant variability when recognizing and reporting the existence of a career impacting chance event.

8.2 Participants

One hundred and fifty individuals (86 F, 58 M) completed the survey. They ranged in age from 20 years to 82 years ($M = 57.47$, $SD = 17.88$). All respondents were born in Australia. One hundred and twenty-one respondents (80.60%), had completed a degree or postgraduate course. A further 10 (6.70%) had completed a TAFE certificate or Diploma, while 11 (7.30%), had not completed other training after Secondary School. Five others (3.30%) had done some other form of on-the-job training.

Thirty-seven (35.24%) were in full-time employment. Twenty-three (21.91%) were in part time work. Sixteen (15.24%) were self-employed, and 29 (27.62%) were retired. Respondents were asked to indicate their net income in the 2015-2016 Tax year. Twenty-eight (18.70%) were in the \$0 – \$37,000 bracket. Sixty-nine (46.00%) were in the \$37,001 - \$80,000

How do chance and uncertainty influence the career development of adults?

income bracket. Thirty-eight (25.30%) were in the \$80,001 to \$180,000 bracket. Three (2.00%) registered in the Over \$180,000 bracket, and seven respondents chose the “Prefer to skip” option.

8.3 Materials

The Study Five survey used Qualtrics software (Qualtrics, 2014) and was distributed online among professional networks and associates and via social media.

8.4 Method

Transcripts from the Study Two interviews were used to prepare vignettes describing circumstances where a chance event had impacted on an individual’s career development. Twenty vignettes simulating circumstances reported in the Study Two interview transcripts were prepared. They are identified as Vignette 1 to Vignette 20. Eighteen vignettes described a chance event, which had an impact on the person’s career. Two vignettes were included as controls. Vignette 3 and Vignette 8 did not have a chance event affecting career development.

Results of the survey were analysed using SPSS.

8.5 Design

Vignettes were prepared describing the circumstances of a chance event as they had been reported in the Study Two interview transcripts. Where possible, transcripts were used verbatim to depict the chance event. Modifications were made to names, locations and other distinctive identifying content to protect the identity of each interview participant whose story was being used. Two raters and the researcher read the vignettes independently to assess whether the story in the vignette described a chance event. Any story that was not acceptable to one of the assessors as representing a chance event was omitted. This process continued until a corpus of 20 vignettes was available for inclusion in the survey. After consensus was reached between the raters and the researcher that the stories each represented a chance event, 18 vignettes depicting a chance event affecting career development were selected for inclusion in the survey. Two further stories were drafted which the raters and researcher agreed did *not* describe a chance event affecting career development. These vignettes were included as control vignettes to measure any tendency to endorse all vignettes as containing a chance event without reading each one. The first vignette that did not describe a chance event was Vignette 3. It read:

I went for a walk, had a coffee with friends, and then went home.

How do chance and uncertainty influence the career development of adults?

Vignette 8 was the second vignette that did not describe a chance event. It read:

I had been reading for 30-40 minutes when the doorbell rang. It was two kids from the neighborhood collecting for Red Cross. I gave them some change and continued reading.

This resulted in a survey with 20 vignettes. Eighteen vignettes described chance events and two vignettes did not describe a chance event. Vignette 1 is included here as an example of a vignette that described a chance event affecting career development:

My wife and I were at the airport. Our plane was delayed and we went for a drink. I met a former neighbour in the bar and he said he was looking for an IT technician. He ended up making me an attractive offer and a month later, I took it up.

The Rojewski definition of a chance event accompanied each vignette. It read: “**unplanned events** (e.g. accidental or unintentional events; or involve being in the right place at the right time or the wrong place at the wrong time) **that have an impact on careers**” (Rojewski, 1999, p. 269). The respondent was asked to read the vignette and respond to the question:

“Is this a chance event impacting on career development?”

Respondents had to choose one of three alternatives - Yes, No, or Unsure.

The complete list of vignettes is in Appendix H.

8.6 Results

Due to very small numbers (5) in the highest income group, these participants were excluded from the analysis. The mean participant ratings for each scenario are presented in Table 26.

How do chance and uncertainty influence the career development of adults?

Table 26: *Mean ratings of identification of a chance event (1=no, 2=unsure, 3=yes) and single sample t-test comparing ratings to neutral rating*

Vignette	N	Minimum	Maximum	Mean	Std. Deviation		sig
1	158	1	3	2.94	.324		.000
2	158	1	3	2.71	.671		.000
3	155	1	3	1.06	.261	Control	.000
4	156	1	3	2.44	.852		.000
5	156	1	3	2.31	.907		.000
6	156	1	3	1.96	.950		.614
7	151	1	3	2.54	.806		.000
8	152	1	3	1.05	.266	Control	.000
9	153	1	3	2.10	.972		.214
10	153	1	3	1.40	.764	Rejected as chance	.000
11	153	1	3	2.80	.551		.000
12	151	1	3	1.63	.884	Rejected as chance	.000
13	150	1	3	2.23	.937		.003
14	150	1	3	2.10	.918		.184
15	151	1	3	1.82	.932	Rejected as chance	.020
16	151	1	3	2.54	.823		.000
17	148	1	3	1.53	.860	Rejected as chance	.000
18	148	1	3	1.66	.908	Rejected as chance	.000
19	147	1	3	2.17	.902		.024
20	148	1	3	2.56	.810		.000

Analysis of the identification of chance events in the presented scenarios was conducted in two ways. Firstly, the detection of chance events in each scenario across participants was

How do chance and uncertainty influence the career development of adults?

analysed with a series of 1-sample t-tests comparing participant ratings to the neutral rating of “unsure”. Table 26 presents the results of this analysis above.

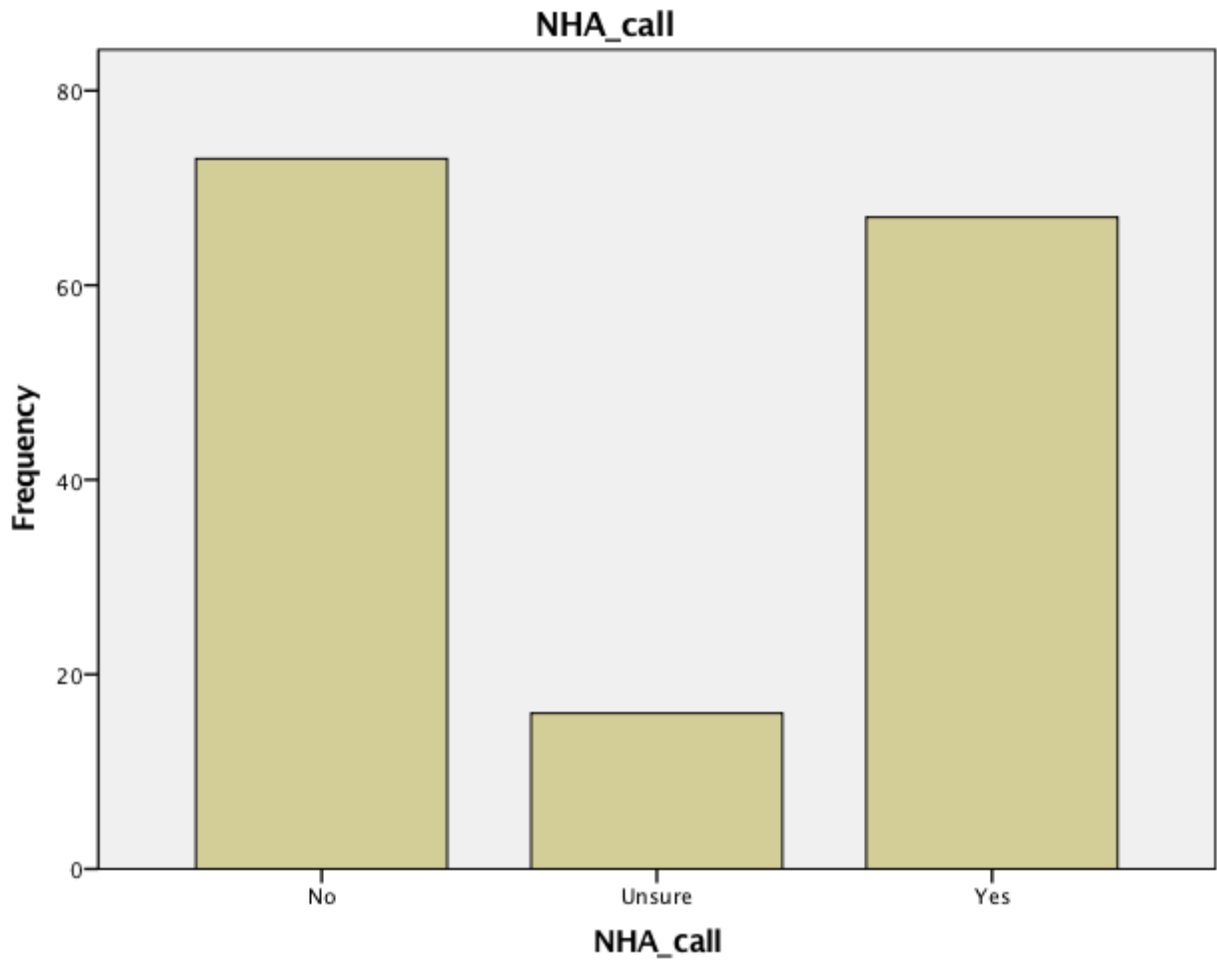
The two control scenarios were identified clearly as not being chance events, and this provides confirmation that the participants were processing the details in each scenario.

Three of the scenarios failed to be identified as a chance event, they were: Vignette 6, Vignette 9 and Vignette 14. Figure 8, Figure 9 and Figure 10 illustrate the bimodal nature of the ratings for each of these scenarios. This indicates that these scenarios split the respondents between those that identified a chance event and those that did not. Participants appeared to be quite definite in their views.

However, the participants were able to identify the chance events depicted in 10 of the 18 chance scenarios, and also correctly classified to the two control events as not containing chance events.

How do chance and uncertainty influence the career development of adults?

Figure 8: *Distribution of Participant Ratings for Scenario - Vignette 6*



How do chance and uncertainty influence the career development of adults?

Figure 9: *Distribution of Participant Ratings for Scenario - Vignette 9*

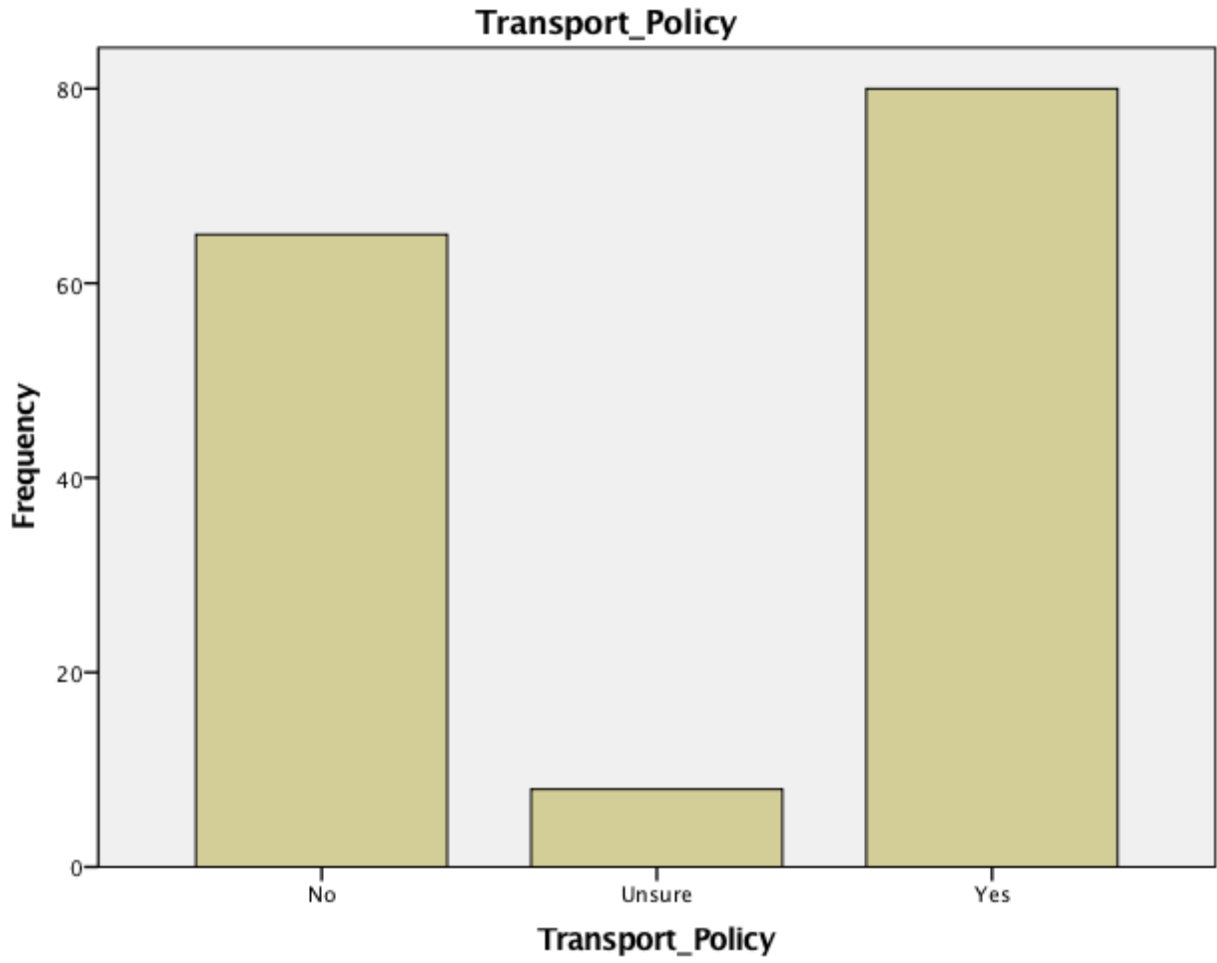
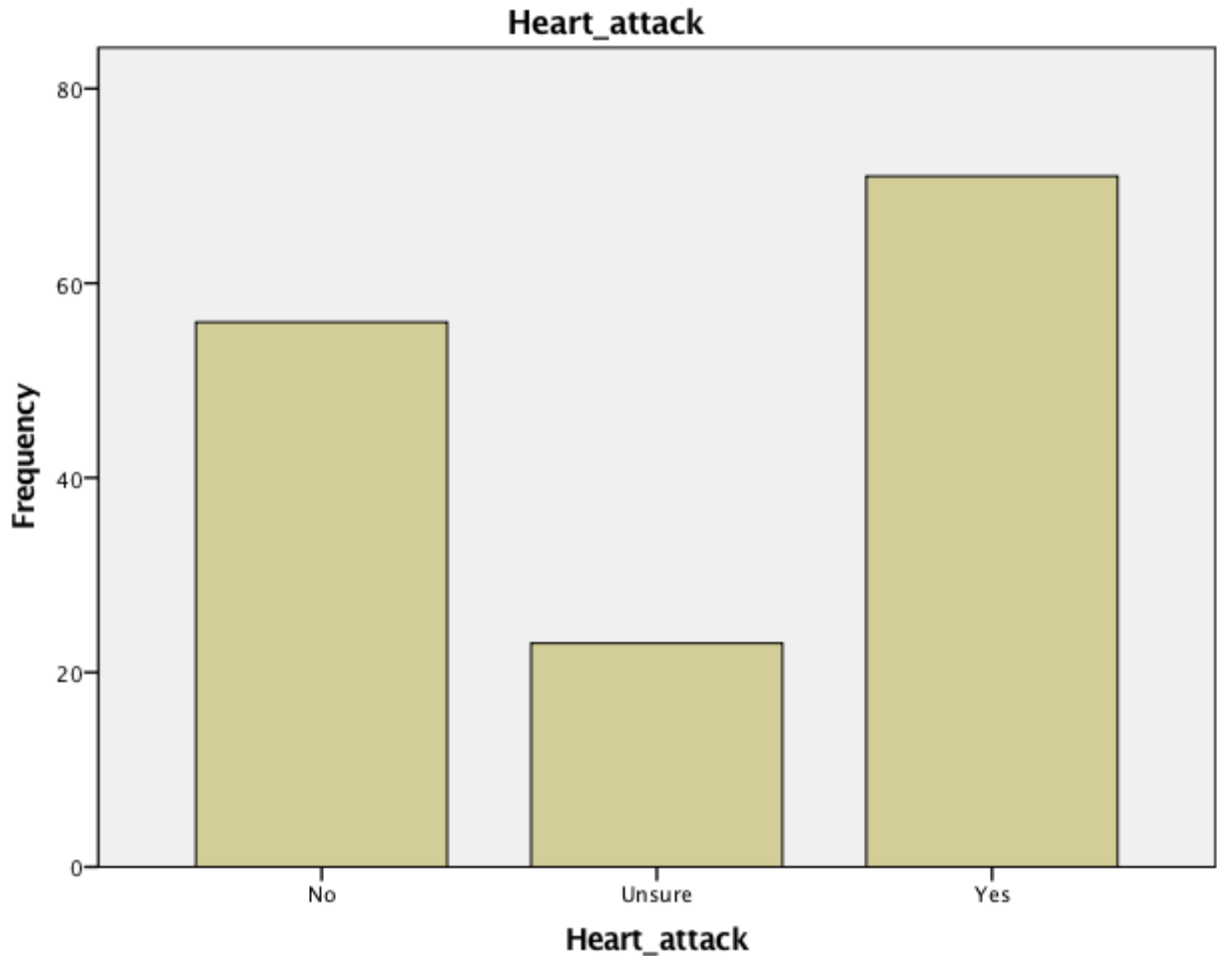


Figure 10: Distribution of Participant Ratings for Scenario - Vignette 14



8.6.1 Rejection of vignette as a description of a chance event

However, a majority of subjects rejected five vignettes as representing a chance event affecting career development. More than 50% of subjects rejected this suggestion for vignettes 10, 12, 15, 17 and 18. There were five other vignettes where more than 30% disagreed with the raters (6, 9, 13, 14 and 19).

On two occasions, more than two thirds of respondents rejected a vignette, which the raters assessed as describing a chance event. In these cases, only 15.54 % (Vignette 10) and 23.81% (Vignette 17) agreed that these vignettes described a chance event. The ratio of those agreeing to those disagreeing for these vignettes was 23:117 and 35:105 respectively.

How do chance and uncertainty influence the career development of adults?

More than one third of respondents felt there was no chance event in ten vignettes. In order of significance, these were the Vignettes 12, 18, 15, 6, 9, 14, 13, 10, 17 and 19.

8.6.2 Variability within subject's responses to a vignette

Subjects' responses varied in their interpretation of some vignettes. In half of the vignettes, more than a quarter of subjects disagreed with the majority opinion (5, 6, 9, 12, 13, 14, 15, 18 and 19). In Vignettes 9, 12, 13, 14, 15, 18 and 19, at least one third of subjects disagreed with the majority opinion. This internal variation was most pronounced in Vignette 6, which had an almost equal division of opinion with Yes = 66 responses and No = 68 responses.

Nine vignettes had ten or more unsure responses. These nine vignettes accounted for over 70% of all unsure responses. Three of the more contested vignettes, 14, 15 and 19, accounted for 30% of the total *unsure* responses.

Some vignettes elicited wide disagreement. Vignette 6 had the lowest agreement ratio at 1.03:1. This indicates a wide disparity of opinion within the cohort with close to half the group deciding Yes, and slightly more answering No. Three other vignettes, 9, 13 and 14 had similarly low ratios at 1.2: 1. Other vignettes with a ratio of 2:1 or lower were Vignettes 5, 15, 18 and 19. Responses for these eight vignettes recorded 57.35% of total unsure responses.

To address the question of the influence of demographics on perceptions of chance events, a series of multivariate ANOVAs (MANOVAs) were conducted with the demographic variables of gender, age group, income, and education as the independent variables, and the identification ratings of chance events for each scenario as the dependent variable.

There was no significant difference in the ratings of chance events in scenarios by gender (Wilk's Lambda = 0.915, $p = 0.947$). There was no significant difference in the ratings of chance events in scenarios by education (Wilk's Lambda = 0.689, $p = 0.185$). There was no significant difference in the ratings of chance events in scenarios by income group (Wilk's Lambda = 0.686, $p = 0.329$). There was no significant difference in the ratings of chance events in scenarios by Age group (Wilk's Lambda = 0.766, $p = 0.769$).

8.7 Discussion

The control vignettes established that subjects were able to manage the task presented in the survey. They correctly rejected control Vignettes 3 and 8 from among the 20 vignettes, with only 4.08% of respondents disagreeing or using the *unsure* option. This definite response by 95% of subjects indicated that they were able to identify when a chance event had not been included in a vignette. In addition, three patterns were observed in the subjects' responses.

- Subjects could identify a chance event
- Subjects rejected some vignettes nominated by the raters
- Subjects displayed internal variation in their responses

8.7.1 Majority identification of a chance event

A majority of subjects identified a chance event in 11 of the 18 vignettes. Subjects seemed to recognize a chance event within a vignette consistently when the story was related sequentially and transparently. This occurred, for example, in vignettes 1, 2 and 11. Vignette 1 described the chance event explicitly, as is evident within the story.

