Pilot study to determine the feasibility of early interventions for ED attendees who present with moderate and high levels of psychological distress

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Candidate's statement of sources

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Abstract

Background

Mental health problems result in high levels of morbidity and mortality and impose high societal costs. Population surveys have not only revealed an increasing prevalence of mental illness and sub threshold levels of psychological distress within the community; but also, relatively consistent and unimproved levels of treatment-seeking behaviours. This unmet need for mental health interventions represents an important public health issue for global health care systems. The Emergency Department (ED) represents an ideal access point for hard to reach individuals and can be seen as a gateway to mental health services, particularly for individuals whom are not seeking treatment for such issues. However, if populations with sub threshold symptoms of mental illness can be routinely screened and targeted during opportunistic presentations, then interventions can be offered to help alleviate distress. Ultimately, this would be beneficial in the long term for the individual, their families and the community as a whole; due to the high costs associated with mental health issues.

Aim

This study aimed to use a novel approach for mental health treatment, by offering telephone-delivered Motivational Interviewing (MI) to ED attendees with moderate to high levels of psychological distress. The intervention focussed on ED attendees who were *not* seeking treatment for mental health problems, with the intention to encourage and motivate them to seek further assistance.

Methods

This study was undertaken in two phases: The first phase comprised a survey of ED attendees over a 24-hour / 2-week time period, to measure the prevalence of psychosocial distress, and to inform the intervention phase of the study. The second phase involved screening ED attendees, using the Kessler Psychological Distress Scales (K10), to identify those with moderate to high levels of psychological distress. Participants were randomised into either a low stress group, or a moderate to high stress group which comprised a control and intervention group (3 arms in total). The intervention was delivered by telephone MI and comprised 2 to 4 sessions of up to one hour, as determined by the participant's needs. Success of the intervention was determined if / when participants actively sought help from their General Practitioner (GP) for their mental health issue. Other measures included the MI effect on psychological distress; with participant follow up conducted at 1, 3, 6 and 12 months, post recruitment.

Results

Overall, the intervention group reported less psychological distress over the 12-month follow up period, although the intervention's aim to increase GP access was ultimately unsuccessful. However, men in the intervention group did report a statistically significant reduction in depression symptoms, with significant effects lasting up to 12 months. The MI intervention delivered by telephone was deemed acceptable for males, with 80% reporting satisfaction for the MI delivered by telephone.

Discussion

For the treatment of mental health issues, men represent a generally hard to access population with lower attendance of health appointments when compared to women; nor do they perceive the need for mental health treatment as easily as women. The telephone intervention utilised in this study was accepted by the male non-treatment seeking sample and suggests that men's treatment needs may be different to that of women's. As such, it may be necessary to explore male-centred models of care that cater exclusively to this gender. Aside from being a crisis service for mental health, the ED also offers a controlled environment for opportunistic health service presentations, where interventions for the promotion of mental health appears to be currently underutilised. The systematic screening of ED attendees can help identify individuals with underlying sub threshold levels of mental ill-health and appears to be particularly useful for patients whom are hard to access due to suboptimal treatment seeking behaviours.

Conclusion

Overall, this study suggests that telephone-based MI represents a feasible and flexible option to help alleviate psychological distress among non-treatment seeking populations. Early detection and targeted interventions that can help prevent the progression of psychological distress are clearly desirable for this vulnerable and hard to access subpopulation. The current study also suggests that screening and delivering early interventions offer a cost-effective method to help reduce the progression of psychological distress symptoms and develop psychological resources for EDs of the future.
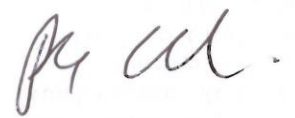
Statement of contribution to jointly published work

Statement of contribution for Chapter 3

Petra Lawrence	Overall contribution 70%. Performed search of the literature and data extraction. Analysis and interpretation of data. Drafted the article and revised it carefully for important content.	
Paul Fulbrook	Overall contribution 15%. Analysis and interpretation of data. Made critical revisions to draft version for important intellectual content.	

Shawn Somerset   Overall contribution 10%.

Analysis and interpretation of data. Made critical revisions to draft version for important intellectual content.

Paula Schulz   Overall contribution 5%.

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Statement of contribution for Chapter 6

Petra Lawrence	Overall contribution 85%. Critical revision of previous protocol. Wrote draft of article. Revision of draft.	
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Abbreviations

ABS   Australian Bureau of Statistics

AIHW   Australian Institute of Health and Welfare

CBT   Cognitive behavioural Therapy

CFA   Confirmatory Factor Analysis

CI   Confidence Interval

CIDI   Composite International Diagnostic Interview

DASS21   Depression Anxiety Stress Scales 21

DSM   Diagnostic Statistical Manual

ED   Emergency Department

EDIS   Emergency Department Information System

HREC   Human Research Ethics Committee

K10   Kessler psychological distress scales 10

KMO   Kaiser-Meyer-Olkin

MI   Motivational Interview

MIC   Motivational Interview Councillor

MINI   MINI International Neuropsychiatric Interview

NA   Negative Affect

NICE	National Institute for Health and Clinical Excellence
NMHWB	National Mental health and Wellbeing Survey
PA	Positive Affect
PAF	Principal Axis Factoring
PCA	Principal Components Analysis
RCT	Randomised controlled trial
RSMEA	Root Mean Square Error of Approximation
SCID	Structured Clinical Interview for DSM
SPSS	Statistical Package for the Social Sciences
WHO	World Health Organisation

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Presentations and articles associated with study

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Lawrence, P., Fulbrook, P., Somerset, S. & Schulz, P. (2017). Efficacy of motivational interviewing to enhance treatment attendance for people with mental ill-health: a systematic review and meta-analysis. *Journal of Psychiatric and Mental Health Nursing*, 24, 699-718.

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Conference presentations associated with the study

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Chapter 1. Introduction

1.1 Overview

Many individuals in the community are suffering from the effects of their psychological distress and behavioural disorders. World Health Organisation (WHO) global surveys, reveal that the lifetime prevalence for any mental illness ranges from 18% to 36%, while the 12 month prevalence ranges from 10% to 19% (Kessler et al., 2009). Symptoms of mental ill-health can range from mild symptoms which may not be noticeable to others, to serious symptoms; which have the greatest impact (Andrade et al., 2014). Mental illness can affect the way an individual interacts in the world around them, and can have health impacts in the short and long term due to increased risky health behaviours (Cuijpers and Smit, 2004). Generally, the more severe the symptoms of mental ill-health, the higher is the perception of treatment need (Cuijpers and Smit, 2004).

There are individuals who may not actively seek help for mental illness even when severe, or when symptoms are increasing in severity, due to various reasons and personal circumstances coloured by the negative thoughts and feelings, or stigma (Ratnasingham et al., 2013). These individuals not seeking treatment for mental health issues represent an important public health problem due to the associated burden caused by mental illness, in terms of financial costs to society, and increased costs to the individual due to increased morbidity and mortality risk (Christiana et al., 2000). Other than a serious diagnosable mental illness, there are also individuals in the community suffering from the effects of lower level symptoms of mental

illness (psychological distress, or sub-threshold symptoms) which can be almost as debilitating as serious symptoms (Karsten et al., 2013).