My wife and I were at the airport. Our plane was delayed and we went for a drink. I met a former neighbour in the bar and he said he was looking for an IT technician. He ended up making me an attractive offer and a month later and I took it up.

When a chance event was reported in a logical manner such as this, subjects seemed readily able to identify it as such. In these cases, a majority of subjects recognized the connection between the event and the impact on career development. Vignettes 1, 2 and 11 were more consistently interpreted than other vignettes. Each of these stories was logical and sequential in its description of the situation. This suggests that the more linear and transparent the story was in the vignette, the more consistent was the response of those completing the survey.

8.7.2 Subjects rejected some vignettes nominated by raters

Some vignettes were not considered by the cohort to report a chance event affecting career development. There were five vignettes where the majority response was the opposite of the raters, and five more where one third considered the vignette had no chance event. This is a significant degree of variability in the context of this study. It raises the question of how valid is

How do chance and uncertainty influence the career development of adults?

the concept of a chance event. If the raters are correct in nominating 18 vignettes with career influencing chance events, the survey is suggesting that on five occasions out of 18, Australian citizens may be likely to overlook the chance event.

8.7.3 Subjects displayed internal variation in their responses

Subjects' responses reflected internal variability in their interpretation of some vignettes. While some vignettes drew uniformly consistent responses from subjects, nine vignettes divided the cohort significantly. For example, in vignette 6, about 45% supported the chance event and another 45% rejected it with the remaining 10% unsure. On eight other occasions less than two thirds supported the majority opinion, whether affirmative or negative. Often, another ten per cent used the unsure response.

Another dimension of these responses was that greater complexity generated greater variability in responses. If the story in the vignette was more complicated and required more interpretation, the tendency for inconsistent responses among respondents appeared to increase. An example is Vignette 6:

I got a phone call from a girl who I'd worked with at the National Health Authority. I'd worked with her on a particular issue and she said 'We're recruiting and we would really like you to apply.'

Here, the job offer creating the career development impact is not stated explicitly, as in Vignette 1. However, it is implied in the text. This story is akin to someone being headhunted for a position. The person receiving the call has no prior knowledge that their name is being discussed or that they are about to be contacted. So presumably, their career development has not factored that into their thinking prior to the phone call. The chance call arrives; and the recipient begins a new thought process prompted by the chance event. Yet 45.95% of respondents disagreed that this described a chance occurrence affecting career development, and a further 14 were unsure about the same question. This represented 55.45% of subjects not recognizing the chance event.

The two vignettes with the lowest Yes response were Vignette 10 (15.54 %), and 17 (23.81%). Each of these required more interpretation on the part of the respondent.

How do chance and uncertainty influence the career development of adults?

These vignettes read:

Vignette 10

The interviews started and suddenly I realized, 'I don't want to do this any more!'

Vignette 17

We were on holidays with my grandparents when I was about 15. I had long talk with grandad about growing up and what I might do in the future. And he was talking through the sorts of things that I could possibly do as a career when I got older.

And from that conversation, within 3 or 4 weeks, I had researched universities; I had researched courses, and I had decided I wanted to do an accountancy course at University.

These vignettes are less transparent in the representation of a chance event than the two earlier examples. The chance event is more difficult to discern, but still exists. Ursula was prompted by her grandfather on a course of action, which molded the early years of her career. At the start of her interview Paula is shocked to find that a career goal has just evaporated. To an extent, the chance event has to be extrapolated from the text. However, the inclination of many of the responses is to suggest that a chance event did not occur. Only 5.41% chose to use the unsure response for Vignette 10; 4.76% used the unsure response for the Vignette 17.

This disparity from strongest level of agreement to greatest level of disagreement shows the extent of variability across the responses among the respondents. Studies Two, Three and Four have each indicated that, with increasingly complex situations, individuals find it more difficult to identify chance events.

This complexity can arise from many sources. With regard to the vignettes in Study Five, the idea of an epiphany may be considered a complex concept, in that it requires the reader to consider the implications of her sudden change of values on her career development. In Ursula's case, the lapse of time between the grandfather's comments and her resulting career development may have introduced complexity into an individual's analysis.

8.7.4 Context as a factor in variable responses

The context of a chance event can disorient a person's interpretation of whether or not a chance event occurs. For example, the reference to the timing of a birth drew a mixed response from respondents. The vignette read:

How do chance and uncertainty influence the career development of adults?

I think I was lucky to be born in a time when there was a low birth rate in the 1930s in the depths of the depression. So there wasn't the competition for jobs there is now.

The fact that this observation is historical rather than contemporary may have confused some respondents. The vignette reflects upon the co-incidental nature of being born during the depression, and the increased opportunity to later access jobs more easily as a result of competing for work in an environment affected by the low birth rates years earlier. There is a time lag, to which the speaker is referring. Forty-four respondents appear to have deduced that connection, while 93 did not. A further ten suggested they were unsure about this situation. Tversky and Kahneman (1973) and Kahneman (2003) have demonstrated the wide variation in interpretation which arises because of the background and preoccupation of the individual. The variability in response to vignettes reflects these authors' understanding of individual differences in perception. Kahneman (2003) even suggests that the same person viewing the same information on different occasions may have a different opinion.

When presented with these vignettes with the limited context of the directions in the survey, an individual may respond intuitively with little reflection, or may be concentrating and reflecting quite deeply. It is difficult to be conclusive about who is right and who is wrong as the survey implied in its initial construction. The raters may have been overly ambitious in building their professionally acute knowledge into the construction of the vignettes which were to be delivered to a cohort of Australians, untrained in aspects of career development.

Nevertheless, the hypothesis, *that individuals will exhibit significant variability when recognizing and reporting the existence of a career impacting chance event* is confirmed by the data in the survey.

The demographic variables of gender, age group, income group and education had no influence on participants perceptions of chance events in the scenarios. This may suggest that the interpretation of chance events may depend upon more personal factors that do not generalize to demographic level variables. The relatively low recognition of chance events depicted in other people's lives can be contrasted with the higher rates of self-reporting of chance events found here in the earlier studies and in previous work (Borg, Bright and Pryor, 2006; 2014; Bright, Pryor, Wilkenfeld & Earl, 2005). This raises the question of whether an individual's experience of an event as chance is treated as such by others. In a counseling situation, are counsellors likely to under-estimate or disregard their client's accounts of chance in their lives? This

How do chance and uncertainty influence the career development of adults?

question could be addressed by presenting these scenarios to a sample of career counsellors. This is a question for future research.

8.8 Limitations

This survey recorded opinions of Australian citizens. The sample size of 150 may limit the extent to which generalizations may be made from the data.

8.9 Study Six

The final study involves a Focus Group built from members of the Study Two interviews.

Chapter Nine - Study Six Focus Group – An exploration of behavior in response to chance events and uncertainty

9.1 Introduction

Study Six involved the use of a focus group to enable individuals who participated in the interviews in Study Two to exchange ideas, reflect upon their own and each other's experience of chance events and to compare their experiences with my findings. This will assist the researcher to re-evaluate and if necessary modify his interpretations of Study One and Study Two findings.

The studies presented so far have aimed to understand participants' perceptions of chance events using survey and interview methodologies. The clear themes emerging from this work were that Australian workers commonly experienced chance events, and their capacity to recognize and categorize such chance events varied from person to person. It was also apparent from the Study Two interviews that one could develop skills to manage the uncertainty associated with chance events.

A third research methodology is introduced in this chapter, namely that of the Focus Group, using participants from the Study Two interviews. A focus group enabled the researcher to test and refine his interpretation of the Study Two interview data. Maxwell (2011) and Saldana (2009) suggest feedback and discussion amongst research participants is a valid form of triangulation.

It also enabled further exploration of the influence of ambiguity and uncertainty as factors affecting behaviour in conditions producing chance events.

The purpose of the focus group was threefold:

- To establish the validity or otherwise of the research findings in Study One and Study Two.
- To gain more depth of understanding of the participants' experience of chance events and uncertainty by exploring their thoughts, feelings and behaviours relating to the chance events.

How do chance and uncertainty influence the career development of adults?

- To identify any further insights the participants may have that are relevant to the research questions and goals.

The interview participants had already invested a considerable amount of energy and time into aspects of the research questions. Prior to any involvement in the focus group, they had, either wittingly or unwittingly:

- Experienced and negotiated a chance event which had affected their career development
- Completed the survey used in Study One, during which time they had affirmed their chance event experience
- Participated in a face to face interview about the chance event involving a significant commitment of time and emotional energy
- Reviewed and confirmed as accurate, a transcript of their interview

This placed them in a unique category of workers, especially able to support development of the Study Six focus group as co-researchers. Gathering a group of workers with specific knowledge and experience of, and an interest in the research topic, offered the prospect of gaining further insights and a richer understanding of the issues being investigated.

The concept of participants as co-researchers is widely supported in qualitative research, (Bazeley, 2013; Maxwell, 2011; Patton M.Q., 2011; Saldana, 2009). Stewart and Shamdasani (2014) indicate that “the group itself is a research instrument. The dynamic interaction of the group under the subtle but firm direction of a skilled moderator can yield insights not easily obtained by other means” (p.179).

The use of focus groups as part of academic research in the social sciences gained acceptance in the latter decades of the 20th century (Kruger & Casey, 2009). Focus groups were used frequently after the Second World War, but mainly in marketing and business endeavors rather than academia. Even when they were used in social science or psychology studies, they still struggled for widespread legitimacy among many academics. However, debate about the efficacy of focus groups in academic research has subsided in recent decades as qualitative research has gained greater legitimacy as a research methodology that is able to delve and nuance in ways inaccessible via survey and other means of data collection (Krueger & Casey, 2009; Morgan, 1996; Stewart & Shamdasani, 2014).

How do chance and uncertainty influence the career development of adults?

Focus groups can be an integral part of qualitative studies (Morgan 1996; Krueger, 2014). They require good planning and design, including deft leadership during the focus group activities to realize fully their potential to go beyond the data capture achieved by surveys. Focus groups enable the use of probe questions and other props to evoke richer participant insights. Interviews had revealed that participants' emotional and intuitive judgements had sometimes motivated their behaviours in the midst of the chance event. Stewart and Shamdasani (2014) cite Boleyn-Fitzgerald (2010) and Zaltman (2003) in suggesting "That the vast majority of human thought is visual, metaphorical, and emotional and resides deeply in neurological substrata" (pp 12-13). The focus group was designed to explore the effect of these emotions by the use of three exercises.

9.2 Design

The principles of a sound focus group revolve around detailed planning, developing a constructive structure for the execution of the focus group activities, and the selection of an appropriate moderator (Krueger & Casey, 2009; Stewart & Shamdasani, 2014). It is appropriate to think of every detail and contingency in planning for the focus group. This includes scheduling and duration, location and the facilities including room size, provision of food and drink, seating arrangements, including the positioning of the moderator, recording facilities, and so on.

Depending on the content to be covered during the discussion, time allocation is critical. A suitable allocation of time should be determined prior to the activity, while allowing flexibility to respond to the way the group discussion evolves. There needs to be adequate time allocated to enable exploration of the agenda by each of the participants, as well as allowing for the organic process of extended exploration if needed.

Using an iterative approach, the researcher prepared several drafts of the focus group structure in consultation with the facilitator and principal supervisor. An early decision was to minimize facilitator talk (Stewart & Shamdasani, 2014), and to ensure that the participants were relaxed and contributing early in the session. This was achieved by beginning with a reflective exercise, which required only a brief introduction and emphasised interaction among the participants. Key criteria that emerged in this iterative stage were that we would plan for the

How do chance and uncertainty influence the career development of adults?

focus group to run for one hour, and that the final structure involved three separate blocks of time, each with its own exercise.

9.2.1 Exercise one - Openness towards uncertainty

After introductions, the facilitator introduced the topic and invited the participants to do a reflective exercise.

In prompting the group, the facilitator began

I'd like you to reflect quietly for a short time about when you were experiencing the effects of a chance event. Now this chance event would preferably be a work matter. The circumstances are not particularly important at the moment. Just recall your thoughts, your feelings and your behaviors at the time of this chance of event.

This enabled each participant to recall and discuss aspects of their experience of the chance event. After several minutes of self-reflection, the facilitator called the group to order and asked each of the participants to take turns to exchange their ideas with another participant or the researcher about their thoughts, feelings and behaviors in the midst of the chance event. After a further five minutes, the focus group discussed these ideas collectively under the leadership of the facilitator.

9.2.2 Exercise two - Managing chance and uncertainty

At the completion of the discussion following the reflection exercise, the facilitator and researcher consulted and amalgamated the second and third exercises in the original format as listed in Appendix C. The second exercise combined questions about managing chance events and the uncertainty which they generate. The facilitator asked the focus group the two prepared questions to begin the second exercise:

“What are ways that you manage the chance event? And,
What other ways do you manage the uncertainty?”

This contingency had been discussed beforehand, and, given the time constraints, suited the research purpose of the focus group. Stewart & Shamdasani (2014) emphasise the sophisticated skills needed to be able to extract maximum value from a focus group, and indicate that it includes the capacity to be adaptable during the focus group activities (p.90).

9.2.3 Exercise three - Decision making in an environment of uncertainty

In the third exercise with the focus group, the researcher used a pictorial representation to explore the process of individual behavior in an environment of uncertainty. During the coding and write-up of the Study Two interviews, my research notes included an analogy in the form of a drawing whose imagery included turbulent sea, a boat, an anchor and fog. This scene depicted a person charged with negotiating a journey replete with ambiguity and uncertainty. It was prompted by the imagery used by Nowotny (2015) to describe situations involving uncertainty. This pictorial representation encouraged the group to discuss the sequential process of decision making in an environment of uncertainty (Radnofsky, 1996). A reproduction of the drawing is included later in this chapter, as Figure 7, Sea of Uncertainty in the discussion of Exercise Three.

Therefore, the structure and flow of the focus group exercises was:

1. Openness towards uncertainty
2. Managing chance and managing uncertainty
3. Decision making in an environment of uncertainty

9.3 Participants

Nineteen participants had completed an interview in Study Two and were therefore considered for inclusion in the Study Six Focus Group. However, practicalities quickly depleted this number. Five lived and worked interstate, and including them in a teleconference was not practicable, as it would have required locating and synchronizing several venues at unspecified cost. Ultimately, the fourteen interview participants residing in Victoria, where the researcher is based, were approached about being involved in the focus group.

Three interview participants from Study Two, namely Rita, Bernard and Ed participated in the focus group. Among the eleven interviewees who did not join the focus group, three were overseas at the time, six declined due to social engagements or work commitments, and two were unable to be contacted. The focus group meeting was scheduled for one hour beginning at 5.00pm. The location was a spacious and comfortable university meeting room on the perimeter of the city, and serviced well by public transport. Parking was offered to participants, but not requested by any of the participants.

How do chance and uncertainty influence the career development of adults?

The focus group was comprised of three interviewees, the facilitator and the researcher, all with personal experience of at least some aspects of the research topic. Each invited participant had successfully navigated major disruptive influences on their career trajectory due to the impact of a chance event. This cohesiveness among the participants presents the possibility of confirmation bias (Tversky & Kahneman, 1973). However, Patton, M. Q. (2011) acknowledges the legitimacy of involving participants with deep knowledge about a topic in qualitative research. This approach differs from some focus groups, which seek a diversity of opinions and experiences to generate a cross-section of opinion about a topic.

Nevertheless, in this study, each participant had a unique story, common in the experience of a chance event. Each participant's experience was distinctive in its context, the person's responses to the chance event, and the actual outcome which resulted. A brief description of the circumstances of the three interviewee participants follows:

Rita, in her mid-forties, is a married mother of two boys. Rita completed her degree in computer science and developed her career to the point where she was a consulting partner in a small family business prior to the occurrence of the specific chance event reported in the Study One Survey as prompting her change of career. Rita experienced a sudden barrier to her career plans when she realized her contract work as a computer analyst was being used to determine who would be let go from the company. Several other chance events also prompted her to re-evaluate her work focus. She retrained as a teacher, which gave her a greater sense of purpose in her work and allowed her more flexibility in meeting her work and other daily commitments.

Bernard is in his early fifties, married with family commitments. He is a former senior public servant, now working in the finance industry. During Study Two, Bernard spoke of his disaffection with a senior manager in his workplace, when Bernard was in the midst of a significant and successful career. This prompted Bernard to seek other opportunities one of which led to a relatively unsuccessful interview. His chance event arose when Bernard rang, quite by chance, to signal to the recruiter his interest in any future opportunities. A sequence of coincidences then led to Bernard obtaining the position for which he had originally interviewed. Bernard described multiple other chance events occurring subsequent to this initial barrier to his original career plan.

Ed is a semi-retired, divorced and with adult children. He previously worked in senior positions in the finance industry and is currently lecturing part-time in the business faculty of an

How do chance and uncertainty influence the career development of adults?

Australian university. Ed's chance event was the breakdown of his long-term marriage. The multiple side effects of the marriage break-up prompted Ed to re-evaluate his priorities. He had to rebuild his finances and restore personal relationships with loved ones; a process he found has made him a "better person, more forgiving and sensitive". Ed spoke of the ambiguity and uncertainty he experienced immediately after the chance event and of the career changes and lengthy process of re-building equilibrium into his life.

9.4 The facilitator

The facilitator for the focus group, Rob, is a counselling psychologist and careers counsellor working in tertiary education in the metropolitan area. Rob is in his late 50s with a diverse work background including 20 years' experience in counselling. An advantage of involving a facilitator was that, in each of the first two activities, the researcher was able to record the session and take notes. In the third activity, my researcher participation was more active, as I became a presenter of information, which I wished the participants to reflect upon and critique.

9.5 Materials

Three exercises were prepared to facilitate the functioning of the focus group. To assist in structuring the time spent in the focus group, pre-reading materials were posted to focus group participants two weeks prior to the meeting (Appendix C).

The facilitator used a whiteboard to note participants' comments. This minimized the likelihood of misunderstanding during focus group discussions. The whiteboard was also used to facilitate discussion during Exercise 3. Some handouts were used during the discussions. Copies of these are included as Appendix J. The focus group conversations were recorded using a personal computer and smart phone.

9.6 Procedure

Using this structure, we divided the hour available into three twenty minute segments. At the start of the focus group, the facilitator welcomed participants, and reminded each participant of the ethical agreement about confidentiality, being respectful and preserving anonymity. The

How do chance and uncertainty influence the career development of adults?

facilitator also reminded the group of the use of a recording device for subsequent transcription purposes, to which they each agreed.

During the first two segments of the focus group, the facilitator used techniques derived from cognitive behaviour therapy to elicit participants' responses about their thoughts, feelings and behaviours relating to the chance event. Thoughts, feelings and behaviours are interrelated and using them in a reflective manner can elicit different aspects of an individual's experience (Beck, 1979). Throughout the focus group, the facilitator summarized participants' points on a whiteboard and verbally reflected their comments to ensure clarity and understanding of all in the focus group. Reflecting comments confirmed and clarified participants' comments to the speaker and others in the group, and served as a prompt for clarification and or elaboration by the initiator or other participants. This is a well-recognized counselling technique (Ivey, 1983, 1986).

At the beginning of the third exercise, it was decided by mutual agreement to extend the focus group period as the time originally allocated had proved too short. A further 20 minutes were added. The focus group were highly engaged throughout and were each given a small gift as a token of appreciation at the end of the session.

At the conclusion of the focus group, the facilitator and researcher discussed the outcome of the focus group discussion. The researcher then transcribed the recording and forwarded a copy of the transcript to the facilitator. The researcher analysed the transcript using the manual coding methods used to analyse the earlier interviews. This process is described in Chapter Five. The researcher and facilitator deliberated further on the transcript, discussing and refining minor variations in interpretation. This produced a set of results consistent with the content in the transcript.

9.7 Results

Participants reported experiencing multiple emotions in the midst of responding to the chance event. They recognized and accepted the need to embrace risk as part of their way to respond to the chance event. Frequently, their actions were prompted by a readiness for change. Participants also recognized the role of complexity in their circumstances, and that luck can be a factor in negotiating a path through such complexity.

How do chance and uncertainty influence the career development of adults?

Participants reflected that sometimes negative chance events would result in positive effects long term. This may have been due in part to the combination of values and self-belief, which participants referred to often during their reflections.

The focus group identified a specific sequential aspect of the decision making process which they experienced during times of ambiguity and uncertainty. This related to identifying a way forward after the initial experience of being shocked and perhaps overwhelmed by the initial realization of the implications of the chance event.

These results are discussed in detail in the next section.

9.8 Discussion – Exercise one

In general, this discussion revealed four points about the group's feelings, thoughts and behaviours.

9.8.1 Multiple emotions

Each participant supported the idea that he or she experienced a multiple number of emotions simultaneously in the midst of the chance event. Some of these emotions were conflicting. Each participant suggested a sense of insecurity occurred, partly because of the novelty arising from the chance event. The sudden and confounding occurrence of a chance event can disorient in the immediate and short term, until a framing of the event is absorbed and a response is determined (Tversky and Kahneman, 1986; Kahneman, 2003). Tversky and Kahneman, argue that much of human management of information occurs because of selective processing of the multiple stimuli to which we are continuously exposed. The initial perception of a chance event can be a disorienting experience (Grigsby & Osuch, 2007; Nowotny 2015). This may in part be explained by the dynamical flow of multiple, and even conflicting emotions such as those described by participants in the focus group.

These descriptions are symptomatic of the key themes of complexity, control, embedded systems, opportunity and satisfaction, described in Chapter Five. They reflect the dynamical experience of the individual, and the diversity of differing stimuli being presented to the individual at conscious and sub-conscious levels.

How do chance and uncertainty influence the career development of adults?

In the immediacy of a chance event, an individual may report experiencing a range of emotions, quite often simultaneously. Many researchers from various fields note this simultaneous effect:

- Nowotny (2015) when providing her sociological perspectives on uncertainty and its effects
- Pryor and Bright (2011) from a career counselling perspective when using attractor metaphors to explain the dynamical patterns of complexity theory
- Piers, Muller, and Brent (2007) in their reflections on self-organizing complexity related to brain function and behaviour
- Grigsby and Osuch (2007), who indicate that up to 10,000 synapses per second flow to multiple sections of the brain in moments of heightened anxiety (p.52).

The individual is both absorbing new information as each instant passes, while at the same time attempting to frame the various stimuli into a coherent message. This establishes the “state” (Grigsby & Osuch, 2007, p.61) or functional context, which the individual’s mind is in at the time. During the interview conducted with Ed several months prior to the focus group, Ed had remarked, “I didn't know what to do. Didn't have a bloody clue”. This feeling reflected the feelings of “trepidation” Ed referred to during the focus group discussion.

Pryor and Bright (2007) describe human behaviour from a complexity perspective by referring to point, pendulum, torus and strange attractors. (The functioning of attractors was discussed earlier in Section II of Chapter 1). Among the four attractors, Pryor and Bright (2007) identify the strange attractor as the key type of response capable of managing uncertainty over the longer term. Each of the other three attractors is a preconditioned response lacking the openness, adaptability and perspective enabled by the deployment of the strange attractor.

9.8.2 Accepting

A wholehearted response is an important part of resolving the uncertainty and any negative emotions that are prompted by the chance event. Ed and Rita emphasised that, once a challenge has been accepted and a plan of action has been decided, the need then is to fully

How do chance and uncertainty influence the career development of adults?

engage in overcoming it through diligence. Acting on the chance event creates a focus, a sense of purpose, and results in a sequence of behaviours, which evolve into part of a person's life story. Despite the "fear and trepidation", Ed reflected, "having a challenge is a good thing, a very good thing for you." Responding to the challenge can bring its own rewards. The more constructive effort put in by the person, the more confident they became about their capacity to overcome the negative, and or, challenging implications of the chance event. With purposeful action, what is going on may become clearer overtime.

Here, understanding the nature of the hard work that the participants undertook in response to the chance event is crucial. The focus group identified the crucial role of strategy in addressing and overcoming the unnerving effects of ambiguity and uncertainty. This latter idea of identifying and using a strategy became pivotal in the Exercise 3 activity presented to the focus group, and will be discussed shortly.

9.8.3 Rejecting

While there is a definite element of challenge in committing to action in these situations, the same may be true about deciding to reject an opportunity when it presents. In this sense, "Saying No!" is an action and an acceptance of the challenge to remain with the status quo. "Saying No!" was identified in Chapter Five as one node within the satisfication theme. On the other hand, doing nothing may represent inaction, and, if it is an habitual response, reflects a kind of numbness or lethargy.

Accepting the challenge of "Saying No!" means rejecting the potentiality of a chance event with positive characteristics. This may well be appropriate, a situation the focus group also reflected upon in exercise three (to be reported shortly). Figure 3 in Chapter Five outlines the circumstances under which availability and opportunity coincide. This happy coincidence of availability and opportunity enables the person to perceive the chance opportunity as placing them "in the right place at the right time". However, if availability or opportunity is compromised significantly, then "Saying No!" may well be the proactive and wise response. Nowotny (2015) emphasizes that the implementing of decisions made in the context of uncertainty is usually a matter of delicate balance requiring both good judgement and deft sense of timing.

How do chance and uncertainty influence the career development of adults?

Sometimes the alternative of doing nothing represents the passing of an opportunity; on other occasions, it may well reflect the act of recognizing and choosing to stay with what one has. As indicated, activity three led the group to reflect in some detail on the conflicting challenges that opportunities present. The capacity to recognize, evaluate and accept or reject opportunity is a crucial skill for the individual living in the strange attractor.

9.8.4 Conscious and measured risk

In accepting the challenge of committing to a course of action, a person is consciously or unconsciously, “taking a risk”. The risk can be one of succeeding or failing, as either can have both anticipated and unexpected consequences. In the context of this study, it is the conscious, measured risk that participants referred to frequently when describing how they coped. Any course of action, by implication, involves opting for one choice from among the many options that may be considered or available.

Ed took on a job he knew he could manage in a completely new location, thereby rebuilding his finances while at the same time distancing himself after his separation from the routines of his 30 years of marriage. Rita walked away from a 20-year career in computing when she realized that to continue conflicted with her deeper values. In both cases, they were taking a risk- the fear that things may not work out satisfactorily – but in each case, it was a conscious and measured risk.

Bernard, having chosen a course of action to resolve intolerable work circumstances, showed similar resolve when offered a chance by senior personnel keen not to lose him, to backtrack. Each of these stories reflects a capacity to entertain the fear associated with failure, and to persevere through to a successful conclusion.

Pryor and Bright (2012) point to the widespread fear of failure as a problem affecting some counsellors and many of those facing issues of career development. However, accepting some level of risk is important. Pryor and Bright refer to failure as a normal part of reality, and draw attention to the many positive aspects of failure. These include learning, creativity, development of strategic thinking and awareness of one’s fallibility and realistic limitations, all keys to successful career adaptability. Nowotny (2015) and Pryor and Bright (2012) also refer to the negative connotation in contemporary society toward risk. In the circumstances we are

How do chance and uncertainty influence the career development of adults?

discussing, participants referred to measured risk - the sense that given the circumstances and the timing, the course of action chosen while not providing certainty, is nevertheless justifiable and perceived as worthwhile. This action is sometimes pre-emptive; on other occasions no action, while risky, may be the best decision.

9.8.5 Readiness for change

Each of the participants reflected that, at the time of the chance event, they were ready for a change. This readiness is described in Chapter Five under the section on “being in the right place at the right time” (Figure 3). The upper right-hand quadrant in Figure 3 depicting availability reflects the readiness of the person to respond to a suitable opportunity. Even so, a person can be ready for change but also needs to be able to recognize and evaluate opportunities that may arise through chance events. Otherwise, they risk remaining stuck in the frustrated quadrant despite chance events and opportunities occurring all around them.

Ed found the need for change was forced upon him by the personal disruption resulting from a divorce. His finances, domestic circumstances and lifestyle in general were severely disrupted. Change was constant, inevitable and profound. In Ed’s case, it was a matter of rapid and dramatic forced choice. He had an urgent need to identify options and generate some certainty. He could have stayed in his employment and relocated accommodation, but chose instead to take a role he knew he could do in a location well away from his current context. With hindsight, Ed wondered whether it was a wise decision. However, in the midst of ambiguity and uncertainty this measured risk provided satisfactory answers, and is consistent with the coding theme, “satisfication”, identified and referred to in Chapter Five.

Rita when expanding on the context of her chance event, indicated that she had been increasingly inclined toward a change for some time. The chance event was in some ways a stimulus for her to act on pressures that had been building over time. Her children’s educational needs were on her mind, and the long work hours associated with consulting were incompatible with those family commitments. Bernard was definitely ready for change as he was actively seeking just that due to frustration at work, when the succession of chance events he described occurred.

How do chance and uncertainty influence the career development of adults?

9.9 Exercise two: Managing chance events and uncertainty

The facilitator asked the focus group two prepared questions about managing a chance event and managing the associated uncertainty. The focus group began with discussion about how to identify a chance event, and the ensuing exchanges revealed four aspects of managing chance and uncertainty. These were luck, complexity, the possibility of benefits arising from negative chance events, and self-efficacy.

These will be discussed in turn.

9.9.1 Luck

Initially, Ed raised the idea of whether any chance event was a chance event or not, a comment which drew a response from Bernard referring to “luck”. This exchange evolved as follows:

ED: To some extent, they’re not chance events are they? I mean, I’d put mine down to being in the right place at the right time to some extent. But you know... So they’re not totally chance.

BERNARD: You make your own luck

ED: Yes

RITA: Very much so

Each of the participants supported the idea that a proactive and perceptive approach could generate beneficial opportunities, which may, or may not be, considered chance events. Ed’s comment above, illustrates the subtlety involved in distinguishing what a chance event is. At this point, a handout, prepared opportunely if this circumstance arose, was distributed to the members of the focus group. It listed the six most frequently identified chance events as reported in Study Two. Bernard then recounted his story using these six most common categories and referred to his feeling that each category of chance event had affected the evolution of his career. The six categories are:

- An injury or health problem
- A personal or work relationship
- Barriers to your previous career plan

How do chance and uncertainty influence the career development of adults?

- Being in the right place at the right time
- Influences of family
- Unexpected opportunity

Bernard's description occurred as follows, (*Italics are used to indicate the themes identified during coding analysis*):

BERNARD: And I find all of these interconnected, and probably all of them there (pointing to the handout listing six categories of chance events in the Study Two Interviews). Looking at my situation... My role for a fair time, (18 years), I'd really enjoyed it. Then, I couldn't stand it. I thought I could survive anything. So that was a barrier to my previous career plan, which was to keep flourishing and enjoying what I was doing and take opportunities as they might arise.

One reason that I hadn't moved earlier was *a health problem* - cancer - which had forced me to stay in a place in which I had comfort, refuge, and known competence. And the barrier came up. So I decided I had to do something about it.

There was a program of getting out and making connections; so, *a personal or work relationship*. Certainly my former boss, who's been wonderful introducing me to various headhunters. Others who I knew because I've done that long-term career development, *networking and international engagement* - becoming office bearer in various Associations, and taking leadership roles there, places you - so you're *being in the right place at the right time*. You're there because you worked hard to get there. *Influences of the family* - she'll kill me - but that could control a few of the opportunities that I take up. I didn't even mention Switzerland to her, but you know...

(Jovial banter about Bernard suddenly taking the family to Switzerland)

BERNARD continues

And *unexpected opportunities*. These do come out at you in various ways, some of them because you went hunting and methodically looking for them, and others because they just flew up because - as in one of the cases I quoted - somebody mentioned it, unintentionally in passing. Everything! It's a very complex set of circumstances that finds you in any position. For good or ill. For the long term, for the short term.

How do chance and uncertainty influence the career development of adults?

This soliloquy exposes the perceptual subjectivity involved in determining whether the circumstances reported in retrospect are luck or chance events or both. In sequence, Bernard neatly described how his circumstances included each of the six major categories identified during the coding of the interviews. In other sections of this study, I have used the definition used by Rojewski (1999, p. 269) to identify a chance event. However, the significance of conscious agency is emphasized by the focus group's support of the role luck plays and the potential for actors to impact on their circumstances to generate good fortune. Bernard's comments indicate, at least in part, that chance events can occur because of the actions of those involved (Krumboltz, Foley, & Cotter, 2013; Pryor and Bright, 2005). People can assist themselves to be lucky, and opportune chance events may be the result, however we wish to define them.

A vital part of orchestrating good fortune includes both being ready to make a change, and having a willingness to engage in measured risk-taking. Accepting challenges requires courage and a sense of faith in oneself. Psychologically, this is referred to as self-efficacy (Bandura, 1994), and from another perspective, it can be interpreted as arising from one's spirituality (Bloch, 2005; Pryor & Bright, 2011). In this context, failure may be viewed as an interesting aberration on the pathway to a successful outcome (Pryor & Bright, 2012).

9.9.2 Complexity

Viewed through another lens, the focus group was identifying the complexity associated with experiencing and managing chance events. All the consequences, of which Bernard spoke, arose from his initial perception of favoritism shown by his employer to another employee.

At one point, Bernard reflected, "the world keeps churning on around you." This comment reflects the dynamical world identified by Bloch (2005, p. 195), Patton M.Q. (2011, p.136) and Pryor and Bright (2011, p.31). This constant churning is pivotal to interpretation of activity within complexity. Complexity exists in related but conceptually distinctive environments. Complexity exists in emergent processes within the natural environment (Morowitz, 2002), and the world external to the individual, which chaos theory has revealed in multiple disciplines. This is the complex, global, digitized world referred to by Castells (2011) and Nowotny (2015). In addition, there is the complexity occurring within each human brain.

How do chance and uncertainty influence the career development of adults?

Studies in neuropsychology use complexity theory to interpret behaviour in the functioning of humans (Piers et al., 2007).

Grigsby and Osuch (2007) speak of “dynamical patterns of (neural) interaction” (p. 52) that are “extraordinarily complex” (p. 52). In Chapter Five, the researcher explored the theme of embedded systems using models derived from Collins (2016) to explain a concept relating to human behaviour in the midst of uncertainty and chance events. It is useful to seek to understand processes such as these by describing them. The constant danger is that description can easily lead to definition. Nowotny (2015) avoids this trap in her casting of uncertainty. She constantly typifies the meaning of the word uncertainty, characteristically using the title word “cunning” (Introduction, p. x) to illustrate its vagaries. However, Nowotny avoids defining uncertainty preferring to describe its behaviour to facilitate understanding. This approach is consistent with Simon (1955, 1972) and Patton M.Q. (2011), both of whom emphasise the danger of excess precision in seeking to understand complexity. Nowotny (2015) advises that “The more the cunning of uncertainty is acknowledged and recognized, so my argument goes, the less the need to feel threatened by uncertainty,” (p.xi). This openness to emergent patterns may be a key to functioning in the strange attractor (Pryor & Bright, 2011).

The focus group agreed that it is difficult to articulate and delineate precisely in such complex circumstances. The processes can be described but allocating precise descriptors like luck or chance event is problematic given the subtleties involved. Bloch (2005) advises such caution, saying “Avoid studies that examine phenomena in isolation” (p 205). Rita’s description of her epiphany-like perception that her computing work conflicted with her personal values provides a similar example of a chance event which acts like a tipping point at which a shift occurs. The words of her work colleague prompted her beyond a threshold of tolerance. At first glance and to Rita, this presents as a chance event; but under analysis it is a little like the straw that broke the camel’s back. Rita’s deeper reflections indicate that the situation was brewing before the pivotal moment arose. Is it a chance event, luck, or co-incidence? When the perceived chance event occurred, Rita was already in a state of readiness for change.

In a similar vein, Bernard concluded this section of his comments, saying, “Small decisions often contribute to large outcomes”, referring to the series of chance events leading to his first change of employer in more than 20 years. This comment neatly reflects the non-

How do chance and uncertainty influence the career development of adults?

linearity of complex systems. This is frequently referred to as the “Butterfly Effect” (Lorenz, 1993), where a minor chance event can have a profound impact due to the sensitivity to initial conditions inherent in complex systems.

9.9.3 Negative chance events having benefits

Each of the participants reflected upon the fact that negative chance events could eventually have a positive outcome. Ed and the facilitator had a small exchange highlighting the unpredictability associated with uncertainty, chance events and resulting human behaviour. Ed’s break-up of his marriage “led me to go and be more proactive. You lose something; you go out and look for something else.” Similarly, Ed spoke of “becoming a better person” as he rebuilt his life and negotiated his way past the trauma of his marriage break-up. This included mastering the challenge of changing his career and achieving satisfaction as a university lecturer.

Rita faced two negative chance events relatively close together, one being finding out that her second son was autistic and would require more of her time and care; and the other being the challenge to her values arising from the comments regarding the impact of her computing work on other peoples’ employment. Each of these was initially a negative chance event. However, by the time of the interview and later the focus group, Rita could reflect on these negatives as having beneficial effects. She referred to personal growth and satisfaction with their family life, her child’s formative development, and the compatibility between her new career in education and her changed life circumstances. Rita emphasised the importance of a supportive partner in the midst of negative experiences and challenges. Rita explained how this supportiveness encouraged her to use measured risk-taking in developing and executing her strategy of retraining, “That was good that I had the support of family” and that it gave her “the security to take a risk.” Rita also mentioned the importance of self-belief, suggesting that the consistency between her innate self-efficacy and the wholehearted support of her partner gave her added conviction and resilience. “He’s supportive. And that helps as well, I think. Not having somebody who's questioning,” she said.

These longer-term positive results provide a further dimension and a richer perspective on the effects of the chance event. The stories of the focus group members, who each referred to

How do chance and uncertainty influence the career development of adults?

the resolute effort required to achieve these positive outcomes, indicate that negative chance events can, over time, lead to personal growth and positive results.

9.9.4 Values and self-belief

During one exchange, Bernard, listening to Rita's comments, placed emphasis on the word "need" to describe an individual's circumstances. In the midst of a chance event and its associated uncertainty, Bernard felt "fenced in by the practical understanding of my obligations and where I just have to find a solution."

The facilitator reflected upon this situation of personal obligations as keeping a person "grounded". Rita noting this idea agreed that the strategic options an individual chooses must exist "within the grounds of living up to the other obligations that you've already got."

Participants' values and obligations and their sense of self-belief were cornerstones of their behaviour. They were confident in their judgement and capacity to achieve a chosen goal. They each had a willingness to accept a challenge and to work hard at a chosen task once they had determined a course of action. However, what an individual might decide from among all the options considered had to "be weighed up with the way we manage the chance events to determine our priorities and our decisions."

This self-belief is tempered and the energies channelled, because they are referring to the delimiting aspects of obligations or responsibilities that a person accumulates as they go through life. Just as accumulating networks and experience may be a benefit in managing chance events, so one's obligations serve to create boundaries beyond which the individual cannot go. Pryor and Bright (2012) explain how such boundaryness is constructive in dealing with a complex world. There are far too many variables for any person to entertain all possibilities, and the idea that a person may have complete knowledge prior to decision-making is fallacious (Simon, 1955, 1972). The "needs" as Bernard had described them provide a kind of ballast that tempers and directs the person's energies towards finding a solution.

The interviews reported in Chapter Five frequently implied the use of satisficing as a decision-making principle applied by participants to resolve competing demands in their lives.

How do chance and uncertainty influence the career development of adults?

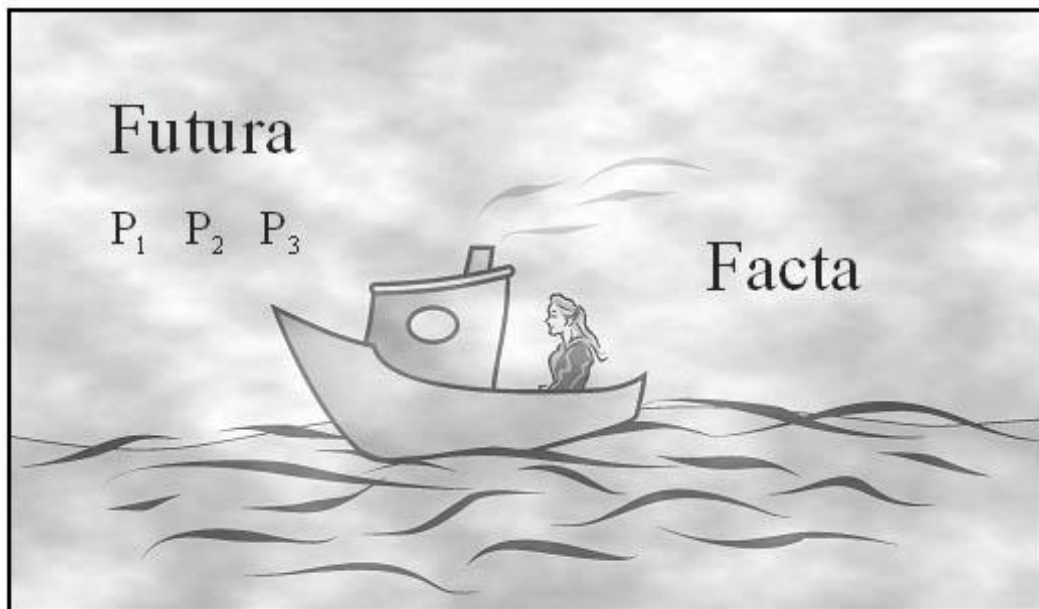
With reference to this focus group, the capacity of qualitative research to dig deeply into individuals' motivations, thought processes and behaviours was reinforced by the collaborative judgement of the focus group. Their conversation reinforced and refined the patterns evident and reported upon in Chapter Five.