The outcomes of these conditions are certainly comparable considering the high prevalence of individuals with sub-threshold symptoms within the community, and studies have revealed that for some people, it is likely that these symptoms will ultimately progress to more serious levels of distress and perhaps a mental illness (Cuijpers and Smit, 2004). This situation affords an opportunity for interventions to help ameliorate the progression of symptoms, rather than waiting until symptoms are severe and then trying to reduce the psychological distress at that point.

Some research suggests that treatment seeking and accessing services for mental ill-health has remained relatively unchanged (Tankel et al., 2011), and generally speaking, mental health interventions tend to focus on individuals which already have a diagnosable mental illness (Bolier et al., 2013). Very little focus is given to those with sub-threshold symptoms, and this may no longer be a desirable option considering the possible symptom progression and high community prevalence. To improve health promotion and facilitate treatment seeking behaviours a novel approach is needed to identify appropriate settings and capture the target sample (in this case, individuals with sub-threshold psychological distress), with the ultimate goal of engaging them in treatment. Strategic screening and referral for treatment at opportunistic health service presentations is known to represent a feasible option in this regard (Kazdin and Rabbitt, 2013). One unexpected and opportunistic health service presentation for individuals is the hospital Emergency Department (ED), a location in which studies have revealed a high prevalence of underlying serious mental illness among patients (Perruche et al., 2011, Emerson et al., 2014).

1.2. Research problem

The sample of interest comprised individuals not seeking treatment for mental ill-health with a lower perceived need for treatment due to their lower expression of symptoms. However, studies have revealed individuals with moderate to high levels of distress, which will elevate to higher and more severe levels without intervention, causing further disability. Also, due to their low level of perceived need, would our target sample be willing to engage in an intervention? Due to the hectic nature of the ED, it is not feasible to conduct interventions at time of recruitment. Screening for mental ill-health will take place in the ED, with referral to other treatment taking place following discharge.

1.2.1 Research question

Is the ED a suitable environment to screen for mental ill-health, specifically for sub-threshold symptoms? Will this sample be willing to engage in a mental health intervention with long term follow up?

The study was developed in two phases, as follows:

Phase One was designed to measure the prevalence of mental ill-health in the ED by systematically screening all consenting adult ED attendees. This phase measured levels of psychological distress to determine the feasibility of the ED as a study site. The investigation and validation of an appropriate screening tool was also conducted. Two surveys which measure common symptoms of psychological distress, the Kessler Psychological Distress scale (K10) (Kessler et al., 2002), and the Depression Anxiety Stress scales (DASS-21) (Lovibond and Lovibond, 1995a), were used to determine their suitability as a screening tool in the ED

environment. The information collected from Phase One informed the protocol development for Phase Two.

Phase Two comprised a pilot study of a health promotion intervention. Consenting ED attendees were screened and individuals with sub threshold levels of psychological distress were identified using the K10. Those with moderate to high levels of distress were either randomly assigned to a motivational interview (MI) intervention delivered by telephone, or to a control group which involved standard ED treatment.

The decision to use the telephone as the intervention delivery method was informed by the systematic literature review and meta-analysis (Chapter 4), which revealed that a short intervention of MI for 15 minutes was sufficient to influence treatment-seeking behaviours.

This study investigated whether telephone interventions can facilitate behavioural change in a sample whom are not seeking treatment for mental ill-health, and motivate them to seek help. Other outcomes of interest included the interventions' effect on the individual's psychological distress levels, measured over a 12-month period.

1.3 Structure of the thesis

For clarity, the structure of this thesis is outlined in below, and brief descriptions of the chapters are provided.

1.3.1. Chapter 1

The Introduction and Overview, highlights the context of the research problem, and the research aims and objectives using non-technical language and concepts.

1.3.2. Chapter 2

The Literature Review further highlights issues and concepts in greater detail and is presented in a descriptive narrative style, thereby affording a greater understanding of the research problem, including the prevalence of mental ill-health in non-clinical samples, the burden of mental illness and sub threshold symptoms on the individual and on the community; as well as treatment seeking for mental ill-health. MI concepts are introduced and briefly discussed, with a more in-depth systematic review and meta-analysis regarding MI's efficacy as a pre-treatment being presented in Chapter 4.

1.3.3. Chapter 3

Chapter 3 represents the beginning of the Methods sections. In this chapter, the Theoretical Framework of the research is presented which provides in-depth description of the nature of mental health and mental illness, how emotions are influenced within the individual by various stressors, and the ways individuals respond to these influences. MI and other theoretical frameworks and concepts, such as the 'stages of change' model, and 'self-efficacy'

theory are described; as are the mechanisms of how MI counselling can influence motivation within individuals.

1.3.4. Chapter 4

Chapter 4 represents the beginning of published journal articles within the thesis. The detailed Systematic Review and Meta-analysis of MI as a pre-treatment have been submitted to peer reviewed journals for publication. The review's focus is on studies which use MI as a pre-treatment intervention, to motivate individuals to seek and / or to attend further therapies/counselling. Sub group meta-analysis consisted of samples which were seeking treatment for their mental ill-health, and those which were not seeing treatment for their mental ill-health. In context, this reflects the sample being sought – those presenting to the ED and not seeking treatment for mental illness, but rather where the individual is presenting with other primary complaints. In this review, there were no studies which had recruited participants from the ED. A majority of the studies targeted samples with diagnosed mental illness, or severe psychological distress, and only a few included individuals with moderate levels of psychological distress. Using treatment attendance post MI as an outcomes measure of MIs effectiveness, the sub group analysis demonstrated that MI was most effective with samples whom were not seeking treatment for their mental ill-health, and an intervention delivered by telephone for 15 minutes was shown to be sufficient to motivate treatment seeking.

1.3.5. Chapter 5

This Chapter provides validation of the Kessler Psychological Distress scale (K10), and the Depression Anxiety Stress Scales (DASS-21) as a screening tool in the ED setting, to measure the prevalence of psychological distress, and whether the ED is suitable as a setting for

screening of the target sample. Survey validity was measured using exploratory factor analysis to determine whether the survey was theoretically sound and congruent with known literature. Subjective measures were also used and involved the survey's ease of use and methods for scoring. The K10 was shown to be the most reliable tool for screening, being easy to use and score and highly comparable to other population data. After selection of the most appropriate survey tool, regression analysis further validated the K10 by exploring the surveys' high score category, and its relationship to clinical and demographic variables and comparing to what is known about mental illness and associated regression results. The K10 was shown to have high reliability and validity when measuring the characteristics of psychological distress.

1.3.6. Chapter 6

Chapter 6 describes the research methodology for Phase Two and was published in the journal, *Pilot and Intervention Studies*.