9.10 Exercise three: Decision making in an environment of uncertainty

9.10.1 Description of the model

The final exercise asked the focus group to reflect on a conceptual model of behaviour under conditions of uncertainty. The researcher had developed these ideas by combining the principles within the coding analysis of the interviews as reported in Chapter Five, with the explanations of the functioning of uncertainty provided by Nowotny (2015). In particular, Nowotny referred to the work of Bertrand de Jouvenel (2007) regarding “facta”, which are past events; and “futura”, which refers to future possibilities, (cited in Nowotny, 2015, p.30). Nowotny also referred to three types of future, “the probable and possible but especially of the preferred futures, of what could and should be” (Nowotny, 2015, p.30). These were identified in the model as “p1”, “p2” and “p3” respectively. Such, as yet unclear futures, each respond in part to the agency of the individual.

Figure 11: Sea of Uncertainty



How do chance and uncertainty influence the career development of adults?

Using a whiteboard to produce the illustration in Figure 11, I described to the focus group the situation of an individual “Paula”, afloat on a turbulent “sea of uncertainty” (Nowotny, 2015, p.31). Paula was travelling, as Bernard had expressed it earlier, while “everything was churning” around her. The churning uncertainty is represented by the turbulence of the sea. A heavy fog, which obscured Paula’s vision, represents another dimension of ambiguity and uncertainty. The *facta* and *futura* provided a sense of time; *facta* being the time that has passed, and *futura* the emerging yet unclear future. Given this uncertainty, the focus group were asked what Paula is doing in negotiating her way toward one of the three possibilities represented by *futura*: p1, p2 and p3. Accompanying the model was a handout sheet indicating the five phases of thinking which Paula may have experienced (see Table 27).

Table 27: Phases of uncertainty experienced by Paula

1	2	3	4	5
Anticipating	Perceiving Assessing Interpreting	Coping Managing	Resolving	Reflecting
FOG	FOG	STRATEGY	OPTIONS	REGROUPING WISDOM

9.10.2 Focus group responses

During the first two of these phases, I described Paula as “looking at the fog”. Almost immediately, Bernard identified what he considered a flaw in the model. His interpretation was that Paula was not preoccupied with the fog at one point in the diagram. Bernard indicated that, although Paula was still living in a situation of ambiguity and uncertainty, at the stage Bernard was identifying, Paula’s focus was on considering a possibility. She was re-framing. In this sense, Paula’s consciousness moved from the perplexing aspects of uncertainty, and her attention was now focusing on imagining an option. This involved a creative activity enabling Paula to perceive beyond or through the fog. Paula was in the early stages of strategizing, something the focus group subsequently identified as “scenario building”.

Bernard: When you're anticipating, you're actually looking at the fog and saying, “What's going on?”

How do chance and uncertainty influence the career development of adults?

Suddenly you've got something!

You're not focusing on the fog, you're focusing on what might be. You're focusing on your strategy. When you're resolving, you're focusing on your options.

Rita: You're focusing out of the fog.

Bernard: You're aware of it.

Ed: But I suspect you don't have full information. A bit of fog.

This section of the transcript indicates two significant benefits to the researcher.

- i) the model was coherent enough to immediately convey to the focus group, many aspects of the stages Paula would experience in managing uncertainty and attempting to negotiate her circumstances
- ii) The model enabled participants to isolate and focus on specific processes, or aspects of reflection and behaviour experienced by Paula in moving from the midst of uncertainty toward an outcome.

Rita's comment "You're focusing out of the fog," is particularly helpful. Her comment highlights the role of personal agency in the midst of uncertainty, and neatly positions and reinforces the role of planning - short term planning - when dealing with uncertainty. This is the kind of iterative, short-term and emergent strategy the Chaos Theory of Careers advocates (Pryor, Amunson & Bright, 2008; Pryor & Bright, 2011). In response to a question from the facilitator Bernard remarked that the process may be quite linear, but often "real life intervenes", that people may "go forward and back", and that "the world keeps churning on around you." This "focusing out of the fog" as Rita described it, is similar to the technique suggested by Duggan (2013) of "strategic intuition" (p 2), where flashes of insight enable an individual to connect previously disparate ideas and information into a coherent and viable way forward.

9.10.3 Coping and imagining

Humans act in response to predictable and regularly repeated stimuli. Confidence about actions is habitually achieved and often automatic. In moments of heightened anxiety where the consequences of decisions and actions involve relatively high-stakes such as career development, these decision-making structures are disrupted.

How do chance and uncertainty influence the career development of adults?

The image in Figure 7 depicts this. The fog represents Paula's lack of clear sensory input. In heightened anxiety, the brain is bombarded with ambiguous and contradictory information. This period of disorientation may last until the scenario building activity occurs and the fog begins to clear. The focus group indicated that scenario building toward an intuitive strategy provides a way through that confused sensory input. Once the vision of a possible or preferred future emerges, no matter how tenuous it may be, it provides Paula with the mechanism by which she can assess and re-evaluate. Tweaking of this vision leads to further vision building. "You're not looking at the fog," as the focus group suggested. You are looking through it or past it toward an imagined strategy. You are scenario building to work your way through the uncertainty.

A detailed example of this process is the Beyond Personal Mastery model Pryor and Bright (2011, pp. 191-195). This provides guidance on two levels, one attitudinal, and the other a practical, action-oriented description. An individual can generate an emergent pattern of desirable outcomes by blending constructive attitudes with appropriate actions. Plans and strategizing are deliberately suspended until late in the cycle, allowing for openness and awareness to develop and feed into the person's mindset. This cycle "is a dynamic one based on the premise that we are continually in a state of both being and becoming" (p. 194).

9.10.4 Building resilience via career adaptability

The focus group turned its attention to how Paula would manage amid the "sea of turbulence". They quickly agreed that the key to Paula surviving and managing was "Resilience. It's a horrible word really," Bernard remarked. The other participants agreed, and in further discussion identified some of the features of resilience as awareness, confidence, and a willingness to step out of your comfort zone and to take a risk. This combination of skills such as risk tolerance, self-awareness, and self-efficacy is sometimes referred to as career adaptability. Bimrose and Hearne (2012) distinguish between the two, suggesting "career resilience appears to relate more to the ability to survive change once it happens, whereas career adaptability has a stronger proactive dimension (p. 339). While being mindful of the distinction, both career resilience and career adaptability receive greater attention in the aftermath of the global financial crisis and its attendant impact on job security (Savickas et al 2009).

How do chance and uncertainty influence the career development of adults?

Krieshok, Black, and MacKay (2009) indicate that “adapting to change” (p. 276) is critical to developing resilience. Krieshok et al. suggest a tripartite model of adaptive career decision making (p. 284) where the resilience referred to by the focus group is enhanced through a combination of continuous “exploration and enrichment” (p. 284) by the individual. Williams et al., (1998) describe their participants as having their “antenna up” (p. 385). They were alert. Krieshok et al. (2009) advance this idea suggesting that

“adaptive individuals think about and plan for their futures even when they are *not* faced with imminent transitions. By behaving in ways that optimize their adaptation to unexpected transitions, they are *engaged* in a process of *enrichment* that can be understood as subtle, but adaptive preparation for the likelihood of career transition (p. 285).

This is analogous to strange attractor behaviour. Cognitive career theory suggests career decision-making skills can be inculcated (Krumboltz, 2009; Krumboltz et al., 1976; Lent et al., 1996, 2002; Peterson et al., 2002). Pryor and Bright (2011) offer a range of activities involving both convergent and emergent exercises to enhance such skill development (pp. 116-144). Several of their techniques have been adapted and used successfully in educational settings, (Borg et al. 2006, 2014; Davey et al., 2005; Loader, 2009, 2011; McKay et al., 2005; Schlesinger & Daley, 2016).

The concept of building the resilience of an individual has received increasing endorsement within career development literature in the last decade (Hirschi et al. 2015; Rudolph, Lavigne, & Zacher, 2017). Bimrose and Hearne (2012) argue there is an under recognized link between career resilience and adaptability, and personal well-being, suggesting that “The dual concepts of career resilience and adaptability are barely evident in the policy and practice discourses of career counseling that have, to date, tended to marginalize issues of well-being and work in the literature” (p. 343). The reflections and stories of the focus group support the validity of engendering awareness of career resilience and career adaptability traits in both young people and adults.

How do chance and uncertainty influence the career development of adults?

9.11 Summary

The focus group strongly confirmed the findings reported in Chapter 5. They refined and clarified certain insights and perceptions.

Conversation within Exercise Three in Study Six identified a flaw in the researcher's interpretation of the management of uncertainty to this stage. The focus group suggested that when people are strategizing constructively, the focus is on possibilities rather than the problems; on solutions rather than difficulties; in searching for and finding solutions, behaviour is driven by hope rather than confusion and despair. The focus may be short or long term but it is governed by practicalities. The search for a useful strategy adopts a realist perspective. It demands imagination. Its use fosters vision and provides a viable way forward. As the focus group concurred, "You're looking at something. An option. You're focusing out of the fog".

9.12 Limitations

This focus group involved three participants who had actively reported an experience relevant to the research topic. The purpose of the focus group was to reflect upon, challenge and clarify the researcher's interpretation of the interviews. Qualitative analysis of the interviews provided themes and processes not previously reported in the literature. While the findings of the focus group have limited generalizability, they nonetheless have validity (Saldana, 2009). They contribute to the understanding of human behaviour in the midst of chance events.

This focus group involved a homogenous, small group. The nature of focus group discussion is interactive and dynamic. Individuals feed off each other and the conversation can be determined by initial inputs on a topic. Future research might consider the use of multiple focus groups on the one topic, as a way of strengthening the findings arising from this focus group research, something which was not practicable within the constraints of this research.

Chapter Ten - Conclusion and Recommendations

10.1 Introduction

It is pertinent to return to the research problem outlined at the end of Chapter Two. The research focused on human responses and behaviours within a dynamical environment, namely the effect of a chance event, which significantly influences the future of a person's career. A circumstance such as this is frequently characterised by complexity (Kahneman, 2003). The study identified methods of analysis and interpretation which direct the researcher to avoid reductionist approaches and develop a sensitized awareness of the factors involved (Patton, M. Q., 2011). This prioritises awareness and understanding over measurement and resolution.

The research consisted of six studies to investigate the question, "How do chance events and uncertainty impact on the career development of adults?" These studies explored aspects of chance events themselves, and the coping and strategic behaviours of individuals in the midst of the uncertainty created by a chance event.

This chapter summarizes the findings of each of the six studies with reference to existing research and the Chaos Theory of Careers. It will then refer to *chance events* and *uncertainty* and show the concomitant nature of these two dimensions. A final section will refer to prospective ways ahead for research, counselling and educational practice.

10.2 Section 1 - Summary of the studies

10.2.1 Study One

Study One established the frequency and perceptions of chance events affecting career development among a group of university alumni using a survey and follow up interviews. The results of Study One confirmed previous research findings regarding the frequency of chance events affecting career development. There is common agreement within the literature that over 60% of a population will report experiencing a chance event that affects a person's career development (Baumgartner, 1976; Betsworth & Hansen, 1996; Bright et al. 2005, 2009; Borg, 2015; Scott & Hatalla, 1990). Study One also indicated that not all chance events have an immediate impact, but that the repercussions of some chance events are time sensitive. Fifty-

How do chance and uncertainty influence the career development of adults?

seven percent of subjects indicated that it took 12 months or longer for the outcome of the chance event to become clear to them, and some outcomes evolved over several years. This is an under-researched aspect of chance events that affect career development.

Thirty five per cent of participants in Study One did not report any experience of a chance event affecting their own career development. These individuals were asked to provide an estimate of the likelihood of a chance event affecting career development among Australians. They felt that this would occur to others only 34% of the time. As far as it can be ascertained, this has never been addressed before in literature. This response is more than two standard deviations outside the incidence commonly reported in the literature and, if replicated in broader studies, suggests that some individuals in the general population may significantly underestimate the actual frequency of this impact. This mis-match has theoretical and practical implications because it suggests that a significant proportion of the population may be blind to the occurrence of chance events.

Finally, no mention of negative chance events was recorded from among more than eighty respondents despite their being asked about this in the survey. This contrasted with earlier studies. Rojewski (1999) pointed to many potentially negative chance events faced by adolescents with learning disabilities. Betsworth and Hansen (1996) included nine subjects indicating “obstacles in original career path” (p.95) as a negative category in their analysis of 141 adult participants’ reports of chance events affecting their careers. Thirty-six percent of young people in a study by Bright, Pryor and Harpham (2005) confirmed a “barrier to your previous career plan” (p.565) as being a negative chance experience. Bright, et al. (2005) indicate that ten per cent of university students reported “injury or a health problem” as a chance event which affected their career plans. Hirschi (2010) found that “unexpected obstacles” (were) “the most important negative” (p.47) chance events reported by students in his study of chance events affecting career development. These examples from the literature suggest the participants’ responses in Study One were unusual and worthy of further investigation. This matter was investigated and discussed further in Study Two and Study Six.

10.2.2 Study Two

Study Two explored the circumstances and processes involved in resolving the effects of the chance event on an individual’s career development. It used probe questions to explore how

How do chance and uncertainty influence the career development of adults?

much control a person has over chance events, and to identify the relevance of openness to new ideas. Interviewees also discussed how they dealt with the uncertainty they experienced during this process.

i) Frequency of chance events

In Study Two, analysis across 19 interviews identified 110 chance events. This was a much greater frequency of chance events than had been indicated in the responses to the survey in Study One. It is likely that the increased reporting of chance events is linked to the use of qualitative methods in Study Two. Qualitative methods are recognized for their capacity to identify and provide rich data about topics often revealing nuances not captured in survey responses (Miles & Huberman, 1994; Saldana, 2009). Given that most studies are surveys, this may indicate that we are currently underestimating the frequency of chance events influencing career development.

ii) Coding analysis reflecting behaviours

Themes developed during the coding analysis of Study Two transcripts identified the human characteristics and personal resourcefulness that combine dynamically to facilitate hope, resolution and progress for the individual facing these situations. The *sensitized concepts* methodology of Patton, M. Q. (2011) and Collins' (2016) *visual representation approach* were blended to illustrate the flexible, adaptive and subtle behaviours of the participants. These are reflected in the Themes and their sub-sets (Chapter 5, Figures 4-6).

Five key themes: Complexity, Control, Embedded Systems, Opportunity and Satisfaction, were used to explain the interplay of adaptive behaviours used by adults living and coping with the effects of uncertainty about their career development (see Chapter Five for a detailed description). These behaviours reflect the strange attractor approach referred to in the Chaos Theory of Careers (Pryor & Bright, 2011, p.45). Often a person experienced a higher level of stress and anxiety during periods of heightened uncertainty (Nowotny, 2015). There was a sense that their circumstances were becoming more unpredictable, and they were sensing a loss of control over events in their lives.

A major inclination reported by interviewees was to adopt behaviours that would give themselves greater control over their personal circumstances so that the level of uncertainty and

How do chance and uncertainty influence the career development of adults?

ambiguity decreased, and they achieved greater clarity. At any time, one or other Theme (or sub-set of that theme – see Appendix B) may predominate. This interplay of factors typifies functioning in a complex system. The individual is functioning in a multitude of overlapping complex systems from global to local. This included the immediate dynamics occurring in the individual's experience of the chance event affecting his or her work circumstances (Pryor & Bright, 2011; Nowotny, 2015; Patton & McMahon, 2014; Taleb, 2010).

Values often played an important role in enabling people to make quick decisions under conditions of complexity. People responded based on how they felt. Research in other disciplines emphasises the need to balance rational planning with intuitive judgement to enable timely and holistic functioning during periods of stressful and critical decision-making (Grigsby & Osuch, 2007; Kahneman, 2003). The Chaos Theory of Careers (Pryor & Bright, 2011), speaks of these behaviours as being patterned in the form of attractors. A strange attractor approach enables a person to be an active, adaptive agent in this process, whereas other attractor behaviours – torus attractor, point attractor and pendulum attractor - (Pryor & Bright, 2011) lead to cyclical but often futile responses. The critical aspect of responding in the midst of uncertainty is timing (Nowotny, 2015). Interviewees spoke of how they had to make decisions without full knowledge of the situation. These decisions sometimes occurred spontaneously. The values the person held, as reflected in the Satisfaction Theme, guided the intuitive and spontaneous, rather than logical and objective decision-making of the person. This analysis varies from models that emphasise logical reasoning and linear time frames as a basis for decision-making.

iii) Interviewee reporting of negative chance events

Many instances of a negative chance event arose during interviews. This contrasted with the absence of any such reports in Study One. Study Two, (which involved interviews with alumni who had completed Study One), revealed several instances of negative chance events, some of them quite severe. These challenging chance events had often occurred years before the interview took place. In each case, participants referred to them as challenges they had worked hard to overcome. There was little sense of them dwelling on the negative aspect of the chance event. The revealing feature within interviews was that the participant often remembered the negative aspect of the chance event in an almost incidental manner when providing contextual

How do chance and uncertainty influence the career development of adults?

background about personal career development. The negativity of the moment had been largely forgotten. The combination of a sense of self-efficacy, a commitment to persistence and hard work, and the possibility of cognitive dissonance (Festinger, 1957), may have enabled the negative memories to dissipate, as an emerging new circumstance takes hold. It is as if the long-term impact of the negative chance event dissipates for the resilient individual.

It is noteworthy that Studies One, Two and Six focussed on subjects with above average education and achievement. They earned high income and displayed a high level of self-efficacy. Their disposition and responses may be atypical of the population in general.

This phenomenon of negative chance events was explored again in Study Six and will be discussed further in Section 10.2.6.

iv) Variability in responses

There was evidence of variability in the identification and interpretation of chance events among the interview cohort. During interviews, and again in casual conversation after the completion of interviews, participants reflected that the possibility of chance events seemed greater than they had been aware of previously. This changed perception may have occurred because of greater exposure to the concept of chance events, an increased level of reflection on their part, and the effects of re-framing (Kahneman, 2003). They also expressed difficulty in being able to recognise all chance events to which they may have been exposed.

Kahneman (2003) points out that a person's emotional state can influence perception of the same content, which can be viewed differently in different contexts. Responses in Studies Three and Four to questions about categorising Vignette Five – asking whether “an injury or health problem” had affected career development - demonstrated this. The content in Vignette Five was more tangible and transparent and the subjects interpreted this with greater uniformity and consistency. Greater variability in categorisation occurred when vignettes had features of non-linearity, and when they had implied rather than stated outcomes. Kahneman (2003) and Nowotny (2015) indicate that decision-making is more difficult in conditions of ambiguity. This suggests that variability of interpretation from the same person could be expected because of changing contexts and the effects of framing.

Patterns of variable perception identified during Study One and Study Two were crucial to the development of the subsequent studies in the research. Three quantitative studies were

How do chance and uncertainty influence the career development of adults?

designed to investigate variability in the recognition and interpretation of chance events. Study Three focussed on a wider group of alumni. Study Four enabled comparison of the alumni cohort with a cohort of Australian citizens. Study Five investigated variability among Australian citizens in recognising a chance event affecting a person's career development.

10.2.3 Study Three

The Study Three survey (see Chapter Six) used vignettes of chance event descriptions to investigate whether the peers of the alumni who had participated in the interviews recognised chance events in the same way as those who had participated in the interviews. The second purpose of Study Three was to establish if there was any variability in the perception and categorization of these chance events among the broader alumni group.

i) Recognition of a chance event

Study Three found that alumni in general were able to recognize chance events, but that there was a less than uniform response. The simpler and linear descriptions of the chance event recorded the highest rate of confirmation. Transcripts that were more complex in their description resulted in less agreement amongst alumni about whether a chance event had occurred.

ii) Categorization of a chance event

A similar pattern occurred within the responses asking alumni to categorise chance events according to the six most common descriptors. Responses to the category of "an injury or health problem" were consistent and uniform among the cohort. However, an increasing variation in responses occurred as the descriptors referred to less tangible categories, (e.g. "a barrier to a previous career plan"), or the vignettes themselves became more complex and subject to interpretation.

iii) One chance event may fit several categories

The Study Three survey also demonstrated that one chance event may be allocated to more than one category of chance event. This was evident in the raters' allocations of categories and the variability of opinion found among alumni. This is further evidence of the fuzziness of

How do chance and uncertainty influence the career development of adults?

the boundaries provided in the descriptors being used to construct categories. This observation had not been noted previously in the literature.

10.2.4 Study Four

Study Four investigated the degree of consistency regarding identification and classification of chance events affecting career development between a cohort of college alumni and subjects sourced by opportunity sampling. It compared these results with those obtained in the Study Three Survey, completed by college alumni.

i) Recognition of a chance event

Australian citizens responded similarly to the alumni cohort. Those in the higher income bracket and those in full-time employment were less likely to recognize a chance event. In general, the cohort was able to recognise a chance event described in a logical, sequential manner. Transcripts with greater complexity generated more variability in the recognition of the chance event.

ii) Categorization of a chance event

A similar level of variation occurred in questions regarding categorisation of a chance event. While there was majority agreement on categorization in instances that were tangible, linear and sequential in style, the variability of responses increased as the scenarios became more complex. Those in the higher income bracket and those in full-time employment were less likely to allocate a chance event to a category. Subjects in part-time employment were more likely to allocate a chance event to the “unexpected opportunity” and “right place at the right time” categories.

These findings, if repeated with a more widespread sample, suggest that the variability recognized among the alumni may be common more broadly in the community.

10.2.5 Study Five

Study Five explored the degree of consistency in identification of chance events affecting career development among an opportunity sample of subjects.

How do chance and uncertainty influence the career development of adults?

i) Recognition of a chance event

Study Five identified a similar level of variability among Australian citizens when they attempted to recognise a chance event within a series of vignettes affecting career development. There were two control vignettes which did not describe a chance event affecting a person's career development. Subjects overwhelmingly rejected these as describing a chance event, thus indicating their capacity to identify when no chance event was being presented. Subjects were definitely able to recognise when a chance event affecting career development was being described. Ninety-five per cent of the cohort made consistent and uniform responses confirming a chance event when vignettes were presented in a linear, sequential fashion, with a precise outcome.

However, vignettes that incorporated greater complexity generated greater variability in response. A majority of subjects rejected five complex vignettes, which described a chance event affecting career development. This rejection contrasted with the interviewees having reflected on the chance event as such during the Study Two interview, and the raters considering the vignette to have described a chance event. Features adding to the complexity of the rejected chance events included an implied rather than stated outcome, a prolonged time delay before outcome, and a non-linear style of presentation in the vignette.

ii) Questions arising from Studies Three, Four and Five

The survey results in Studies Three, Four and Five each confirmed the capacity of a majority of a population to recognize a chance event affecting career development. The studies also confirmed peoples' capacity to categorize such an event using descriptors commonly used in the literature.

Those on higher income were less likely to recognize chance events, and less likely to allocate a category to a description of a chance event. Those working part-time were more inclined to categorize chance events as "unexpected opportunities" or being in the "right place at the right time".

The hypotheses in Studies Three, Four and Five were similar in each case:

"that people of similar socio-economic and cultural background will differ in their *recognition* of the occurrence of a chance event affecting career development"; and

How do chance and uncertainty influence the career development of adults?

“that people of similar socio-economic and cultural background will differ in their *categorization* of a chance event affecting career development”.

The survey results obtained for these three studies supported the above hypotheses and the general conclusion that there is variation in the recognition and interpretation of chance events among a group of people. Further, the internal consistency in subjects' responses varied dependent upon the complexity of the situation they were asked to reflect upon. This variability in opinions raises two questions with regard to chance events affecting career development:

1. *What is the expected range of perceptual differences within any group of individuals with regard to recognition and categorization of chance events? and,*
2. *What is the preferred way to manage linguistic difficulties associated with communicating and researching about chance events affecting career development?*

iii) *The range of perceptual differences*

This research has indicated some perceptual variation between those on higher income and those in full-time employment and the broader population, with the former being less likely to identify and categorize chance events. Further research may confirm these findings. Similarly, more research may support the result indicating that part-time workers are more open to categorizing chance events as “unexpected opportunities” or being in the “right place at the right time”.

An entrepreneurial disposition is reflected in a person's ability to recognize opportunity (Dew et al. 2009; Markman & Baron, 2003). Nevertheless, results from this research support the use of framing as an explanation for variability among subjects' perceptions. Higher income and full-time workers may have less inclination towards recognizing chance events, and the rationale of attribution bias may explain some of this disposition. On the other hand, those in part-time work are often in less secure, lower paid and less entitled positions and, therefore, may be more disposed toward seeking out opportunities and lucky encounters. Research into this issue could also include workers in other types of employment such as casual work, and blendings of training and work (cadetships, traineeships etc.). These types of positions are less secure and generally held by people looking to find appealing opportunities.

How do chance and uncertainty influence the career development of adults?

The variations in the survey responses suggest that each individual, when responding to the survey questions about chance events, will frame the question according to his or her perspective at the time they are completing the survey. The survey results reflect this and indicate that this variation increases with greater levels of complexity.

iv) Communicating and researching about chance events

Previous research investigating chance events influencing career development has established a range of descriptors which serve to distinguish between various types of chance event. Betsworth and Hansen (1996) devised a taxonomy to describe 132 chance events using 11 categories (p.95). These descriptors have been used and adapted in later studies (Bright, Pryor & Harpham, 2005; Bright, Pryor, Wilkenfeld & Earl, 2005; Hirschi, 2010).

Other researchers have investigated the effect of chance without formulating or using an extensive list of descriptors. Diaz de Chumaceiro (1999) identified just three, being in “the right place at the right time”, “serendipitous substitution” and “pseudoserendipity” (p.347) as types of beneficial chance events experienced by successful female conductors. Diaz de Chumaceiro also stressed the multidimensional nature of pseudoserendipitous chance events, referring to them also as a “serendipity analog” (Diaz de Chumaceiro, (1999, p. 228). Williams et al. (1998) referred to “unplanned occurrences” (p. 383), but focussed mainly on the context and outcome of the chance event. Mainemelis et al. (2015) suggest “our study lends support to chance events approaches to boundaryless careers” (p.18) but did not categorize the chance events, instead emphasising the connection between chance, networking and the individual’s protean tendencies. A similar approach was taken by Bornat, et al. (2011) in their study of how chance assisted the careers of migrant doctors in UK geriatric medicine.

This research advances our understanding of the usefulness and limits of categorizing chance events. The profession and the research community in particular face challenges with regard to the vagaries of language, as has been widely acknowledged (Brown, 2012; Miller, M. J., 1983; Patton & McMahon, 2014; Zunker 2012). The concept of chance events is not immune from this difficulty. This is reflected in the survey results from Studies Three, Four and Five. Each of these studies found that the variability in interpretation increased depending upon the contextual complexity associated with the report of the chance event. Some chance events were allocated to more than one category by the raters and those completing the surveys. This

How do chance and uncertainty influence the career development of adults?

indicates the imprecision of the descriptors used to provide the categories. Counterintuitively, it seems that adoption of fuzzy concepts and fuzzy boundaries may enhance our understanding of the nebulous and ambiguous term, chance event (Taleb, 2010). A recommendation regarding this will be included in the final section.

Notwithstanding these caveats, it is reasonable to conclude from these results that a population is likely to identify a chance event described in a linear and sequential manner, especially if the outcome is proximate and stated explicitly. Chance events occurring under circumstances that are more complex are likely to generate greater diversity of opinion.

10.2.6 Study Six

Study Six involved a Focus Group. It was designed to explore, confirm and/or refine the Study Two coding analysis, and to provide discussion and comments in response to prepared group activities.

i) Confirmation of Study Two coding analysis

The Focus Group discussion confirmed the principles built into the thematic structure identified by the Study Two coding analysis (See Chapter 5 and Appendix D). The Focus Group also emphasised the importance of self-efficacy, persistence and imagination in enabling a person to negotiate circumstances involving ambiguity and uncertainty about his or her career development. These traits appear to be strange attractor behaviours and present a sound practical response to coping with the challenges posed by the uncertainties surrounding the chance event. Focus Group comments also supported the observations made earlier in this chapter about negative chance events receding from prominence when their impact has been absorbed and/or resolved.

ii) Negative chance events – self-efficacy and cognitive dissonance

Studies One and Two had given conflicting data about the occurrence and effect of negative chance events. In Study One, no-one referred to a negative chance event despite a question specifically asking about it. Yet, in Study Two more than ten instances of negative chance events were reported during interviews – some of them quite serious. Bright et al. (2009), Bright, Pryor and Harpham (2005) and Hirschi (2010) have referred to complications in

How do chance and uncertainty influence the career development of adults?

career development for those with external locus of control who experience negative chance events. The Focus Group provided an opportunity to gain deeper insight into the processes associated with the impact of negative chance events, and the ways in which individuals coped in those situations.

Comments on this topic within the Focus Group suggest that a combination high self-efficacy and the passage of time had enabled the subjects in this study to move on from the initial shock and consciousness of a negative chance event. When a negative chance event arises, interviewees recalled developing strategies to visualize and work towards building a new situation, which replaced the previously functioning scenario. The Focus Group spoke of “overcoming challenges”, “hard work and persistence” and their “sense of belief” as personal assets that enabled this transition (see Chapter Nine for detailed discussion). The results of Study One and Study Two and the Focus Group, suggest that, accompanying the current context of each participant’s life, was a faded memory of the event which had caused the change to arise. It is likely that the possibility of cognitive dissonance works to the advantage of those with a strong sense of purpose and a hopeful outlook (Festinger, 1957). This interpretation may explain the discrepancy in reports of negative chance events between Study One and Study Two.

iii) *Exposure to chance events raises consciousness*

The interviewees in general and the Focus Group in particular commented on the relatively unexplored nature of the topic of chance events affecting career development. Each participant indicated that their interest and understanding of the topic had increased because of their participation in the research. This is similar to the results of Borg (2015) and Loader (2009, 2011) who reported greater interest and awareness by participants after exposure to the topic of chance events affecting career development. The principles promoted by Mitchell et al. (1999) and Krumboltz et al. (2013) are consistent with these findings, and suggest that exposure to the theory and practical applications of the Chaos Theory of Careers can be beneficial to young people and workers.

10.3 Section II – Linking chance events and uncertainty

The term *chance event* is used generically to describe situations that arise without being anticipated. A widely acknowledged aspect of a chance event is its unpredictability. This

How do chance and uncertainty influence the career development of adults?

feature is common to many similar words used to describe chance events within the literature including “serendipity” (Diaz de Chumaceiro, 1999, 2004; Williams et al. 1998), “happenstance” (M. J. Miller, 1983; Mitchell, Levin & Krumboltz, 1999), and “synchronicity” (Guindon & Hanna, 2002). In each case, the term reflects the uncertainty and unpredictability of our human condition.

In their approach to defining a chance event Shanahan and Porfeli (2007) provide four criteria, but place qualifiers on each criterion. In referring to the “unlikely” (p. 100) nature of a chance event, Shanahan and Porfeli distinguish between using a dichotomous approach to interpreting chance events and analysing chance events as a continuous variable. Their conclusion is that:

neither researchers nor the subjects of research can determine whether an event is unlikely enough to be considered a “chance event” with a high level of intersubjective agreement. The researcher typically does not have sufficient information to calculate the probability of the event and the subject of research typically assesses the probability of events based on many extraneous considerations. (Shanahan & Porfeli, 2006, p. 103)

Shanahan and Porfeli are, in effect, not defining, but describing a chance event, although they do not appear to make such a distinction. Their approach is more like that of Nowotny, (2015) who describes, but does not attempt to define uncertainty. Study Two clarified that a person’s recognition of a chance event often indicates the moment when his or her sense of uncertainty rises. In their study, Shanahan and Porfeli conclude that “it seems unfeasible that objective measurement” (p.115) of chance events is possible. They may have a valid point. However, for the career profession an equally relevant alternate view is that “the rate of reporting of chance events is too high for them to be easily attributed to contextual factors unless a permanent and major contextual factor is unpredictability” (Bright, Pryor & Harpham, 2005, p.574).

Perhaps there is a useful middle ground. This research contributes to new knowledge by exploring chance events using in-depth interviews to investigate and analyse the effects of chance events that individuals have experienced. It suggested a variety of processes used by the individual to identify, strategize and resolve the uncertainty created by the chance event. It suggests new approaches to interpreting the behaviour and responses of individuals under the

How do chance and uncertainty influence the career development of adults?

stress, which often accompanies the occasion of a chance event affecting career development (See Chapter Five and Appendix B).

10.3.1 Recommendation - The benefit of good theory

The Chaos Theory of Careers can profoundly assist the career profession to understand the place of chance and uncertainty in the career development of a client. The Chaos Theory of Careers includes unpredictability, chance and uncertainty as part of its framework. Order and disorder, predictability and unpredictability, knowledge and an incapacity to know everything that would assist decision-making, are all part of the Chaos Theory of Careers framework (Pryor & Bright, 2011). The holistic perspective of the Chaos Theory of Careers enables chance and uncertainty to be incorporated into a range of probabilities and possibilities (Pryor, et al., 2008), instead of consigning them to the aberrant space of *error* or *noise*. This is vital, because the exceptional is included as a normal part of the cycles we experience in life. Educators and counsellors are already exploring the potential of this inclusive framework with encouraging results (Borg et al., 2006, 2014; Chien et al., 2006; Loader, 2009, 2011; Krumboltz et al., 2013; Schlesinger & Daley, 2016).

The sub-title of the Chaos Theory of Careers is “a new perspective on working in the twenty-first century”. Increasing rates of change and the role of chance events were noted in the twentieth century (Chen, 2005; Baumgardner, 1982; Miller, M. J., 1983). These trends have accelerated in recent decades (Castells, 1996, 2011), and more research and collaborative practice is needed to achieve the potential of the theory for researchers, counsellors and educators.

10.4 Implications of the research

10.4.1 Value of mixed methodology

This research combined quantitative and qualitative methodologies to good effect. The use of qualitative methodology in two studies was particularly appropriate given the subject matter. The act of asking “how” moves the research away from specific questions seeking finite answers to questions which are more concerned with understanding and interpretation. The qualitative methodology enabled the researcher to dig deeply into the research topic and reveal data not previously available within the literature. Quantitative methods were then used to

How do chance and uncertainty influence the career development of adults?

establish the relevance and significance of these insights. This combination of methods enables richer and well-informed data collection. Data from quantitative studies supported some tentative conclusions regarding questions arising from the qualitative studies. It is valuable to career counsellors and psychologists in increasing our understanding of the motivational factors driving career decision-making.

10.4.2 Contribution to new knowledge

i) Frequency of chance events

The research revealed the possibility of under reporting of chance events. The qualitative interviews in Study Two evoked reports of a much higher incidence of chance events than had appeared in the Study One survey. The Study One survey also identified 35% of the cohort who expected chance events to occur far less frequently than is reported in the literature. In Studies Three, Four and Five, circumstances commonly accepted as describing a chance event were rejected as doing so by significant numbers.

It is possible that the commonly accepted figure of 60% of the population experiencing a chance event affecting their career is below the real frequency due to under recognition and under reporting of chance events.

ii) Negative chance events and self-efficacy

This research detected under-reporting of negative chance events among a high achieving population. In the studies by Williams et al. (1998) and in this research, high achieving professionals did not *directly* report negative chance events. However, in Study Two, reports of negative chance events did emerge. As reported in both Study Two and Study Six, the effects of these events were resolved over time by a combination of determination, imagination and adaptation, and hard work. They seemed then to have been largely forgotten by the interviewee. It seems that high self-efficacy and time may dissipate the memory of an initially negative chance event for those able to adapt successfully to a new set of circumstances.

How do chance and uncertainty influence the career development of adults?

iii) Variability about what a chance event is, and how to categorise it

There is no clear delineation between what a chance event is, and what is not a chance event. Quantitative results showed that people view chance events differently. In that sense, there are gradations of interpretation. It was obvious too, that the variability increased with the complexity of the circumstances used to describe the chance event.

With regard to categorization, there may be value in categorizing a chance event. However, no compendium of categories addresses all contingencies at present, and there is overflow between the categories in use, with one chance event likely to be allocated to more than one category.

Using pre-existing literature this study was able to identify the six most commonly used categories among 110 chance events. However, Studies Three, Four and Five indicated that any population is likely to show wide variability in their interpretation of anything other than the most obvious chance event described in a linear and sequential manner.

This variability of interpretation about the recognition of a chance event, and about the relevant category within which the chance event may be consigned, both suggest that exploring fresh approaches to advance our understanding of chance events and uncertainty may be beneficial.

A recommendation follows at Section 10.4.3.

iv) Management of the impact of a chance event

The conditions of anxiety and stress brought about by the occasion of a chance event require deft management by the individual. Tien, Lin, and Chen (2005) surveyed Taiwanese students to understand the conditions prompting uncertainty in their career decision-making, and the response behaviours they reported under these conditions. Their study was restricted to analysis of survey responses. In the current research, valuable insights into the open systems decision-making of people in situations replete with uncertainty is portrayed using the Themes presented in Study Two. The model reflected in the Study Two analysis and confirmed and refined in the Study Six Focus Group demonstrates the value of the strange attractor approach and its capacity to respond to the volatility and spontaneity of decision-making prompted by the occasion of the chance event. Humans have a propensity for certainty and predictability (Pryor & Bright, 2007). This thematic construct details the ways individuals moved towards greater

How do chance and uncertainty influence the career development of adults?

certainty without resorting to closed system thinking. This information has not been researched previously, and could provide a valuable resource for further research and practice. (See next section).

v) ***Limitations***

This research developed by collaborating with a successful group of well-educated and mature workers, all of whom showed characteristics of high self-efficacy. It used Australian participants, who worked through conditions of continuous economic growth and did not experience the upheaval of the Global Financial Crisis to the same extent as did employees in other advanced economies. The surveys used sample sizes appropriate to the research, and care should be taken if extrapolating from them.

Notwithstanding these comments, some generalizations from the information reported may be appropriate.

10.4.3 Suggested research

i) ***Frequency of chance events***

It may be useful to investigate the possibility of under reporting of chance events using a qualitative study. Further qualitative studies may reveal an incidence of chance events greater than the commonly reported 60% of a population.

ii) ***Negative chance events and self-efficacy***

The data suggested a strong link between high self-efficacy and overcoming negative chance events. Further research about people who have successfully managed negative chance events may reveal more about personal traits relevant to productive outcomes for those experiencing negative chance events. Multidisciplinary studies in this area may benefit some aspects of career guidance focus especially with reference to adaptability and resilience (Markman & Baron, 2003; Wyszomirski & Chang, 2017).

iii) ***Variability of perception regarding chance events***

This research revealed a wide diversity of opinion about many aspects of chance events. This occurred with both the recognition and categorisation of chance events using commonly

How do chance and uncertainty influence the career development of adults?

accepted descriptors from within the literature. Further research is recommended to determine if such variability:

- is common to all populations
- occurs with both recognition and categorisation of chance events, and
- whether one chance event can be allocated to a variety of categories; or
- whether categories can be developed which are mutually exclusive?

Among distinctive populations, these studies suggested that those on higher income were less likely to recognize chance events, and less likely to allocate a category to a description of a chance event; and those working part-time were more inclined to categorize chance events as “unexpected opportunities” or being in the “right place at the right time”. Further research is recommended to determine if these findings are supported. Given the casualization of jobs, attitudes towards chance events of those in less secure work is a very relevant issue worthy of more research.

iv) Greater understanding and clarity

Multidisciplinary research especially involving fuzzy concepts, controlled vocabularies and linguistics could be developed to enrich our perceptiveness, communication and understanding of the chance event phenomenon (Gillam, Tariq, & Ahmad, 2005; Grigsby & Osuch, 2007; Thunnissen, 2003; Zimmermann, 2005).

Economists and managers have used this approach to developing their understanding of uncertainty by adopting the term *lack of certainty* to facilitate quantitative analysis (Walker et al., 2003).

Much of the existing research on the effect of chance events on career development is focussed on measurement. A dichotomous approach to discussion and debate is likely to continue in the absence of broadly accepted and constructive terminology demonstrating a more tentative and continuous rationale. The use of fuzzy concepts, as used in other fields of complexity research (Thunnissen, 2003), does not appear to be a commonly used part of the careers lexicon. Methodologies with a greater focus on interpretation and understanding rather than measurement may provide constructive insights (Patton, M. Q., 2011).

How do chance and uncertainty influence the career development of adults?

10.4.4 Implications for career counsellors

Narrative counselling could be blended with principles from the Chaos Theory of Careers to strengthen the client's awareness of the frequency and types of chance events that they may encounter, and the range of behaviours that may be prompted by such events. The coping strategies (Appendix B) identified in this research could be used in role-plays and card sorts to promote discussion leading to more resourceful and adaptive behaviours under conditions of career stress (Kahneman, 2003).

Some examples of possibilities already exist in the research, (Borg et al., 2006, 2014; Chien et al., 2006; Loader, 2009, 2011; Krumboltz et al., 2013; Pryor & Bright, 2011; Schlesinger & Daley, 2016).

10.4.5 Implications for career educators

A significant challenge in disseminating insights gained from this research is to identify the needs and capacities of each target audience. This will determine the style of content and method of delivery. The following suggestions refer to different target audiences, each of which has different needs and learning capacities.

i) Young people

The principles of the Chaos Theory of Careers provide a valuable framework for young people to use when absorbing and reflecting upon matters of career development. Variable content targeting early, developing and more mature age-related populations (e.g. 8–12, 12–18, 16–25) can be made available to achieve this. Borg (2015) and Loader (2009, 2011), provide successful examples of this.

NB: Age groupings can be flexible and overlap because of the variable mental age within these groups.

ii) Educational Policy re Career Education

The over-emphasis on planning in approaches to Career Education Policy in Australia has been remarked upon by Borg (2015). This philosophy is based on a commitment to predictability inconsistent with theory in the Chaos Theory of Careers, and trends in prevailing literature (Castells, 2011; Taleb, 2010). Policy makers could be given greater exposure to Chaos

How do chance and uncertainty influence the career development of adults?