1.3.7. Chapter 7

Chapter 7 describes the study intervention, and the effectiveness of MI delivered by telephone. Outcomes were examined in terms of the sample (intervention vs control) seeking further treatment and support for psychological distress. The impact of intervention success was also measured by psychological distress at follow up periods of 1, 3, 6 and 12 months, and compared to the control group.

1.3.8. Chapter 8

Chapter 8 is presented as an overall Discussion and Conclusion. Results from the multiple statistical analyses are synthesised and discussed in terms of statistically significant findings. Overall, despite some limitations of the study design, the research revealed some important findings and directions for future investigations in the field of mental health.

Chapter 2. Literature review

2.1 Introduction

The following literature review comprises a scoping review to explore the phenomenon of mental illness. This chapter provides a detailed background to the problems regarding mental health, and provides data on the prevalence and severity of mental illness in terms of population prevalence, community costs, and access to treatment. There is also a brief introduction to MI. This section works in conjunction with Chapter 3, which discusses in detail, the theoretical framework of the MI intervention, and other related mental health concepts.

2.1.1. Incidence and burden of mental ill-health

The term 'mental health' refers to a wide spectrum of mental health problems and behavioural disorders, describing a dynamic state of emotions and behaviours. These emotions and behaviours fluctuate in both severity and duration during a person's life span, between mental wellness and serious mental illness. It also refers to an individual's potential ability of being able to work, develop strong healthy relationships with others, and to contribute to the society in which they live (Beddington et al., 2008). Mental illness includes high prevalence disorders such as anxiety and depression, or low prevalence disorders such as bipolar disorder and schizophrenia.

The cost of mental illness, or its 'burden', can be measured and takes into account the impact of the condition on the population, in terms of the loss of a healthy life from risk factors, morbidity and death (AIHW, 2016). Prior to the 1996 Global Burden of Disease study by the *World Health Organisation* (WHO), little was known of the large impact of mental illness on

the individual and society, with the study revealing that mental illness was widespread and costly, and that depressive disorders were a very large contributor to the global burden of disease; being the fourth leading cause of global disease burden and therefore, a major public health issue (Murray and Lopez, 1997). Currently, depressive disorders are the leading cause of disability (WHO, 2013, Ormel et al., 2008) and it has been estimated that the total world-wide financial burden of mental illness from 2011 to 2030 will be at least US$16.3 million, million (WHO, 2013).

Epidemiological surveys have revealed that women consistently experience significantly higher levels of anxiety and mood disorders, while men experience higher rates of externalising and substance abuse disorders (ABS, 2016b, Alonso et al., 2004a, Jacobi et al., 2004, Kessler et al., 2005b, Seedat et al., 2009a, Phillips et al., 2009, Kringlen et al., 2001, Wittchen et al., 1992, Oakley Browne et al., 2006, Serrano-Blanco et al., 2009). The gender differences which are apparent in the prevalence and types of mental illness experienced are due to the social and cultural context where one lives, and the differences in the types of stressors the individual experiences, their coping resources, and their opportunities for expressing the psychological distress that they experience (Rosenfield and Mouzon, 2013).

There are individuals in the community who may be currently free from a diagnosable mental illness but are still suffering from distress but at moderate and high levels, which impact their daily lives, in terms of thriving and self-worth (Keyes, 2007). These sub-threshold levels of mental illness still have a great impact when compared to individuals with low levels of psychological distress (Karsten et al., 2013) and studies have demonstrated that moderate levels of psychological distress have a high possibility of progressing to more serious psychological symptoms of mental illness (Cuijpers and Smit, 2004). However, despite the impact that mental illness has on individuals and society, only a small proportion of people with these conditions seek and receive any treatment (Ratnasingham et al., 2013) meaning

that there are many individuals within the community whom do not seek any help for their condition. Studies have shown that the perceived need for treatment is a barrier for seeking help, where individuals with lower levels of distress having a lower perceived need (Andrade et al., 2014). Other barriers for seeking help include the individuals personal beliefs and values regarding mental illness (Corrigan et al., 2006, Corrigan, 2014). The most common access point to treatment is a general practitioner, followed by psychologists; although individuals have to actively seek this engagement (Burgess et al., 2009).

The symptoms of mental illness an individual experiences affects their ability to relate to the world around them which may cause them significant distress, disability and other health consequences (ABS, 2011). Individuals with mental illness symptoms, when compared to the general population, have higher levels of risky health behaviours, increased health care utilization, and higher rates of morbidity and mortality (WHO, 2009, Australian Health Ministers, 2009). The WHO Mental Health Survey revealed that the life time prevalence for any mental illness, or serious symptoms of mental ill-health, ranges from 18.1% to 36.1%, while the 12-month prevalence ranges from 9.8% to 19.1%. The lifetime prevalence of serious anxiety symptoms average approximately 14.3%, while the 12-month prevalence is 8.3%. The life time prevalence of serious mood symptoms such as depression, was 5.1%, with a 12-month prevalence of 10.6% (Kessler et al., 2009).

Depressive conditions are most prevalent in high and middle income countries, being their leading cause of burden of disease, ahead of ischemic heart disease and cerebrovascular disease; while in low income countries, depression is the 8th leading cause of health burden (WHO, 2008). Mental illness symptoms usually begin in childhood with half of all lifetime cases starting by the age of 14 years, with 75% of lifetime cases beginning by 24 years (Kessler et al., 2005a). Mental illness is the most disabling illness and medical and psychosocial

treatments are not being utilised by the majority of people which would benefit. Treatments have been shown to be effective in treating mental illness symptoms, although there will always be some individuals who do not recover (Insel and Scolnick, 2006).

In Australia alone, mental illness represents 13% of the total disease burden (Begg et al., 2007) (fourth behind cardiovascular diseases; musculoskeletal diseases; and injuries) (AIHW, 2014c) comprising 24% of the burden of non-fatal disease (AIHW, 2007). Mental illness costs the Australian community approximately $20 billion dollars per year, which includes lost work productivity and work participation (ABS, 2011, COAG, 2006). The Australian National Survey of Mental Health and Wellbeing (NMHWB) 2007 revealed that almost half of the adult population aged 16 to 85 years (7.3 million) had experienced at least one episode of mental illness in their lifetime, and yearly, one in five adults are experiencing serious mental illness (ABS, 2007b). Low prevalence disorders such as major psychotic disorders (for example, schizophrenia) affect 0.45% of the Australian population. However, conditions such as anxiety and depression are highly prevalent. One in five, or 20% of adults (3.2 million) experienced mental illness in the previous year: 14% experienced an anxiety disorder, 6% experienced an affective disorder, and 5% had a substance abuse disorder (AIHW, 2015b), and 10% have experienced these symptoms in the previous 30 days (Slade et al., 2009a).

Mental disorders are not only defined by the serious symptoms of mental illness, but also in the lower levels of distress experienced by the individual. There are individuals within the community suffering from mild and moderate psychological distresses which are not at levels indicating a diagnosable disorder, but rather, 'sub-threshold' levels. Approximately three million people are suffering from some form of emotional and behavioural distress, but without the diagnosis of serious mental illness. Despite sub-threshold symptoms being less defined than diagnosable mental illness, they still pose a serious problem and can impair a

person's potential development, their opportunities in career and education, increases risk of the development of future mental illness (Druss et al., 2007, Pincus et al., 1999), increases levels of chronic physical disease, and poorer psychosocial functioning (Keyes, 2007).

Co-morbidity, or the co-occurrence of additional diseases or disorders, is also common between mental illness symptoms; where 38% (1.4 million people) which had experienced mental illness in the previous 12 months also experienced symptoms from another mental illness condition, such as anxiety, depression and/or substance use, which are the most common co-morbidities (ABS, 2011). Women had a higher prevalence of mental illness across all age groups when compared to men, with higher levels of anxiety (18% vs 11%, respectively), and depression (7% vs 5%, respectively). Prevalence rates are highest in the early adult years, with depression being the most common in youth aged from 16 years to 24 years, a rate which decreased with age (AIHW, 2015b). Men had higher prevalence of substance use disorders across all age groups (7% vs 3%, respectively) (ABS, 2015).

Australian men are three times more likely to drink at risky levels and to exceed the drinking guidelines when compared to women. Men had a greater lifetime risk (25.8% vs 9.3% respectively) with those in the 55 to 64 year age group at the most risk (ABS, 2015). Men are also more likely to binge drink when compared to females (56.8% vs 31.7% respectively), and adults between the ages of 18 to 24 years, especially young men, who are more likely to binge drink and consume alcohol at harmful levels on a single occasion, (69.4%). Women experienced similarly high levels of harmful single occasion drinking (60.6%) however females, in all age groups, do not have the high level of drinking that men display and their risk also decreases with age (ABS, 2015).

In Queensland, 18.6% (897,000) of individuals are affected by mental illness in any one year, including primary substance abuse conditions. Of those individuals experiencing mental

illness, 40.2% (492,213) experience mild symptoms, 20.5% (248,954) experience moderate symptoms and 12.5% (156, 300) are experiencing severe symptoms. Adults aged 15 to 64 years, had the highest prevalence of mental illness (74.4%, or 667,376 individuals), and children from the ages of 0 to 14 years (15.4%, or 138,623 individuals) had higher prevalence rates of mental illness than those over 65 years of age (10.2%, or 91,467 individuals) (Diminic et al., 2013).

2.1.2. Psychological distress

Despite individuals not experiencing symptoms of mental illness, the concept of psychological distress is an important consideration for treatment to help prevent these symptoms becoming more serious and the possible negative consequences involved. In Australia in 2011, for example, 25% of the population were experiencing moderate and high levels of psychological distress (18.4% and 7.4% respectively) (ABS, 2012a). Very high levels of psychological distress represents a very important issue and can indicate a possible diagnosable mental illness (Andrews and Slade, 2001). However, for individuals who may not reach diagnostic criteria for mental illness, their symptoms of distress may not be recognised in primary care or community settings (Rucci et al., 2003).

Psychological distress is a highly prevalent condition, and sub threshold levels of mental illness that do not meet diagnostic thresholds have been less well studied than the symptoms illness (Rodríguez et al., 2012, Rucci et al., 2003). The prevalence of sub-threshold mental illness is higher than that of diagnosable mental disorders (Horwath et al., 1992, Cuijpers et al., 2004, Preisig et al., 2001, Pietrzak et al., 2012, Demyttenaere et al., 2004, Karsten et al., 2011b, Haller et al., 2014, Grenier et al., 2011). Korten and Henderson (2000) found that sub-threshold levels of psychological distress were strongly associated with impaired social role

performance, and carried half the burden of missed days out of role compared with individuals with serious symptoms of mental illness. Sub-threshold symptoms of psychological distress has a smaller impact than serious mental illness, but still significant when compared to individuals not experiencing psychological distress (Rodríguez et al., 2012, Batelaan et al., 2007a, Karsten et al., 2013, Grenier et al., 2011), and because of its high prevalence, the impact on health is comparable (Cuijpers et al., 2013).

Sub-threshold psychological distress has been associated with decreased quality of life (Chachamovich et al., 2008, Goldney et al., 2004, Preisig et al., 2001, Rapaport and Judd, 1998, Fehm et al., 2008, Zlotnick et al., 2002), increased distress and depressive symptoms (Rucci et al., 2003), increased health care usage (Goldney et al., 2004, Rodríguez et al., 2012) and costs (Cuijpers et al., 2007a, Batelaan et al., 2007b), mortality (Cuijpers et al., 2013) and higher suicide risk (Bali and Jiloha, 2008). Individuals with symptoms of psychological distress are at a high risk of developing serious mental illness in the long and short term (Cuijpers and Smit, 2004, Cuijpers et al., 2004, Horwath et al., 1992, Pietrzak et al., 2012, Shankman et al., 2009, Haller et al., 2014, Paykel et al., 2006, Karsten et al., 2011a, Kennedy et al., 2004, Furukawa et al., 2008a, Fiedorowicz et al., 2011). In the presence of chronic psychosocial stressors, treatment of psychological distress can be beneficial in the long term, in reducing stress and suffering (Druss et al., 2007, Shankman et al., 2009, Demyttenaere et al., 2004, Kessler et al., 2003b) and might be cost effective (Demyttenaere et al., 2004, Kessler and Price, 1993, Karsten et al., 2011b, Fehm et al., 2008, Haller et al., 2014, Kessler et al., 2003b). Brief psychological treatments have been shown to be effective and may prevent the onset of major symptoms of mental illness (Cuijpers et al., 2007b).

2.1.3. Access to treatment

2.1.3.1 Emergency Department

Treatment for mental illness comes mainly from community based providers such as general practitioners and psychologists (Burgess et al., 2009). However, general practitioners may have limited training and experience, and also limited time to effectively deal with this type of presentation (Sharma et al., 2008). Data from the United States has reveal that individuals presenting with mental illness are a growing component of emergency department (ED) practice (Larkin et al., 2009) and data from Australian EDs also support this trend (Shafiei et al., 2011, Tankel et al., 2011).

The central principle of the Second National Mental Health Plan to 'mainstream' mental health services (Australian Health Ministers, 1998) has resulted in an increased number of individuals with mental illness symptoms presenting to Australian EDs (Shafiei et al., 2011, Happell et al., 2003). Statistics from Victoria show that mental illness presentations to its EDs has increased by 47%, compared with a 26% rise in non-mental health presentations (Shafiei et al., 2011). This mainstreaming process has significantly altered the way people access these services in Australia.