Theory of Careers research, including practical case studies of cohorts for whose needs they are drafting and preparing policy statements.

iii) Adults as carers

Borg (2015) has identified the significant role played by parents as career guides to their children. Parents and carers have ongoing input into the career development issues confronting young people in the decade prior to their full-time entry into employment as an adult (15 - 25 years). Given the likely under-recognition and under-reporting of chance events, as identified in these Studies, education of parents and carers is a critical precursor to appropriate framing by adult carers likely to be delivering persuasive advice to young people (Kahneman, 2003).

iv) Adults as supervisors

The comments about adults as carers are equally relevant in circumstances involving adults in supervisory roles. Study One found that those claiming no experience of a chance event affecting their career were likely to significantly underestimate the possible incidence of chance events affecting career development of others. A supervisor with this disposition may promote tension in work environments. An educational program alerting those in managerial roles to the frequency of chance events could alleviate this.

v) Adults as workers

High variability of the recognition of a chance event was found in this research. This suggests that many Australian workers are likely to fail to recognize in a timely manner, chance events that affect their own career development. Exposure to education about chance events could ameliorate this difficulty and have workers more open to chance and the changes that result.

Appendix A Survey 1

Qualtrics Survey Software

Welcome

Dear respondent,
Welcome to my survey. I appreciate your interest and support.
Please find the [Signed ethics approval statement](#).

Please click 'Next' to continue with the survey.

Sincerely,
Gerard Torpy
PhD Candidate

Profile

Please click on the appropriate choice in the following boxes

Female

Male

What year were you born?

In which country were you born?

Please indicate your approximate Net Income in the 2012 - 2013 Tax year
(Optional, based on current tax rates)

\$0 - \$37,000

\$37,001 - \$80,000

\$80,001 - \$180,000

Over \$180,000

Prefer to skip

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How do chance and uncertainty influence the career development of adults?

Qualtrics Survey Software

Please indicate your highest level of Education or Training:

- Secondary School
- TAFE Certificate or Diploma
- Apprenticeship
- On the Job training
- University - Degree
- University - Post Graduate
- Other

Please provide brief comments about the progress of your career to date
A possible format is provided to assist you with this question. Use one or more rows as you see fit, or answer in the space below these rows.

	Start Year	End Year	Work/Role(s)	Detail (eg employer, level of responsibility, major tasks, level of satisfaction, reason for leaving)
Phase of Work/Job(s)				
Phase of Work/Job(s)				
3rd phase if appropriate				
4th phase if appropriate				
Click to write Statement 5				

What is your current work status?

- Employed - Full-time work
- Employed - Part-time work
- Self-employed
- Retired
- Volunteer
- Other (Please detail)

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How do chance and uncertainty influence the career development of adults?

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Considering the span of your working life, please indicate which kinds of work circumstances you have experienced for a period of 12 months or longer. (Multiple answers allowed).

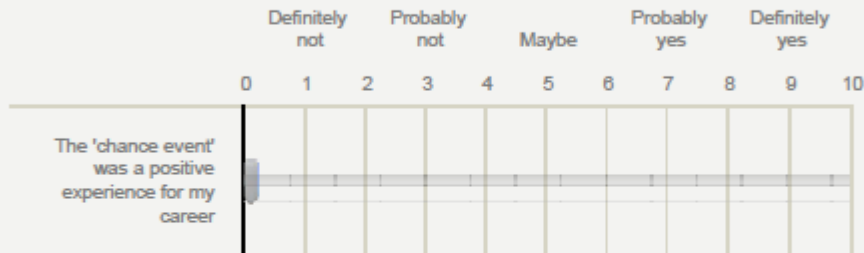
- Full-time Employee
- Part-time Employee
- Self-employment/contractor
- Full-time Parent
- Owner
- Partner in business
- Volunteer
- Full-time Carer
- Other (Please describe)

Chance +P/N?

Has your career development ever been influenced by a 'chance event'?
(A 'chance event' is some action or occurrence which was unexpected).

- Yes
- No

Was the 'chance event' a positive experience for your career?



If possible, briefly describe the context of the 'chance event' you refer to.

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How do chance and uncertainty influence the career development of adults?

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Yes & Positive

Do you think any of the following 'chance events' have ever impacted on your career development?

	Very Unlikely	Unlikely	Undecided	Likely	Highly likely
Sudden awareness negating an earlier career plan					
A social event					
A personal relationship					
An injury or health problem					
Unintended exposure to work that you found interesting					
Unintended exposure to work that you did not enjoy					
An upturn in the economy					
An downturn in the economy					
A change in government or government policy					
Use of the internet or social media					
New inventions or technology					
An act of war or terrorism					
A change of residence					
Being in the 'Right place at the right time'					
Other					

Was the 'chance event' an isolated/one-off event?

Yes

No

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How do chance and uncertainty influence the career development of adults?

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Was the 'chance event' more like a 'series of events' ?

- Yes
- No
- Other

Please explain if you are able to.

How soon after the 'chance event' did it lead to an outcome related to your career?

- Almost immediately
- Within 12 months
- Gradually over time

On a scale of 1 - 10, how did the 'chance event' impact on the development of your career?



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How do chance and uncertainty influence the career development of adults?

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How much control of the situation did you feel you had?

	No control	A little	Some	A significant level	Almost total control						
	0	1	2	3	4	5	6	7	8	9	10
Level of control											

Do you have any further comments about the 'chance event'?

Negative

Were there any longer term beneficial aspects of this negative experience?

On a scale of 1 - 10, how did the 'chance event' impact on the development of your career?

	0	1	2	3	4	5	6	7	8	9	10
It lowered my confidence											
It isolated me professionally											
It decreased my job options											
I was unsure of my competence											
It changed my thinking											

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How do chance and uncertainty influence the career development of adults?

Qualtrics Survey Software

Other (please explain) 

Are any of the following 'chance events' likely to have ever impacted on your career development?

	Very Unlikely	Unlikely	Undecided	Likely	Highly likely
Sudden awareness negating an earlier career plan					
A social event					
A personal relationship					
An injury or health problem					
Unintended exposure to work that you found interesting					
Unintended exposure to work that you did not enjoy					
An upturn in the economy					
An downturn in the economy					
A change in government or government policy					
Use of the internet or social media					

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How do chance and uncertainty influence the career development of adults?

Qualtrics Survey Software

]

New inventions or technology

An act of war or terrorism

A change of residence

Being in the 'Right place at the right time'

Other

Was the 'chance event' an isolated/one-off event?

Yes

No

Was the 'chance event' more like a 'series of events' ?

Yes

No

Other

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How do chance and uncertainty influence the career development of adults?

Qualtrics Survey Software

Please explain if you are able to.

How soon after the 'chance event' did it lead to an outcome related to your career?

- Almost immediately
- Within 12 months
- Gradually over time

How much control of the situation did you feel you had?



Do you have any further comments about the 'chance event'?

Distractor Qns

What proportion of the Australian workforce/community would you estimate has experienced a 'chance event' of significance to their career development?



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How do chance and uncertainty influence the career development of adults?

Qualtrics Survey Software



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How do chance and uncertainty influence the career development of adults?

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On further reflection, has your career development ever been influenced by a 'chance event'?
(A 'chance event' is some action or occurrence which was unexpected).

Yes

No

Interview

If contacted, would you agree to be interviewed as a further part of this research?

Yes

No

Please provide your contact details:

Incentive & Closure

Thank you for your participation in this survey. End of Questionnaire

Please contact support@surveyz.com if you have any questions regarding this survey.

Survey Powered By Qualtrics

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Appendix B Interview Confirmation and Pre-reading

Letter (email) of confirmation

Dear _____,

Thank you for agreeing to be interviewed to progress my research.

I will contact you on:

Day	Friday
Date	29 May
Time	9.30 am EST
Length of Interview	40 – 60 minutes

Outline of interview topics

You may like to reflect on aspects of the areas we will discuss. The interview will be largely conversational, but I will have certain research concepts in mind. In this context I will structure the interview around the following themes:

1. Reference to a chance event

In responding to the survey, you referred to a chance being a factor in your career development. Can you elaborate on that?

2. Level of control experienced

Another aspect of this chance event is the level of control which you had at this time. Can you describe your experience of how much control of the situation you had at this time?

•

3. Uncertainty

When dealing with chance events do you experience a level of uncertainty about the situation?

We will discuss attitudes beliefs and values in the context of the topics that arise in our discussion

I look forward to meeting you on (include date and time).

Yours sincerely

Gerard Torpy

Appendix C **Focus Group Pre-reading**

Study 6 - Focus Group - Engaging with uncertainty

Dear _____,

Thank you for agreeing to participate in this Focus group. I have scheduled it for **4.30pm on Monday, 22 August** at Lv. 1, 250 Victoria Pde, East Melbourne. This is a normal office building, opposite the main ACU building. (See link to map).

Mr Rob Cole will facilitate the Focus group. Rob is an experienced Career Counselor and psychologist, working with youth and adults at Holmesglen TAFE. Rob has a continuing interest in uncertainty and is familiar with my research topic.

I have invited four interviewees to participate in this discussion. This will enable a balance between depth of ideas and diversity of opinion in the 45 minutes allocated. The discussion will be recorded to enable transcription and analysis by the researcher.

All previously affirmed protocols regarding ethics approval also pertain to this study. (Ethics approval No. 2012 233N).

My objective is to elicit attitudes and strategies used by resourceful workers when dealing with uncertainty. I will use these comments to augment the readings and evidence already gained from earlier studies within the PhD.

I look forward to seeing you next Monday, August 15, 2016

Best wishes

Gerard Torpy

Attached: Focus Group session – Date, time and venue
 Structure of the Focus Group session

How do chance and uncertainty influence the career development of adults?

Focus Group session – Date, time and venue

Day	Monday
Date & Time	22nd August at 4.30pm
Location	Level 1 , (Take lifts on the RH side), 250 Victoria Pde , East Melbourne, 3002 This is opposite the main ACU Building. http://www.whereis.com/vic/east-melbourne-3002/250-victoria-pde
Parking	The ACU Car park is next to the main ACU Building.
Tram	Collins St Tram 109 or Tram 12. (100 metre walk from Stop No 13)
Train	Parliament Station. 7 minute walk, or take the tram as indicated.

Structure of the Focus Group session

Activity	Mins.	Content
Intro. & protocols	3 - 4	Welcome, Introductions & Ethics (GT) Basic structure (RC)
Ex. 1	15	Openness towards uncertainty
Ex. 2	10	Contemporary work issues and uncertainty
Ex. 3	10	Managing uncertainty
Summary & Close	5	RC & GT

Appendix D Expanded Nodal System

Parent Node	Child Node	Level 3	Level 4	Level 5
Satisfaction	Values	compassion priorities disorienting transparent		
	Saying 'No!'	rejecting maintaining		
	Flexible Work			
Control	Level of Control	absolute	self other	
		high low no control managing control		building control releasing control
	Headhunted	shock encouragement low control		
	Leadership	wise counsel respect poor leadership communication		
Embedded Systems	Networks & Relationships	reaching out mentoring mutual respect recognition job connection		
	Accumulation	knowledge	existing growing using	
		professional development & training gift attitude resources resilience		
	Strategy	planning	plan	grand chunks of time

How do chance and uncertainty influence the career development of adults?

Parent Node	Child Node	Level 3	Level 4	Level 5
			no plan	faith self-efficacy imagination
			imposed structure	work self
		action	naïve	
		control motive use of scaffold hope support	execution creative	
Complexity	Ambiguity & Insecurity	causes	restructures health stress change	
		effects	uncertainty anxiety despair reactionary behaviour	
	Chance Events	fork RPRT luck opportunity health sensing change negative luck		
	Multiple Roles	challenges	work personal family	
		logistics		
Opportunity	Openness	curiosity possibility chance event mutual benefit searching		
	Measured Risk	locus of control		
	Epiphany			

Appendix E Vignettes – Survey 2 and 3

Chance events are 'unplanned events (e.g. accidental or unintentional events; or involve being in the right place at the right time or the wrong place at the wrong time) that have an impact on careers'.

Ron We had just had twins. I was working in Brisbane as the Finance Manager for Shell, and the next likely opportunity for me was probably going to be overseas. They would probably say, 'OK, we want you to go to Singapore, or Tokyo...' It was something we didn't really want to contemplate at that time as we wanted to be near our families. So, I gave a former work colleague a call and said, 'Let me know of anything interesting that crops up in your space'. Then, a new role came up at Suncorp in Brisbane. It was not reporting to my colleague, but it was part of the Finance function. I applied and I got the job.

118 words

Tina I had in mind to do some computer training because I thought that would catapult me into business. I now know that I could have gone straight into business but I didn't know that then. But through sheer good luck really, a neighbour said, 'There's this scholarship going in Woolworths for people doing this course.' He took them a copy of my CV and I was able to win one of the scholarships. I had nine years with Woolworths. It was hard. At one stage, I was managing 350 executives around Australia. It was a very demanding job because you had all these managers jumping up and down, and you had to placate them. And you had budgets and you had all the managerial concerns. But it was great. Now, if those scholarships had not been around - they only lasted about three years - I would not have had the income they offered. My timing was impeccable. But, eventually I was ready to leave. And one of my old bosses had moved to Westpac. She talked to me about going and working there, which I did.

187

David Well I got into my primary field – Immigration - I got into that simply because I'd been in Tokyo for a year at the embassy. I was on a secondment there. The guy replacing me came from Immigration so I got his job back in Canberra. They needed somebody quickly and I was free. And it was a good job and a great field to get into. I've been with that ever since.

73

How do chance and uncertainty influence the career development of adults?

Sandra You know I've basically lived with my parents all through Uni. I get this transfer, and I'm living on my own in a country town with 6,000 people, where you're six hours drive west of Sydney, and the nearest town is Lismore which is two hours east. It was a challenge! It was incredibly difficult. So I can't say that it was the best time of my life. All my friends and my partner were in Sydney. I don't make friends altogether that easily. So for six months it was OK, but when the GFC happened, we heard that the project was slowing down. We were all fully mobilised for 2008, which is when the GFC hit. At the time management was saying, 'No, no we're still going ahead. This is the plan. We're employing additional people. We'll get it done.' You arrive and you find, No! Things are slowing down. By January 2009 things were really slowing down. It's no wonder I resigned and found a job back in Sydney.

171

Dan I reasonably quickly developed an ability to manage contracts. I was doing contract management, business management and contract writing. I very quickly became a jack of all trades in the consulting area. And the chance event which changed me from the business area across to human resources was that the principal consultant in Human Resources took leave and left me to cover for her for several weeks. She left me in charge of about 25 projects that she was working on. And I found I enjoyed the behavioural science aspect. There's much more human assessment when you're in HR. And it's not so much just throwing budgets at things as a fix. There is a lot more subtlety, finding complementary skills and fostering team building. I'm very much motivated by people and relationships. The change gave me more intrinsic satisfaction than I was getting. One of our major clients toward the end of that period was the Commonwealth Bank and they had effectively seconded me to assist with a major initiative. Then their HR manager retired and the Sydney team tapped me on the shoulder and said, 'Come across to Commbank and do the job'. So that's how I got to be here.

203

Paula My mother was diagnosed with cancer and my father decided to leave our hotel business to care for mum. Just before mum's illness, my brother, Simon, and dad had decided to buy another hotel at Bateman's Bay, 200 km away. Simon had moved there with his family and he had his hands full there. It was all a bit overwhelming for the family. The lucky part was I was still in my mid-twenties. I was in Sydney in a small accounting firm, but with no real ties there at that stage. So, I went to my boss and said would she mind my taking six months leave? That

How do chance and uncertainty influence the career development of adults?

way, I could move back home to help them out and get the business restructured. I took six months leave and within three or four months, we were able to turn the hotel around. It was a good little business and I found I liked it. So eventually, I decided to stay.

160

Appendix F Survey 2

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Block 5

1.1.

Dear respondent,

Welcome to my survey. I appreciate your interest and support.

Please find the [ACU Signed Ethics Approval - Survey 3.pdf](#)

Sincerely,
Gerard Torpy
PhD Student

1.2.

Six scenarios (stories) about chance events are presented in the next section.

Chance events are '**unplanned events** (e.g. accidental or unintentional events; or involve being in the right place at the right time or the wrong place at the wrong time) **that have an impact on careers**'.

Read the story and then answer the seven questions about each story. There is no 'correct' answer. I want to know your opinion about each question.

The definition above will appear with each story. If necessary, refer back to the story to complete your answers.

Please click the arrows to continue with the survey.

How do chance and uncertainty influence the career development of adults?

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Default Question Block

2.1.

Chance events are **'unplanned events'** (e.g. accidental or unintentional events; or involve being in the right place at the right time or the wrong place at the wrong time) **that have an impact on careers'**.

Story 1 - Ron

We had just had twins. I was working in Brisbane as the Finance Manager for the company, and the next likely opportunity for me was probably going to be overseas. They would probably say, 'OK, we want you to go to Singapore, or Tokyo...'

It was something we didn't really want to contemplate at that time as we wanted to be near our families. So, I gave a former work colleague a call and said, 'Let me know of anything interesting that crops up in your space'.

Then, a new role came up in Suncorp. It was not reporting to my colleague, but it was part of the finance function. I applied and I got the job.

2.2. A **chance event** influenced Ron's decision to change jobs.

Strongly agree Somewhat agree Neither agree nor disagree Somewhat disagree Strongly disagree

2.3. An unplanned **personal or work relationship** influenced Ron's career change.

Strongly agree Agree Somewhat agree Neither agree nor disagree Somewhat disagree

2.4. An **unexpected opportunity** influenced Ron's change of career.

Neither agree nor

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How do chance and uncertainty influence the career development of adults?

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Strongly agree Somewhat agree disagree Somewhat disagree Strongly disagree

2.5. You could say Ron was in the “**right place at the right time.**”

Strongly agree Somewhat agree Neither agree nor disagree Somewhat disagree Strongly disagree

2.6. Ron experienced a **barrier to his previous career plan.**

Strongly agree Somewhat agree Neither agree nor disagree Somewhat disagree Strongly disagree

2.7. An **injury or health problem** influenced Ron's career.

Strongly agree Somewhat agree Neither agree nor disagree Somewhat disagree Strongly disagree

2.8. **Unplanned influence of family** influenced Ron's career.

Strongly agree Somewhat agree Neither agree nor disagree Somewhat disagree Strongly disagree

XXXXX

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3.1.

Chance events are '**unplanned events** (e.g. accidental or unintentional events; or involve being in the right place at the right time or the wrong place at the wrong time) **that have an impact on careers**'.

Story 2 - Tina

I had in mind to do some computer training because I thought that would catapult me into business. I now know that I could have gone straight into business but I didn't know that then. But through sheer good luck really, a neighbour said, 'There's this scholarship going in Woolworths for people doing this course.' He took them a copy of my CV and I was able to win one of the scholarships.

I had nine years with Woolworths. It was hard. At one stage, I was managing 350 executives around Australia. It was a very demanding job because you had all these managers jumping up and down, and you had to placate them. And you had budgets and you had all the managerial concerns. But it was great.

Now, if those scholarships had not been around - they only lasted about three years - I would not have had the income they offered. My timing was impeccable.

But, eventually I was ready to leave. And one of my old bosses had moved to Westpac. She talked to me about going and working there, which I did.

3.2. A **chance event** influenced Tina's decision to change jobs.

Strongly agree Somewhat agree Neither agree nor disagree Somewhat disagree Strongly disagree

3.3. An unplanned **personal or work relationship** influenced Tina's career change.

Neither agree nor

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Strongly agree Agree Somewhat agree disagree Somewhat disagree

3.4. An **unexpected opportunity** influenced Tina's change of career.

Strongly agree Somewhat agree Neither agree nor disagree Somewhat disagree Strongly disagree

3.5. You could say Tina was in the **"right place at the right time."**

Strongly agree Somewhat agree Neither agree nor disagree Somewhat disagree Strongly disagree

3.6. Tina experienced a **barrier to her previous career plan.**

Strongly agree Somewhat agree Neither agree nor disagree Somewhat disagree Strongly disagree

3.7. An **injury or health problem** influenced Tina's career.

Strongly agree Somewhat agree Neither agree nor disagree Somewhat disagree Strongly disagree

3.8. **Unplanned influence of family** influenced Tina's career.

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How do chance and uncertainty influence the career development of adults?

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Strongly agree Somewhat agree Neither agree nor disagree Somewhat disagree Strongly disagree

XX

4.1.

Chance events are '**unplanned events** (e.g. accidental or unintentional events; or involve being in the right place at the right time or the wrong place at the wrong time) **that have an impact on careers**'.

Story 3 - David

Well I got into my primary field – Immigration - I got into that simply because I'd been in Tokyo for a year at the embassy. I was on a secondment there. The guy replacing me came from Immigration so I got his job back in Canberra. They needed somebody quickly and I was free. And it was a good job and a great field to get into. I've been with that ever since.

4.2. A **chance event** influenced David's decision to change jobs.

Strongly agree Somewhat agree Neither agree nor disagree Somewhat disagree Strongly disagree

4.3. An **unplanned personal or work relationship** influenced David's career change.

Strongly agree Agree Somewhat agree Neither agree nor disagree Somewhat disagree

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How do chance and uncertainty influence the career development of adults?