The ED is an environment that has a high number of attendees with underlying symptoms of mental illness and several European studies have assessed individuals with underlying common mental illness in their EDs. A single site French study systematically assessed five hundred consecutive ED patients and found that 38% of attendees had serious mental illness conditions, most commonly depression (42%) and anxiety (18%) (Saliou et al., 2005). In another single site French study, 339 consecutive ED patients were assessed for anxiety and depression, researchers found that 23% of attendees had anxiety and 47% had depression

(Perruche et al., 2011). A single site Italian study which also systematically screened consecutive ED attendees found that from 719 admissions 42% of patients had a serious diagnosable mental illness condition, with the most common being anxiety (18.1%) and depression (11.5%) (Marchesi et al., 2004).

From the United States, a single site study randomly sampled 275 ED attendees who presented with a physical injury to assess for current or historical serious mental illness conditions, 44.7% were found to have a positive psychiatric history or a current serious mental illness symptoms, with the most common being depression (47%) (Richmond et al., 2007). While in another single site US study, from the 211 consenting patients presenting to the ED with stable non-psychiatric conditions, 45% had undiagnosed serious mental illness symptoms, with the most common being depression (24%) and anxiety (9%) (Downey et al., 2012).

In another US observational study in an inner city ED, 55% of the 226 consenting patients screened positive for depression (Haughey, 2005). An observational study of a convenience sample from an urban paediatric ED screened 200 mothers for post-partum depression and found a prevalence of 16%. At follow up, 50% reported they had discussed their mood with an informal source, while 33% discussed with a medical provider (Emerson et al., 2014). Another study screened 140 women in the paediatric ED for maternal depressive symptoms of the mothers of children with asthma, and found that 47% reported significant levels of depressive symptoms (Bartlett et al., 2001). A multi-site cross-sectional study measuring the prevalence of depression among ED attendees, interviewed 539 participants and found that depression was elevated in the ED, where 30% of respondents reported depression symptoms in the past 12 months (Kumar et al., 2004). Another multi-site observational study found that 26.6% of the 505 attendees screened were positive for depression (Hoyer and David, 2012).

There are many studies in the ED which focus on screening for more specific disorders, such as delirium (LaMantia et al., 2014), paediatric suicide-related presentations (Newton et al., 2010), risky alcohol use (Jones, 2011), drug use (D'Onofrio and Degutis, 2010) and self-harm (Randall et al., 2011). There are also studies which screen for certain conditions and disorders in the ED population and implement interventions, with a majority focussing on risky alcohol use (Drummond et al., 2014, Désy et al., 2010, Cherpitel et al., 2010, Aseltine, 2010, Le Foll et al., 2014), drug use (D'Onofrio and Degutis, 2010, Blow et al., 2010, Bogenschulz et al., 2014, Bohnert et al., 2016, Donovan et al., 2015), and intimate partner violence (Koziol-McLain et al., 2010).

A few studies have measured the spectrum of the psychological distress (sub threshold mental illness) of ED patients. A single site French study measured levels of co-morbid psychological distress of ED attendees presenting for alcohol related disorders and found that 60% reported some level of psychological distress (Arnaud et al., 2010). The authors stated that identification of mental illness in the ED can be made easier with the concept of psychological distress as it makes it possible to screen for a variety of conditions as the emotional and behavioural symptoms exhibited are not exclusive to any particular disorder (Arnaud et al., 2010).

Another study measuring psychological distress targeted women post miscarriage (Stallman et al., 2010). In this study, 117 women were interviewed, and it was found that 81.2% experienced distress, with 24.8% experiencing serious levels, meaning that moderate and high symptoms of distress were experienced by 56% of their sample, which indicates that those individuals are experiencing a certain level of impairment when compared to those reporting low levels of distress. The statistics of underlying psychological distress experienced in the

community, and the underlying psychological distress and mental illness experienced the ED is significant but it is likely to be underreported due to bias against reporting embarrassing behaviours and the stigma associated with mental illness (Kessler et al., 2005a, Krumpal, 2013).

2.1.3.2. Health Promotion

Individuals experiencing psychological distress display increased level of morbidity and mortality when compared to those without distress and this cohort have been less studied than those with mental illness. Data from Australian population studies report that a large number of individuals in the community with moderate and high psychological distress do not seek help, the ED may represent an opportunistic hospital presentation for screening and referral for treatment and may also represent a moment where patients may be amenable to an intervention (Woodruff et al., 2013, Le Foll et al., 2014). However, it is important to note that conditions of mental illness, like physical disorders, differ widely in both severity and need for treatment. Those with lower levels of distress have a lower perceived need for treatment and strategies must be aimed at changing attitudes and motivating them to seek help. It is essential to encourage individuals with disabling conditions who do not perceive a need for medical care (Mojtabai et al., 2002).

Conceptually and philosophically the goals of health promotion and morbidity prevention are not mutually exclusive. Overlap exists as prevention does not only mean to implement interventions before the onset of a serious condition, but also to interventions to prevent co-morbidity, relapse, disability and other consequences (Davis, 2002). Interventions must also target a wider sample, especially those who are vulnerable to mental illness and high levels of psychological distress so as to promote mental well-being, and also target those with less than

desirable mental well-being for the same reason. In other words, interventions are necessary to target those with varying levels of psychological distress in the prospect of preventing the escalation of these symptoms to something more serious.

2.1.3.3. Interventions

Currently, interventions are focussed on individuals who are already experiencing serious symptoms of mental illness (Morgan and Jorm, 2008, Bolier et al., 2013, Hofmann et al., 2012, Klainin-Yobas et al., 2012, Olatunji et al., 2010, Rosenbaum et al., 2014, Jeffery et al., 2000, Drake et al., 2004, Cabassa et al., 2010, Daumit et al., 2013, Cleary et al., 2008, Miklowitz, 2006, Jauhar et al., 2014, Dutra et al., 2008). As discussed earlier, the statistics from the Australian population reveal a high number of individuals who are experiencing moderate and high levels of psychological distress.

Some of these individuals have already experienced mental illness in their life, and for others, they may never experience mental illness, but they are also experiencing a degree of psychological distress. For some, their unrelieved psychological distress could lead to their first episode of mental illness. Also, there are low numbers of individuals in the community who seek treatment for their problems, and there are other individuals who may seem to have no problems but seek mental health services anyway. Furthermore, there are other individuals in the community who may be in need of treatment but do not get any. In this circumstance, where presentation to medical treatment for mental illness is slim, opportunistic health service presentations represent an opportunity for screening and referral for an intervention. Such an opportunity for screening and referral is the emergency department (ED).

Even though MI was originally designed as an intervention for alcohol problems, the approach is adaptable for use in treatments for problems other than substance abuse, and may be used in combination with other therapy styles to enhance treatment (Walitzer et al., 1999). There are many literature reviews and meta-analysis regarding MI and it has been shown to be effective with several lifestyle changes, such as weight loss in overweight and obese patients (Armstrong et al., 2011), smoking cessation (Heckman et al., 2010), excessive drinking (Vasilaki, 2006, Bien et al., 1993), increase physical activity in those with chronic health conditions (O'Halloran et al., 2014) and improve health outcomes (Rubak et al., 2005a, Martins and McNeil, 2009, Lundahl et al., 2013).