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4.4. An **unexpected opportunity** influenced David's change of career.

Strongly agree Somewhat agree Neither agree nor disagree Somewhat disagree Strongly disagree

4.5. You could say David was in the “**right place at the right time.**”

Strongly agree Somewhat agree Neither agree nor disagree Somewhat disagree Strongly disagree

4.6. David experienced a **barrier to his previous career plan.**

Strongly agree Somewhat agree Neither agree nor disagree Somewhat disagree Strongly disagree

4.7. An **injury or health problem** influenced David's career.

Strongly agree Somewhat agree Neither agree nor disagree Somewhat disagree Strongly disagree

4.8. **Unplanned influence of family** influenced David's career.

Strongly agree Somewhat agree Neither agree nor disagree Somewhat disagree Strongly disagree

XX

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5.1.

Chance events are **'unplanned events'** (e.g. accidental or unintentional events; or involve being in the right place at the right time or the wrong place at the wrong time) **that have an impact on careers'**.

Story 4 - Sandra

You know I've basically lived with my parents all through Uni. I get this transfer, and I'm living on my own in a country town with 6,000 people, where you're six hours drive west of Sydney, and the nearest town is Lismore which is two hours east. It was a challenge! It was incredibly difficult. So I can't say that it was the best time of my life. All my friends and my partner were in Sydney. I don't make friends altogether that easily. So for six months it was OK, but when the GFC happened, we heard that the project was slowing down. We were all fully mobilised for 2008, which is when the GFC hit. At the time management was saying, 'No, no we're still going ahead. This is the plan. We're employing additional people. We'll get it done.'

You arrive and you find, No! Things are slowing down. By January 2009 things were really slowing down. It's no wonder I resigned and found a job back in Sydney.

5.2. A **chance event** influenced Sandra's decision to change jobs.

Strongly agree Somewhat agree Neither agree nor disagree Somewhat disagree Strongly disagree

5.3. An unplanned **personal or work relationship** influenced Sandra's career change.

Strongly agree Agree Somewhat agree Neither agree nor disagree Somewhat disagree

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5.4. An **unexpected opportunity** influenced Sandra's change of career.

Strongly agree Somewhat agree Neither agree nor disagree Somewhat disagree Strongly disagree

5.5. You could Sandra was in the **“right place at the right time.”**

Strongly agree Somewhat agree Neither agree nor disagree Somewhat disagree Strongly disagree

5.6. Sandra experienced a **barrier to her previous career plan.**

Strongly agree Somewhat agree Neither agree nor disagree Somewhat disagree Strongly disagree

5.7. An **injury or health problem** influenced Sandra's career.

Strongly agree Somewhat agree Neither agree nor disagree Somewhat disagree Strongly disagree

5.8. **Unplanned influence of family** influenced Sandra's career.

Strongly agree Somewhat agree Neither agree nor disagree Somewhat disagree Strongly disagree

XXXXX

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6.1.

Chance events are '**unplanned events** (e.g. accidental or unintentional events; or involve being in the right place at the right time or the wrong place at the wrong time) **that have an impact on careers**'.

Story 5 - Dan

I reasonably quickly developed an ability to manage contracts. I was doing contract management, business management and contract writing. I very quickly became a jack of all trades in the consulting area. And the chance event which changed me from the business area across to human resources was that the principal consultant in Human Resources took leave and left me to cover for her for several weeks.

She left me in charge of about 25 projects that she was working on.

And I found I enjoyed the behavioural science aspect. There's much more human assessment when you're in HR. And it's not so much just throwing budgets at things as a fix. There is a lot more subtlety, finding complementary skills and fostering team building.

I'm very much motivated by people and relationships. The change gave me more intrinsic satisfaction than I was getting.

One of our major clients toward the end of that period was the Commonwealth Bank and they had effectively seconded me to assist with a major initiative.

Then their HR manager retired and the Sydney team tapped me on the shoulder and said, 'Come across to Commbank and do the job'. So that's how I got to be here.

6.2. A **chance event** influenced Dan's decision to change jobs?

Strongly agree Somewhat agree Neither agree nor disagree Somewhat disagree Strongly disagree

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How do chance and uncertainty influence the career development of adults?

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6.3. An unplanned **personal or work relationship** influenced Dan's career change.

Strongly agree Agree Somewhat agree Neither agree nor disagree Somewhat disagree

6.4. An **unexpected opportunity** influenced Dan's change of career.

Strongly agree Somewhat agree Neither agree nor disagree Somewhat disagree Strongly disagree

6.5. You could say Dan was in the "**right place at the right time.**"

Strongly agree Somewhat agree Neither agree nor disagree Somewhat disagree Strongly disagree

6.6. Dan experienced a **barrier to his previous career plan.**

Strongly agree Somewhat agree Neither agree nor disagree Somewhat disagree Strongly disagree

6.7. An **injury or health problem** influenced Dan's career.

Strongly agree Somewhat agree Neither agree nor disagree Somewhat disagree Strongly disagree

6.8. **Unplanned influence of family** influenced Dan's career.

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How do chance and uncertainty influence the career development of adults?

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Strongly agree Somewhat agree Neither agree nor disagree Somewhat disagree Strongly disagree

Block 6

XXXXX

8.1.

Chance events are **'unplanned events'** (e.g. accidental or unintentional events; or involve being in the right place at the right time or the wrong place at the wrong time) **that have an impact on careers'**.

Story 6 - Paula

My mother was diagnosed with cancer and my father decided to leave our hotel business to care for mum. Just before mum's illness, my brother, Simon, and dad had decided to buy another hotel at Bateman's Bay, 200 km away. Simon had moved there with his family and he had his hands full there.

It was all a bit overwhelming for the family. The lucky part was I was still in my mid-twenties. I was in Sydney in a small accounting firm, but with no real ties there at that stage.

So, I went to my boss and said would she mind my taking six months leave? That way, I could move back home to help them out and get the business restructured.

I took six months leave and within three or four months, we were able to turn the hotel around. It was a good little business and I found I liked it. So eventually, I decided to stay.

8.2. A **chance event** influenced Paula's decision to change jobs?

Strongly agree Somewhat agree Neither agree nor disagree Somewhat disagree Strongly disagree

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How do chance and uncertainty influence the career development of adults?

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8.3. An unplanned **personal or work relationship** influenced Paula's career change.

Strongly agree Agree Somewhat agree Neither agree nor disagree Somewhat disagree

8.4. An **unexpected opportunity** influenced Paula's change of career.

Strongly agree Somewhat agree Neither agree nor disagree Somewhat disagree Strongly disagree

8.5. You could say Paula was in the **"right place at the right time."**

Strongly agree Somewhat agree Neither agree nor disagree Somewhat disagree Strongly disagree

8.6. Paula experienced a **barrier to her previous career plan**

Strongly agree Somewhat agree Neither agree nor disagree Somewhat disagree Strongly disagree

8.7. An **injury or health problem** influenced Paula's career.

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How do chance and uncertainty influence the career development of adults?

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Strongly agree Somewhat agree Neither agree nor disagree Somewhat disagree Strongly disagree

8.8. Unplanned influences of family influenced Paula's career.

Strongly agree Somewhat agree Neither agree nor disagree Somewhat disagree Strongly disagree

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Appendix G Survey 3

Qualtrics Survey Software

Welcome

Dear respondent,
Welcome to my survey. I appreciate your interest and support.
Please find the [Signed ethics approval statement](#).

Please click 'Next' to continue with the survey.

Sincerely,
Gerard Torpy
PhD Candidate

Profile

Please click on the appropriate choice in the following boxes

Female
Male

What year were you born?

Profile 2

In which country were you born?

Australia

Please indicate your approximate Net Income in the 2015 - 2016 Tax year
(Optional, based on current tax rates)

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- \$0 - \$37,000
- \$37,001 - \$80,000
- \$80,001 - \$180,000
- Over \$180,000
- Prefer to skip

Please indicate your highest level of Education or Training:

- Secondary School
- TAFE Certificate or Diploma
- Apprenticeship
- On the Job training
- University - Degree
- University - Post Graduate
- Other

What is your current work status?

- Employed - Full-time work
- Employed - Part-time work
- Retired
- Self-employed
- Student
- Volunteer

Ron

Six scenarios are presented in the next section. There are one or more chance events in each story.

Chance events are 'unplanned events (e.g. accidental or unintentional events; or involve being in the right place at the right time or the wrong place at the wrong time) that have an impact on careers'.

Please read the story and then answer the seven questions about each story. There is no 'correct'

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How do chance and uncertainty influence the career development of adults?

Qualtrics Survey Software

answer. I want to know your opinion about each question.

The definition above will appear with each story. If necessary, refer back to the story to complete your answers.

Please click the arrows to continue with the survey.

Chance events are 'unplanned events (e.g. accidental or unintentional events; or involve being in the right place at the right time or the wrong place at the wrong time) that have an impact on careers'.

Story 1 - Ron

We had just had twins. I was working in Brisbane as the Finance Manager for Shell, and the next likely opportunity for me was probably going to be overseas. They would probably say, 'OK, we want you to go to Singapore, or Tokyo...'

It was something we didn't really want to contemplate at that time as we wanted to be near our families. So, I gave a former work colleague a call and said, 'Let me know of anything interesting that crops up in your space'.

Then, a new role came up at Suncorp in Brisbane. It was not reporting to my colleague, but it was part of the Finance function. I applied and I got the job.

A chance event influenced Ron's decision to change jobs.

Strongly disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Strongly agree
-------------------	-------------------	----------------------------	----------------	----------------

An unplanned personal or work relationship influenced Ron's career change.

Strongly disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Strongly agree
-------------------	-------------------	----------------------------	----------------	----------------

An unexpected opportunity influenced Ron's change of career.

Neither

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How do chance and uncertainty influence the career development of adults?

Qualtrics Survey Software

Strongly disagree	Somewhat disagree	agree nor disagree	Somewhat agree	Strongly agree
You could say Ron was in the "right place at the right time."				
Strongly disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Strongly agree
Ron experienced a barrier to his previous career plan.				
Strongly disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Strongly agree
An injury or health problem influenced Ron's career.				
Strongly disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Strongly agree
Unplanned influence of family influenced Ron's career.				
Strongly	Somewhat	Neither agree nor	Somewhat	Strongly

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How do chance and uncertainty influence the career development of adults?

Qualtrics Survey Software

disagree

disagree

disagree

agree

agree

Tina

Chance events are 'unplanned events (e.g. accidental or unintentional events; or involve being in the right place at the right time or the wrong place at the wrong time) that have an impact on careers'.

Story 2 - Tina

I had in mind to do some computer training because I thought that would catapult me into business. I now know that I could have gone straight into business but I didn't know that then. But through sheer good luck really, a neighbour said, 'There's this scholarship going in Woolworths for people doing this course.' He took them a copy of my CV and I was able to win one of the scholarships.

I had nine years with Woolworths. It was hard. At one stage, I was managing 350 executives around Australia. It was a very demanding job because you had all these managers jumping up and down, and you had to placate them. And you had budgets and you had all the managerial concerns. But it was great.

Now, if those scholarships had not been around - they only lasted about three years - I would not have had the income they offered. My timing was impeccable.

But, eventually I was ready to leave. And one of my old bosses had moved to Westpac. She talked to me about going and working there, which I did.

A chance event influenced Tina's decision to change jobs.

Strongly
disagree

Somewhat
disagree

Neither
agree
nor
disagree

Somewhat
agree

Strongly
agree

An unplanned personal or work relationship influenced Tina's career change.

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How do chance and uncertainty influence the career development of adults?

Qualtrics Survey Software

Strongly disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Strongly agree
An unexpected opportunity influenced Tina's change of career.				
Strongly disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Strongly agree
You could say Tina was in the "right place at the right time."				
Strongly disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Strongly agree
Tina experienced a barrier to her previous career plan.				
Strongly disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Strongly agree
An injury or health problem influenced Tina's career.				
Strongly	Somewhat	Neither agree nor	Somewhat	Strongly

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How do chance and uncertainty influence the career development of adults?

Qualtrics Survey Software

disagree	disagree	disagree	agree	agree
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Unplanned influence of family influenced Tina's career.

Strongly disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Strongly agree
-------------------	-------------------	----------------------------	----------------	----------------

David

Chance events are 'unplanned events (e.g. accidental or unintentional events; or involve being in the right place at the right time or the wrong place at the wrong time) that have an impact on careers'.

Story 3 - David
Well I got into my primary field – Immigration - I got into that simply because I'd been in Tokyo for a year at the embassy. I was on a secondment there. The guy replacing me came from Immigration so I got his job back in Canberra. They needed somebody quickly and I was free. And it was a good job and a great field to get into. I've been with that ever since.

A chance event influenced David's decision to change jobs.

Strongly disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Strongly agree
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An unplanned personal or work relationship influenced David's career change.

Neither

[https://acu.qualtrics.com/ControlPanel/Ajax.php?action=GetSurveyPrintPreview\[6/08/2017 8:26:04 PM\]](https://acu.qualtrics.com/ControlPanel/Ajax.php?action=GetSurveyPrintPreview[6/08/2017 8:26:04 PM])

How do chance and uncertainty influence the career development of adults?

Qualtrics Survey Software

Strongly disagree	Somewhat disagree	agree nor disagree	Somewhat agree	Strongly agree
An unexpected opportunity influenced David's change of career.				
Strongly disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Strongly agree
You could say David was in the "right place at the right time."				
Strongly disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Strongly agree
David experienced a barrier to his previous career plan.				
Strongly disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Strongly agree
An injury or health problem influenced David's career.				
Strongly	Somewhat	Neither agree nor	Somewhat	Strongly

[https://acu.qualtrics.com/ControlPanel/Ajax.php?action=GetSurveyPrintPreview\[6/08/2017 8:26:04 PM\]](https://acu.qualtrics.com/ControlPanel/Ajax.php?action=GetSurveyPrintPreview[6/08/2017 8:26:04 PM])

How do chance and uncertainty influence the career development of adults?

Qualtrics Survey Software

disagree

disagree

disagree

agree

agree

Unplanned influence of family influenced David's career.

Strongly
disagree

Somewhat
disagree

Neither
agree
nor
disagree

Somewhat
agree

Strongly
agree

Sandra

Chance events are 'unplanned events (e.g. accidental or unintentional events; or involve being in the right place at the right time or the wrong place at the wrong time) that have an impact on careers'.

Story 4 - Sandra

You know I've basically lived with my parents all through Uni. I get this transfer, and I'm living on my own in a country town with 6,000 people, where you're six hours drive west of Sydney, and the nearest town is Lismore which is two hours east. It was a challenge!

It was incredibly difficult. So I can't say that it was the best time of my life. All my friends and my partner were in Sydney. I don't make friends altogether that easily. So for six months it was OK, but when the GFC happened, we heard that the project was slowing down. We were all fully mobilised for 2008, which is when the GFC hit. At the time management was saying, 'No, no we're still going ahead. This is the plan. We're employing additional people. We'll get it done.'

You arrive and you find, No! Things are slowing down. By January 2009 things were really slowing down. It's no wonder I resigned and found a job back in Sydney.

A chance event influenced Sandra's decision to change jobs.

Strongly
disagree

Somewhat
disagree

Neither
agree
nor
disagree

Somewhat
agree

Strongly
agree

[https://acu.qualtrics.com/ControlPanel/Ajax.php?action=GetSurveyPrintPreview\[6/08/2017 8:26:04 PM\]](https://acu.qualtrics.com/ControlPanel/Ajax.php?action=GetSurveyPrintPreview[6/08/2017 8:26:04 PM])

How do chance and uncertainty influence the career development of adults?

Qualtrics Survey Software

An unplanned personal or work relationship influenced Sandra's career change.

Strongly disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Strongly agree
-------------------	-------------------	----------------------------	----------------	----------------

An unexpected opportunity influenced Sandra's change of career.

Strongly disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Strongly agree
-------------------	-------------------	----------------------------	----------------	----------------

You could say Sandra was in the "right place at the right time."

Strongly disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Strongly agree
-------------------	-------------------	----------------------------	----------------	----------------

You could say Sandra was in the "wrong place at the wrong time."

Strongly	Somewhat	Neither agree nor	Somewhat	Strongly
----------	----------	-------------------	----------	----------

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How do chance and uncertainty influence the career development of adults?

Qualtrics Survey Software

	disagree	disagree	disagree	agree	agree
Sandra experienced a barrier to her previous career plan.					
	Strongly disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Strongly agree
An injury or health problem influenced Sandra's career.					
	Strongly disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Strongly agree
Unplanned influence of family influenced Sandra's career.					
	Strongly disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Strongly agree
Dan					
Chance events are 'unplanned events (e.g. accidental or unintentional events; or involve being in the right place at the right time or the wrong place at the wrong time) that have an impact on careers'.					

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How do chance and uncertainty influence the career development of adults?

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Story 5 - Dan

I reasonably quickly developed an ability to manage contracts. I was doing contract management, business management and contract writing. I very quickly became a jack of all trades in the consulting area. And the chance event which changed me from the business area across to human resources was that the principal consultant in Human Resources took leave and left me to cover for her for several weeks.

She left me in charge of about 25 projects that she was working on.

And I found I enjoyed the behavioural science aspect. There's much more human assessment when you're in HR. And it's not so much just throwing budgets at things as a fix. There is a lot more subtlety, finding complementary skills and fostering team building.

I'm very much motivated by people and relationships. The change gave me more intrinsic satisfaction than I was getting.

One of our major clients toward the end of that period was the Commonwealth Bank and they had effectively seconded me to assist with a major initiative. Then their HR manager retired and the Sydney team tapped me on the shoulder and said, 'Come across to Commbank and do the job'. So that's how I got to be here.

A chance event influenced Dan's decision to change jobs?

Strongly disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Strongly agree
-------------------	-------------------	----------------------------	----------------	----------------

An unplanned personal or work relationship influenced Dan's career change.

Strongly disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Strongly agree
-------------------	-------------------	----------------------------	----------------	----------------

An unexpected opportunity influenced Dan's change of career.

Neither agree

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How do chance and uncertainty influence the career development of adults?

Qualtrics Survey Software

Strongly disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Strongly agree
You could say Dan was in the "right place at the right time."				
Strongly disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Strongly agree
Dan experienced a barrier to his previous career plan.				
Strongly disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Strongly agree
An injury or health problem influenced Dan's career.				
Strongly disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Strongly agree
Unplanned influence of family influenced Dan's career.				
Strongly	Somewhat	Neither agree nor	Somewhat	Strongly

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How do chance and uncertainty influence the career development of adults?

Qualtrics Survey Software

disagree disagree disagree agree agree

Paula

Chance events are 'unplanned events (e.g. accidental or unintentional events; or involve being in the right place at the right time or the wrong place at the wrong time) that have an impact on careers'.

Story 6 - Paula

My mother was diagnosed with cancer and my father decided to leave our hotel business to care for mum. Just before mum's illness, my brother, Simon, and dad had decided to buy another hotel at Bateman's Bay, 200 km away. Simon had moved there with his family and he had his hands full there. It was all a bit overwhelming for the family. The lucky part was I was still in my mid-twenties. I was in Sydney in a small accounting firm, but with no real ties there at that stage.

So, I went to my boss and said would she mind my taking six months leave? That way, I could move back home to help them out and get the business restructured.

I took six months leave and within three or four months, we were able to turn the hotel around. It was a good little business and I found I liked it. So eventually, I decided to stay.

A chance event influenced Paula's decision to change jobs?

Strongly disagree Somewhat disagree Neither agree nor disagree Somewhat agree Strongly agree

An unplanned personal or work relationship influenced Paula's career change.

Strongly disagree Somewhat disagree Neither agree nor disagree Somewhat agree Strongly agree

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How do chance and uncertainty influence the career development of adults?

Qualtrics Survey Software

An unexpected opportunity influenced Paula's change of career.

Strongly disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Strongly agree
-------------------	-------------------	----------------------------	----------------	----------------

You could say Paula was in the "right place at the right time."

Strongly disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Strongly agree
-------------------	-------------------	----------------------------	----------------	----------------

Paula experienced a barrier to her previous career plan

Strongly disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Strongly agree
-------------------	-------------------	----------------------------	----------------	----------------

An injury or health problem influenced Paula's career.

Strongly disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Strongly agree
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Unplanned influences of family influenced Paula's career.

		Neither agree		
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How do chance and uncertainty influence the career development of adults?

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Strongly disagree Somewhat disagree nor disagree Somewhat agree Strongly agree

Thank you for your participation in this survey. End of Questionnaire

Please contact support@surveyz.com if you have any questions regarding this survey.