In mental health samples, MI has also been shown to be effective with reducing excessive drinking in samples with psychotic disorders (Baker et al., 2012b). There was a small but clinically significant effect in treating those with depression and co morbid alcohol use disorders when used in conjunction with cognitive behavioural therapy (CBT) (Riper et al., 2014). One literature review and meta-analysis focussed on the mechanisms of MI and how it enhances outcome for samples with depression, anxiety, psychotic, eating disorders, and co morbid conditions (Romano and Peters, 2015). They found that the mechanisms of MI in this population was limited, but MI as an adjunct treatment can enhance outcomes for a diverse range of mental health problems. Another review exploring MIs effect on populations with anxiety disorders found that MI had the potential to improve treatment, engagement and clinical outcomes when supplemented or integrated with CBT (Randall and McNeil, 2016).

Chapter 3. Conceptual Framework

3.1 Overview

This chapter continues to explore the mental health phenomenon and review the relevant literature but in terms of how stressors affect the individual and what therefore constitutes a mental illness, or psychological distress. This exploration of the inner self will illuminate how MI, in theory, should work in increasing motivation within the individual, allowing change to occur.

3.2. Methodology and Design

3.2.1. Theoretical Framework

An individual's mental health is determined by a complex interaction of biological, social, psychological, environmental and economic factors (Australian Health Ministers, 2009). The disability caused by the distress of mental illness is determined by its impact, which varies in severity (Department of Health and Aging, 2010). There are several factors which may contribute to an individual's psychological distress, 1): chemical imbalances in the brain, 2): stressful life events, and 3: drug use (Queensland Government, 2013).

3.2.1.1.Stressors

Research has found that the primary causes of stress can involve money, personal health, family, and the health of others. Younger people are more concerned with friendships, relationship issues, environmental issues, work and study (Casey, 2011). Women are likely to identify work, family issues and personal health issues as a source of stress, while men are more likely to be concerned with work, the economy and political climate. Stressors impact an individual's psychological distress levels and symptoms of mental illness can be clinically

diagnosable if it affects the way a person thinks, has a negative impact on their emotional states, their social abilities, has impacts on their working life, their careers, their normal daily activities, and their relationships with others (Queensland Government, 2013).

3.2.1.2. Emotional Response

Emotional responses to stressors are due to the complex interaction of many factors which are inter-related. The way a person assess the world around them, and their relationship to that world and to themselves, play an important role in an individual's mental wellbeing and their mental illness (Kret and De Gelder, 2012). Qualities of that unique internal state or emotional experience involve concepts such as valence, arousal or activation, and dominance or control (Bradley and Lang, 1994) and depending on how a person processes and interprets life stressors determines their mood, or their effect.

The concept of emotional valence was first identified by Wundt (1924) (Kuppens et al., 2013) who stated that affective experience involves two properties, valence (a range of feelings from pleasant to unpleasant) and arousal which relates to the intensity of the emotional experience (a range from low to high arousal or alertness) (see Figure 3.1). Unpleasant feelings occur when wishes and outcomes of the individual do not match or concur, creating cognitive dissonance. The level of cognitive dissonance is determined by the strength of the stressor or stimuli. These two concepts of valence and arousal are interrelated and can be interpreted in dimensions of positive affect or negative affect (Watson and Tellegen, 1985). When an individual simultaneously holds two cognitions that are psychologically inconsistent or incompatible, the magnitude of the dissonance influence pressures within the individual to reduce or eliminate the dissonance, leading to changes in behaviour (Festinger, 1957).

Figure 3.1: The state of valence and arousal
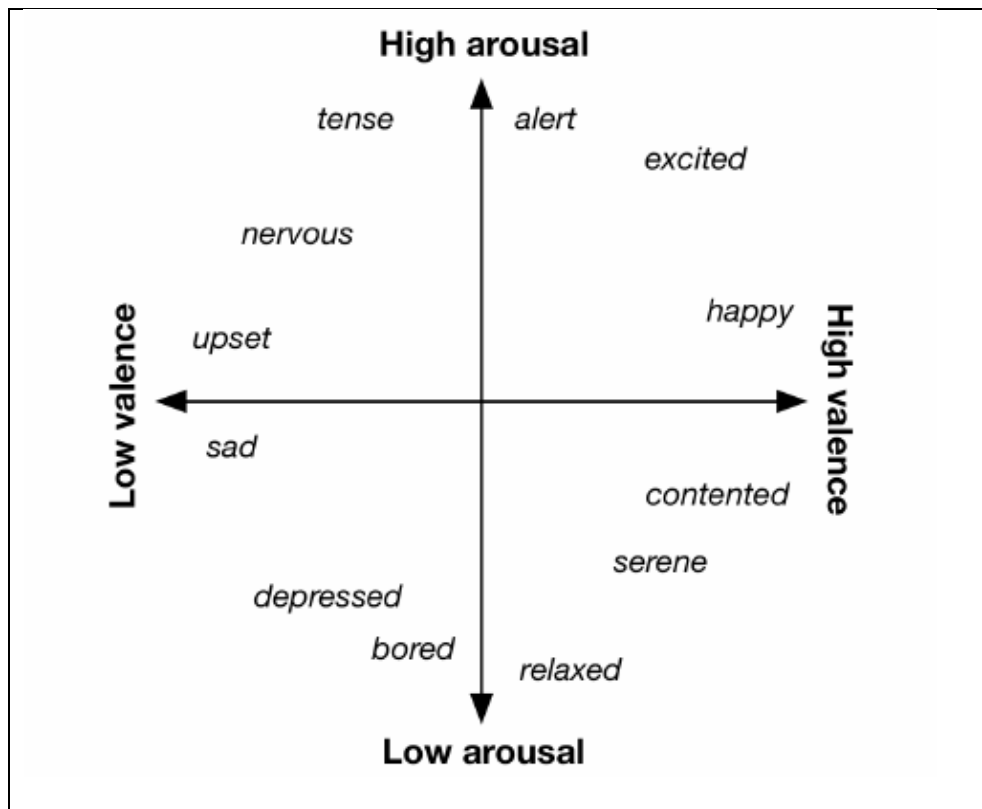
High positive affect relates to a person's enthusiasm and activity levels, with a state of high energy, alertness. The individual is able to fully concentrate, and has pleasurable interactions with others and the world around them. The opposite is low positive affect, which is characterised by sadness and fatigue and can be viewed as an unpleasant and distressful interaction with the world. A high negative affect is a subjective view characterised by various aversive and unpleasant states in the expression of their mood, including anger, indifference, displeasure, guilt, fear, nervousness and agitation. Whereas the characteristics of low negative affect include a state of tranquillity and composure. The major distinguishing feature of depression and anxiety are both low state and low trait positive and negative affect (Watson et al., 1988). Emotions are changeable over time but personality traits are stable over time (Matthews et al., 2009) and it's these traits that are likely have an effect on an individuals' emotional functioning (Bernhardt and Singer, 2012).

An individual has both affective 'state' dimensions which correspond to the affective 'trait' dimensions of positive and negative affect, and is where the differences in individual emotional sensitivity and reactivity lie (Watson and Tellegen, 1985). Decisions are made which are not only influenced by what is happening now, but also by the individuals' emotional state which is moderated by past experience (Trimmer et al., 2013). Trait positive affect and trait negative affect are inter-related psychobiological and psychodynamic sensitivity to signals of reward and punishment and its reinforcement (Watson et al., 1988).

And finally, the third factor in the emotional response is emotional dominance and refers to the control an individual has of the emotional experience, ranging from little to complete dominance, or in other words, the degree of control the stressor or stimulus has on the individual (Bradley and Lang, 1994, Matthews et al., 2009). This can refer to locus of control and can be influenced by either internal or external factors, and the individuals' perceived behavioural control and its' impact on an individual's intentions and their actions.

3.2.1.3. Locus of Control

This control theory was first introduced by Rotter (1966) and refers to the extent of an individuals' subjective appraisal of the control they have of events and occurrences in their lives. According to social learning theories (Bandura, 1977, Rotter, 1966) these subjective appraisal processes are not intrinsic, but are learned and acquired through a pattern of reinforcements and whether outcomes are determined by either skill or chance. Individuals who hold an internal orientation consider the outcomes of events to be dependent upon their own actions, abilities and character, where hard work will gain positive outcomes. Whereas

individuals with an external orientation view event outcomes as largely influenced by outside forces, such as other people and luck (Levensen, 1981, Rotter, 1966). Rotter (1966) suggests that individuals intrinsically want to avoid unpleasant situations and they do this by purposely seeking positive stimulation or reinforcement. This then strengthens the anticipation that the individual experiences, and similar reinforcement will occur when that behaviour or event is experienced the future. In social learning theory, the anticipation some individual experiences is called expectancy, and there are two kinds. The first is situation-specific (Bandura, 1977), where expectancies are determined by an individuals' prior experiences (Lefourt, 1976).

The second is a general expectancy (Bandura, 1977) and refers to situations which are ambiguous, and lack clarity or social cues. In the absence of clear information, an individual will make a deduction based on their general experience, personality dispositions, and beliefs in a way to process and make sense of the situation (Folkman, 1984). Individuals learn to judge their behaviours and outcomes associated with these behaviours, and then generalise their anticipations for the future. It is these concepts which formulate and define an individuals' locus of control (Rotter, 1966). A predictive formula by Lefourt (1976) defines locus of control as being a function of expectancy and reinforcements, and the probability of engaging in a particular behaviour.

However, an important social aspect of this development is the society values of where the person is immersed. The values of either individualism-collectivism have an impact on an individual's beliefs, customs, traditions, norms and values. An individual's locus of control is determined by cultural and social norms and Rotter (1966) claimed that his locus of control theory is a theory for Western psychology. Locus of control is dependent on whether the society they live have either individualist or collectivist cultural dimensions, because norms in these contexts influence their members' views of the self, their place in society, and

determines and guide their behaviour. In Western societies, individualist norms promote autonomy, self-reliance, self-efficiency and competence and members seek gratification of their needs over the goals of their group, and in turn society reward members for pursuing personal goals.

In contrast, collective societies encourage and reward social goals and behave in a communal way. Members of collectivists' societies are generally more willing to relinquish personal control or allow others to take control for the sake of the community goals (Cheng et al., 2013). In a collectivist culture, an external locus of control does not carry the same negative connotations as it does in Western counties due to their cultural belief systems where norms emphasise connectedness to others and role obligations and view the world in a more holistic approach. Whereas decreasing control often heightens cognitive dissonance for Westerners (Cheng et al., 2013).

3.2.1.4. Behavioural Control

The other construct for emotional dominance is the perceived behavioural control which is different from locus of control, but their similarities lie on the emphasis of factors which are directly linked to certain behaviour. Where locus of control refers to the expectancy which remains stable across situations and forms of action, perceived control refers to an individual's perception of the behaviour of interest, and the ease or the difficulty one may experience while performing the particular behaviour, which can vary across the types of situations and types of actions involved (Ajzen, 2002). For example, an individual believes that generally, their own behaviour determines the outcomes (internal locus of control) but at the same time they are aware that the chances of completing their PhD studies in a timely fashion are very remote (low perceived behavioural control). Overall, if there are strong intentions to engage

in certain behaviour, then more likely the behaviour it will occur. Behavioural achievement is dependent on an individual's motivation (intention) and also their ability (behavioural control) (Ajzen, 2002).

3.2.1.5. Motivation

There are three independent determinants of motivation, 1): the attitude towards the behaviour (personal evaluation), 2): social subjective norm or code of conduct (social and cultural context), and 3): the individuals evaluation regarding the ease or difficulty of the behaviour (self-efficacy) which also reflects their past experiences as well as their anticipation of problems and the obstacles (Ajzen, 2002). An individuals' behaviour is highly influenced by their confidence in their capabilities (perceived behavioural control). Individuals whom have low efficacy for accomplishing a task may avoid it, while those who believe they are capable of accomplishing a task do not avoid it. Efficacy in negotiating an individuals' environment is not a fixed act, but involves the ability to organise and process cognitive, social and behavioural skills (Bandura, 1982). Efficacy appraisal is a process where an individual will weigh-up and combine their personal factors and the situational factors and perceive their ability. The expectations of the outcomes are important in determining an individual's action because generally, we are not motivated to behave in ways which may result in negative consequences. Self-efficacy beliefs influences choices we make in terms of activities, the preparation for these activities, the effort expended, persistence, and well as an individual's unique thought patterns and emotional reactions. The stronger the efficacy, or mastery, the more active will be the efforts (Bandura et al., 1977).

On a spectrum where mastery is at one end, on the other is the theory of learned helplessness (Seligman et al., 1971) which is a mal-adaptive response to external control, where individuals give up trying because they lack self-efficacy in achieving the necessary behaviour or action. This could be due to reasons where an individual believes that their behaviour will have no effect on an unresponsive environment, or they have been consistently punished. This then reduces an individuals' inclination to engage in problem solving activities and elicits depressive symptoms. There are many studies which link locus of control and depression (Benassi et al., 1988) but the link between locus of control and anxiety is less understood (Cheng et al., 2013).

This complex interaction between the various factors of emotion can be measured and classified as either positive or negative, with high or low arousal or activity, and the various levels of control some individual feels of the experience is also a factor. It is emotions which influence most aspects of an individuals' cognition, which also have underlying physiological correlates and behavioural correlates (Kuppens et al., 2013).

These definitions regarding the nature of emotions, reactivity, and the scale of mental wellbeing demonstrate that mental health and mental illness are not mutually exclusive categories but show that they are points on a continuum, from positive mental health, to mental ill-health, and through to serious mental illness. Depending on large number of biological, psychosocial and social factors, we all move back and forth along this continuum and the need for mental health treatment will vary accordingly, depending on the levels of psychological distress being experienced (Davis, 2002).