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Appendix H Vignettes Survey 4

Vignette	Topic	Text
1	Airport	My wife and I were at the airport. Our plane was delayed and we went for a drink. I met a former neighbour in the bar and he said he was looking for an IT technician. He ended up making me an attractive offer and a month later and I took it up.
2	Play	The play was about to start. And still no Roberta. We were without our second lead. I wasn't even an understudy really, but the director turned to me to fill in. What else could I do? And yet looking back, that was my first lucky break. Somehow, we got through that night and things just got better from there. That was really the start of my solo career.
3*	Walk & Coffee	I went for a walk, had a coffee with friends, and then went home.
4	Cerebral Palsy	My youngest son was born with cerebral palsy. He needed regular therapy. I had to work reasonably flexible hours, part time, close to home.
5	Other Job	When I went for the interview they actually offered me a different job that they hadn't even advertised. It was a full-time job. Better pay and more challenging. So I was quite surprised and happy to take it.
6	NHA Ph Call	I got a phone call from a girl who I'd worked with at the National Health Authority. I'd worked with her on a particular issue and she said 'We're recruiting and we would really like you to apply.'
7	RPRT	I happened to be available when somebody else resigned. His position had to be replaced immediately. I just happened to be available and ready. I was in the right place at the right time.
8*	Red Cross	I had been reading for 30-40 minutes when the doorbell rang. It was two kids from the neighbourhood collecting for Red Cross. I gave them some change and continued reading.
9	Fed Transport	There was a new federal government policy being developed for long-distance transport. And a bloke I known rang me up sounded me out about working with them. He said, 'We'd like you to come and work with us.' But the call came totally out of the blue.
10	Realization	The interviews started and suddenly I realised, 'I don't want to do this any more!'

How do chance and uncertainty influence the career development of adults?

Vignette	Topic	Text
11	Health Area	I was doing a short course in floristry - and I sat next to a guy who worked in a hospital. We were talking about work and he said, 'Oh with your training background you should consider the health area because they do quite a lot of work like that. Have a look at some of their websites.' I think he might have even said 'Have a look at St Vincent's Hospital website.'
12	Redundancy	Rick, who was my boss and had been very supportive, said, 'Olga, this project is ending at the end of the year. You can stay on if you like, but I can arrange redundancy. Would you like package?' And I didn't know what I was going to do at that stage and I thought, 'This is a pretty good opportunity. My parents are pretty elderly and this will give me more free time help them.' So I took a redundancy and it worked out well.
13	Pediatrics	A very good friend of mine decided to quit osteopathy and go to primary teaching. So her workplace had a lot of difficulty finding a replacement for her and said to her, 'Is there anyone you know wanting to work in the pediatric field?' She just came to me. Because I think she knew that my end goal in getting into 'osteo' was to work with kids in some way.
14	Heart Attack	I'd been feeling a bit run down and been to the doctor and got some medication and I thought I was just tired and run down. Then, at my son's footy match, I had a heart attack. It turned my life up-side-down.
15	Emigrate	Suddenly my widowed mother decided to emigrate from Hungary to Australia to join her sisters. I was only 17 at the time and I had no choice. I had to come.
16	Scholarship	I had in mind to do some computer training because I thought that would help me into business. And through sheer good luck really, a friend said, 'There's this scholarship going in Vic Roads for people doing this course. I don't know if they consider an outsider.' She gave them my CV, and then out of the blue, I got this call I was still in my other job.
17	Grandad	We were on holidays with my grandparents when I was about 15. I had long talk with grandad about growing up and what I might do in the future. And he was talking through the sorts of things that I could possibly do as a career when I got older. And from that conversation within 3 or 4 weeks, I had researched universities; I had researched courses, and I had decided I wanted to do an accountancy course at University.
18	Low Birth rate	I think I was lucky to be born in a time when there was a low birth rate in the 1930s in the depths of the depression. So there wasn't the competition for jobs there is now.

How do chance and uncertainty influence the career development of adults?

Vignette	Topic	Text
19	Amateurs Help	Well there happened to be a talk organized by this Extension Committee at Monash University on Australian Archaeological sites. I happened to find out about it and went along to listen. Then the speaker said they were trying to get as much recorded as possible before it's too late and amateurs can help with this recording. So that's how I got involved.
20	Wedding	They'd appointed this person and then, at the last minute, she decided to stay in New Zealand and get married. So I got her job.

Appendix I Survey 4

Qualtrics Survey Software



Incentive & Closure

1.1.

Dear respondent,

Welcome to my survey. I appreciate your interest and support.

Please find here the [Signed ethics approval statement](#).

Please click the arrows to continue with the survey.

Sincerely,

Gerard Torpy

PhD Candidate

Survey 2 Profile

2.1. Please click on the appropriate choice in the following boxes

Female

Male

2.2. What year were you born?

How do chance and uncertainty influence the career development of adults?

Qualtrics Survey Software

2.3. In which country were you born?

2.4.

Please indicate your approximate Net Income in the 2014 - 2015 Tax year
(Optional, based on current tax rates)

- \$0 - \$37,000
 - \$37,001 - \$80,000
 - \$80,001 - \$180,000
 - Over \$180,000
 - Prefer to skip
-

2.5.

Please indicate your highest level of Education or Training:

- Secondary School
 - TAFE Certificate or Diploma
 - Apprenticeship
 - On the Job training
 - University - Degree
 - University - Post Graduate
 - Other
-

2.6. What is your current work status?

- Employed - Full-time work
- Employed - Part-time work
- Self-employed

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How do chance and uncertainty influence the career development of adults?

Qualtrics Survey Software

- -
 -
 - Retired
 - Volunteer
 - Other (Please detail)
-

2.7.

With reference to career development, chance events can be described as '**unplanned events** (e.g. accidental or unintentional events; or involve being in the right place at the right time or the wrong place at the wrong time) that have an impact on careers'.

The following section has twenty separate statements.

Please read the statements and then indicate if you think the statement represents an unplanned 'event or encounter' that would have an impact on career development and behaviour.

Three options - 'Yes', 'No', or 'Unsure' - are offered for each statement.

Thank-you
Gerard Torpy

PhD Student

Block 3

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How do chance and uncertainty influence the career development of adults?

Qualtrics Survey Software

3.1.

'unplanned events (e.g. accidental or unintentional events; or involve being in the right place at the right time or the wrong place at the wrong time) that have an impact on careers'.

Scenario

My wife and I were at the airport. Our plane was delayed and we went for a drink. I met a former neighbour in the bar and he said he was looking for an IT technician. He ended up making me an attractive offer and a month later I took it up.

Is this a chance event impacting on career development?

Yes

No

Unsure

3.2.

'unplanned events (e.g. accidental or unintentional events; or involve being in the right place at the right time or the wrong place at the wrong time) that have an impact on careers'.

Scenario

The play was about to start. And still no Roberta. We were without our second lead. I wasn't even an understudy really, but the director turned to me to fill in. What else could I do? And yet looking back, that was my first lucky break. Somehow, we got through that night and things just got better from there. That was really the start of my solo career.

Is this a chance event impacting on career development?

» Yes

» No

» Unsure

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How do chance and uncertainty influence the career development of adults?

Qualtrics Survey Software



3.3.

'unplanned events (e.g. accidental or unintentional events; or involve being in the right place at the right time or the wrong place at the wrong time) that have an impact on careers'.

Scenario

I went for a walk, had a coffee with friends, and then went home.

Is this a chance event impacting on career development?

» Yes



» No



» Unsure



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How do chance and uncertainty influence the career development of adults?

Qualtrics Survey Software

3.4.

'unplanned events (e.g. accidental or unintentional events; or involve being in the right place at the right time or the wrong place at the wrong time) that have an impact on careers'.

Scenario

My youngest son was born with cerebral palsy. He needed regular therapy. I had to work reasonably flexible hours, part time, close to home.

Is this a chance event impacting on career development?

» Yes

» No

» Unsure

3.5.

'unplanned events (e.g. accidental or unintentional events; or involve being in the right place at the right time or the wrong place at the wrong time) that have an impact on careers'.

Scenario

When I went for the interview they actually offered me a different job that they hadn't even advertised. It was a fulltime job. Better pay and more challenging. So I was quite surprised and happy to take it.

Is this a chance event impacting on career development?

» Yes

» No

» Unsure

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How do chance and uncertainty influence the career development of adults?

Qualtrics Survey Software



3.6.

'unplanned events (e.g. accidental or unintentional events; or involve being in the right place at the right time or the wrong place at the wrong time) that have an impact on careers'.

Scenario

I got a phone call from a girl who I'd worked with at the National Health Authority. I'd dealt with her on a particular issue and she said 'We're recruiting and would really like you to apply.'

Is this a chance event impacting on career development?

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How do chance and uncertainty influence the career development of adults?

Qualtrics Survey Software

» Yes

» No

» Unsure

3.7.

'unplanned events (e.g. accidental or unintentional events; or involve being in the right place at the right time or the wrong place at the wrong time) that have an impact on careers'.

Scenario

I happened to be available when somebody else resigned. His position had to be replaced immediately. I just happened to be available and ready. I was in the right place at the right time.

Is this a chance event impacting on career development?

» Yes

» No

» Unsure

[https://acu.qualtrics.com/ControlPanel/Ajax.php?action=GetSurveyPrintPreview\[6/08/2017 8:31:57 PM\]](https://acu.qualtrics.com/ControlPanel/Ajax.php?action=GetSurveyPrintPreview[6/08/2017 8:31:57 PM])

How do chance and uncertainty influence the career development of adults?

Qualtrics Survey Software

3.8.

'unplanned events (e.g. accidental or unintentional events; or involve being in the right place at the right time or the wrong place at the wrong time) that have an impact on careers'.

Scenario

I had been reading for 30-40 minutes when the doorbell rang. It was two kids from the neighbourhood collecting for Red Cross. I gave them some change and continued reading.

Is this a chance event impacting on career development?

» Yes

» No

» Unsure

3.9.

'unplanned events (e.g. accidental or unintentional events; or involve being in the right place at the right time or the wrong place at the wrong time) that have an impact on careers'.

Scenario

There was a new federal government policy being developed for long distance transport. And a bloke I'd known rang me up and sounded me out about working with them. He said, 'We'd like you to come and work with us.' But the call came totally out of the blue.

Is this a chance event impacting on career development?

» Yes

» No

» Unsure

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3.10.

'unplanned events (e.g. accidental or unintentional events; or involve being in the right place at the right time or the wrong place at the wrong time) that have an impact on careers'.

Scenario

The interview started and suddenly I realized, 'I don't want to do this anymore!'

Is this a chance event impacting on career development?

» Yes

» No

» Unsure

3.11.

'unplanned events (e.g. accidental or unintentional events; or involve being in the right place at the right time or the wrong place at the wrong time) that have an impact on careers'.

Scenario

I was doing a short course in floristry - and I sat next to a guy who worked in a hospital. We were talking about work and he said, 'Oh with your training background you could consider the health area because they do quite a lot of work like that. Have a look at some of their websites.' I think he might have even said 'Have a look at St Vincent's Hospital website.' If I hadn't sat next to him I might never have thought of working in health.

Is this a chance event impacting on career development?

» Yes

» No

» Unsure

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3.12.

'unplanned events (e.g. accidental or unintentional events; or involve being in the right place at the right time or the wrong place at the wrong time) that have an impact on careers'.

Scenario

Rick, who was my boss and had been very supportive, said, 'Olga, this project is ending at the end of the year. You can stay on if you like, but I can arrange a redundancy. Would you like a package?'

And I didn't know what I was going to do at that stage and I thought, 'This is a pretty good opportunity. My parents are pretty elderly and this will give me more free time to help them.' So I took a redundancy and it worked out well.

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Is this a chance event impacting on career development?

» Yes

» No

» Unsure

3.13.

'unplanned events (e.g. accidental or unintentional events; or involve being in the right place at the right time or the wrong place at the wrong time) that have an impact on careers'.

Scenario

A very good friend of mine decided to quit osteopathy and go into primary teaching. So her work place had a lot of difficulty finding a replacement for her and said to her, 'Is there anyone you know wanting work in the pediatric field?'

She just came to me. Because I think she knew that my end goal in getting into 'osteo' was to work with kids in some way.

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How do chance and uncertainty influence the career development of adults?

Qualtrics Survey Software

Is this a chance event impacting on career development?

» Yes

» No

» Unsure

3.14.

'unplanned events (e.g. accidental or unintentional events; or involve being in the right place at the right time or the wrong place at the wrong time) that have an impact on careers'.

Scenario

I'd been feeling just a bit run down and been to the doctor and got some medication and I thought I was just tired and run down. Then, at my son's footy match, I had a heart attack. It turned my life up-side-down.

Is this a chance event impacting on career development?

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How do chance and uncertainty influence the career development of adults?

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» Yes

» No

» Unsure

3.15.

'unplanned events (e.g. accidental or unintentional events; or involve being in the right place at the right time or the wrong place at the wrong time) that have an impact on careers'.

Scenario

Suddenly my widowed mother decided to emigrate from Hungary to Australia to join her sisters. I was only 17 at the time and I had no choice. I had to come.

Is this a chance event impacting on career development?

» Yes

» No

» Unsure

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3.16.

'unplanned events (e.g. accidental or unintentional events; or involve being in the right place at the right time or the wrong place at the wrong time) that have an impact on careers'.

Scenario

I had in mind to do some computer training because I thought that would help me into business. And through sheer good luck really, a friend said, 'There's this scholarship going in Vic Roads for people doing this course. I don't know if they'd consider an outsider.' She gave them my CV, and then out of the blue, I got this call while I was still in my other job.

Is this a chance event impacting on career development?

» Yes



» No



» Unsure



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3.17.

'unplanned events (e.g. accidental or unintentional events; or involve being in the right place at the right time or the wrong place at the wrong time) that have an impact on careers'.

Scenario

We were on holidays with my grandparents when I was about 15. I had a long talk with grandad about growing up and what I might do in the future. And he was talking through the sorts of things that I could possibly do as a career when I got older.

And from that conversation within 3 or 4 weeks, I had researched universities; I had researched courses, and I had decided I wanted to do an accountancy course at University.

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Is this a chance event impacting on career development?

» Yes

» No

» Unsure

3.18.

'unplanned events (e.g. accidental or unintentional events; or involve being in the right place at the right time or the wrong place at the wrong time) that have an impact on careers'.

Scenario

I think I was lucky to be born at a time when there was a low birth rate in the 1930's in the depths of the depression. So there wasn't the competition for jobs there is now.

Is this a chance event impacting on career development?

» Yes

» No

» Unsure

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3.19.

'unplanned events (e.g. accidental or unintentional events; or involve being in the right place at the right time or the wrong place at the wrong time) that have an impact on careers'.

Scenario

Well there happened to be a talk organised by this Extension Committee at Monash University on Australian Archaeological sites. I happened to find out about it and went along to listen.

Then the speaker said they were trying to get as much recorded as possible before it's too late and amateurs can help with this recording. So that's how I got involved.

Is this a chance event impacting on career development?

» Yes



» No



» Unsure



[https://acu.qualtrics.com/ControlPanel/Ajax.php?action=GetSurveyPrintPreview\[6/08/2017 8:31:57 PM\]](https://acu.qualtrics.com/ControlPanel/Ajax.php?action=GetSurveyPrintPreview[6/08/2017 8:31:57 PM])

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3.20.

'**unplanned events** (e.g. accidental or unintentional events; or involve being in the right place at the right time or the wrong place at the wrong time) **that have an impact on careers**'.

Scenario

They'd appointed this person and then, at the last minute, she decided to stay in New Zealand and get married. So I got her job.

Is this a chance event impacting on career development?

» Yes



» No



» Unsure



[https://acu.qualtrics.com/ControlPanel/Ajax.php?action=GetSurveyPrintPreview\[6/08/2017 8:31:57 PM\]](https://acu.qualtrics.com/ControlPanel/Ajax.php?action=GetSurveyPrintPreview[6/08/2017 8:31:57 PM])

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Block 4

4.1.

Thank you for your participation in this survey.

End of Questionnaire.

Please contact support@surveyz.com if you have any questions regarding this survey.

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Appendix J **Handout – most common categories of chance events**

An injury or health problem

A personal or work relationship

Barriers to your previous career plan

Being in the right place at the right time

Influences of family

Unexpected opportunity

Appendix K ACU Ethics Approval



ACU|education
Transforming learning communities

TITLE OF PROJECT: The impact of chance events on the career development of adults

SUPERVISOR: Professor Jim Bright

STUDENT RESEARCHER: Mr Gerard Torpy

PROGRAMME IN WHICH ENROLLED: Doctor of Education

Dear Participant,

You are invited to participate in a research study into the impact of chance events in the career development of adult workers. This research will explore the frequency of chance events influencing careers of adults and the range and level of impact of these chance events on people.

Those agreeing to be involved in this research will be asked to complete an online survey. An online link is provided for this purpose. Questions are arranged in sections with most answers requiring a yes/no response or a selection from five alternatives which are offered. Some questions allow for a free response. The survey will take about 20 minutes to complete. Phase two of the research involves a one hour interview with the researcher. This face to face interview will be recorded and a written report of the interview will be forwarded to the interviewee for review and confirmation of its accuracy. Verification of the original interview will occur during a second interview - which may be via phone, email or face to face - as arranged between the researcher and participant at the time.

Interviewees will benefit from involvement in this research by gaining a clearer insight into the impact of chance events which have affected their career path. This evidence will be useful to career counsellors, other researchers and members of the public. It is likely to feed into the strategies and teaching processes used with students in the development of their career awareness and career planning. The findings from this research are likely to be shared with professional groups in professional journals and/or in a professional conference.

The research involves no foreseeable risks, inconvenience (other than allocation of time to the research tasks), or discomfort to the participant. Participants in this research are free to refuse consent altogether without having to justify that decision, or to withdraw consent and discontinue participation in the study at any time without giving a reason.

The confidentiality of each participant will be protected at all times. The researcher will use a code enabling the data from the survey and the interviews to be re-identifiable. Only the researcher and principal supervisor will have access to this code. Original records of survey responses will be labelled and stored securely at ACU Strathfield. All interviews will be recorded and the original of the recording backed up to external drives that will be kept in a locked drawer in Prof. Jim Bright's office at ACU Strathfield. Publication of data will be restricted to aggregated data only. No identifiable material will be published.

School of Education NSW
25a Barker Road, Strathfield NSW 2135
Locked Bag 2002 Strathfield NSW 2135
T: (02) 9701 4000 **M:** 0435 300 261 **F:** (02) 9701 4034 **E:** gtorp001@myacu.edu.au

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How do chance and uncertainty influence the career development of adults?



ACU|education
Transforming learning communities

Any questions regarding this project should be directed to the Supervisor or the Student Researcher:

SUPERVISOR: Professor Jim Bright
(02) 9701 4000
School of Education
Australian Catholic University, Mount St Mary Campus,
25A Barker Rd Strathfield, NSW, 2135

STUDENT RESEARCHER: Mr Gerard Torpy
(03) 9523 5228
School of Education
Australian Catholic University, St Patrick's Campus,
115 Victoria Parade, Fitzroy, VIC, 3065.

A summary report of the survey will be provided to participants on the results of phase one of the project. Those participants who are involved in the interviews will receive a detailed report of the interview.

This study has been approved by the Human Research Ethics Committee at Australian Catholic University. (ETHICS REGISTER NUMBER: 2012 233N) In the event that you have any complaint or concern, or if you have any query that the Supervisor and Student Researcher have not been able to satisfy, you may write to the Chair of the Human Research Ethics Committee care of the Research Services Office.

Chair, HREC
C/- Research Services
Australian Catholic University
North Sydney Campus
PO Box 968
NORTH SYDNEY NSW 2059
Tel: 02 9739 2105
Fax: 02 9739 2870

Any complaint or concern will be treated in confidence and fully investigated. The participant will be informed of the outcome.

If you agree to participate in this project, your completion of the online survey will be taken as consent. If you then agree to be interviewed, two copies of the Consent form will be forwarded to you. You should sign both copies of the Consent form, retain one copy for your records and return the other copy to the Supervisor or Student Researcher in the envelop provided.

Principal Investigator (or Supervisor)

Student Researcher

School of Education NSW
25a Barker Road, Strathfield NSW 2135
Locked Bag 2002 Strathfield NSW 2135
T: (02) 9701 4000 **M:** 0435 300 261 **F:** (02) 9701 4034 **E:** gtorp001@myacu.edu.au

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Appendix L 2012 233N Ethics Approved

2012 233N Extension approved

MP

Ms Pratigya Pozniak <pratigya.pozniak@acu.edu.au>

Reply all |

Tue 17/01, 5:32 AM

Prof Jim Bright <jim.bright@acu.edu.au>;

Gerard Torpy;

...

+1 more

Dear James Edward Harold,

Ethics Register Number : 2012 233N

Project Title : The impact of uncertainty and chance events on the career development of adults

Data Collection Date Extended : 1/08/2017

Thank you for returning the Ethics Progress Report for your project.

The Deputy Chair of the Human Research Ethics Committee has approved your request to extend the project. The new expiry date for the project is the 1/08/2017 .

We wish you well in this ongoing project.

Kind regards,

Ms Pratigya Pozniak

Research Ethics Officer | Office of the Deputy Vice-Chancellor (Research)

Australian Catholic University

T: 02 9739 2646 E: res.ethics@acu.edu.au

THIS IS AN AUTOMATICALLY GENERATED RESEARCHMASTER EMAIL

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