3.2.2. Motivational Interviewing

Broadly, psychological interventions can involve different therapies depending on the theoretical model underpinning the intervention and can be classified into behavioural, psychodynamic, cognitive, social, humanistic, motivational, disease and environmental (NICE, 2011). For example, a cognitive approach emphasises the role of thinking either prior to or while engaged in a certain unhealthy behaviour, or while trying to prevent relapse. A behavioural approach focuses on learned behaviour and teaching different behavioural patterns. Motivational intervention such as MI may heighten motivation, and increase self-efficacy for behaviour change (NICE, 2011).

MI is a style of counselling where its primary principle is that change is not imposed on an individual but rather evoked from the individual / client (Rollnick and Allison, 2004). MI explores the dissonance the client may be experiencing regarding certain behaviours and it creates an environment, or space, where there is exploration of the costs and benefits of certain behaviours, and prepares the individual to become more receptive to behaviour change (Miller and Rollnick, 2002b, Rubak et al., 2005b, Leffingwell et al., 2006).

In MI counselling, both the client and the counsellor have an equal relationship, and the client is seen as the expert in solving their own problems, and they also chose how to deal with their problems. The MI counsellor does have a therapeutic agenda but as a way to minimise resistance and increase motivation, is non-confrontational and uses empathetic listening skills (Rollnick and Allison, 2004). Motivation is a state of readiness to change and the state fluctuates, and it can be influenced by others. What is useful for the MI counselling style, is the 'stages of change model' (DiClemente and Prochaska, 1998) (see Figure 3.2). By understanding where the client is at regarding their stage of change and motivation to change, MI useful for working with clients who are ambivalent, resistant or reluctant to change (Miller

and Rollnick, 2002b). All change is preceded by some measure of ambivalence, which is a state of mixed feelings (Rollnick and Allison, 2004).

Figure 3.2: The stages of change model
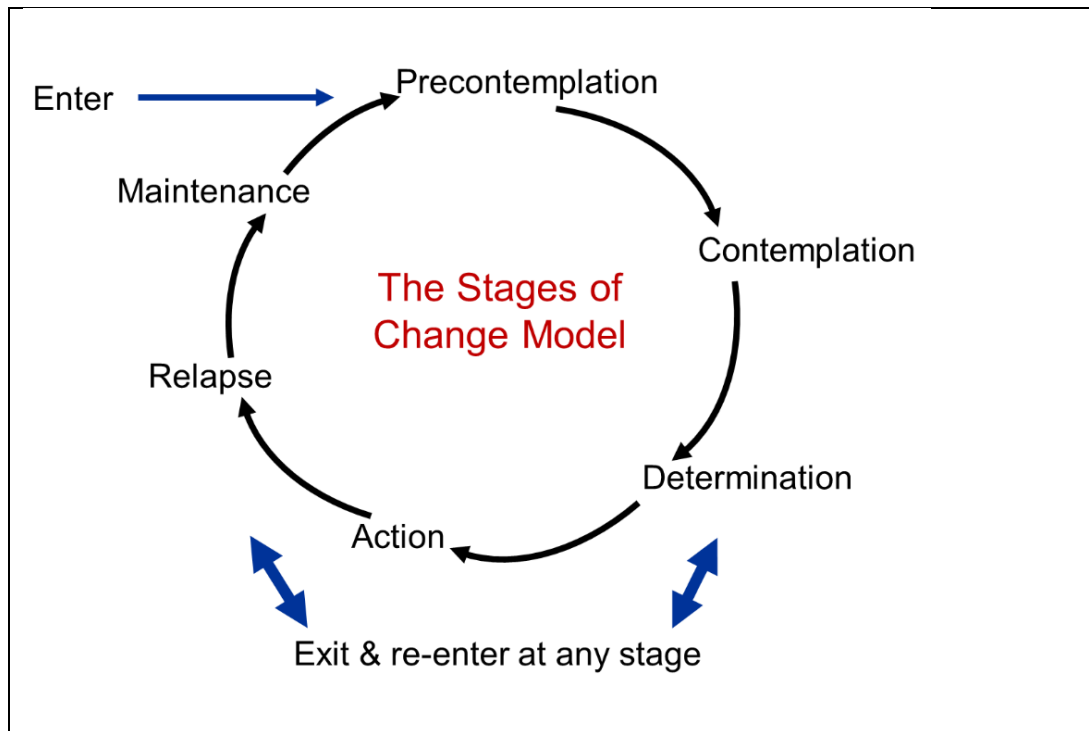
MI is a counselling style which was originally developed for substance abuse disorders (Miller, 1983). It is a client-centred, directive communication method used to promote change in the client by enhancing intrinsic motivation. The important aspect of this counselling style is that it does not focus on exploring the past, or works at reshaping cognition, nor does it teach coping skills (Miller and Rollnick, 2002b). It focuses on the present to enhance inherent motivation to change by examining and dealing with ambivalence and does this by focussing on the persons' own interests and concerns. The basic skills required by the counsellor for effective MI involve; asking open ended questions to allow the person to do most of the talking; reflective listening to verbalise meaning and make meaning more explicit; to provide

affirmation to encourage and support the person; summarising what the person has said to demonstrate listening and to emphasise certain points; and eliciting change talk which reflect desire, ability and commitment to change without actually becoming an advocate of change (Arkowitz et al., 2008).

Discrepancies are explored and developed by highlighting incongruities between the person's experience and values, and the interviewer facilitates natural change by eliciting and reinforcing change talk by responding to resistance in a way that diminishes it. MI is not a coercive method to impose change, but rather highlights the relevance of change by exploring the persons own values and beliefs (Miller and Rollnick, 2002b).

The 'spirit' of MI carries four general principles, 1) express empathy; 2) develop discrepancy; 3) roll with resistance; 4) support self-efficacy (Miller and Rollnick, 2002b). The empathetic counselling style of MI is its defining characteristic. The counsellor accepts the person's feelings and perspectives without judging, criticizing or blaming, but neither with agreement or approval. Through reflective listening, discrepancy between present behaviour and their broader goals and values can trigger awareness between costs of present behaviours and the perceived advantage of changing behaviour. Change is more likely to occur when behaviour is seen to be conflicting. As MI is not a coercive method of behavioural change, argument is considered counterproductive and can actually cause a person to defend their cause.

MI shifts focus to a positive lifestyle and behaviour choices which can be achieved, rather than a focus on changing negative behaviours which may make the person defensive (Miller and Rose, 2009). Rolling with resistance is useful to turn or reframe the conversation to create a new momentum towards change. The communication style focuses on the person's values

and experiences, it is important to assert that the person is responsible for deciding and directing their own change. Promoting self-efficacy is an important element in motivation to change and a predictor of treatment outcome (Miller and Rollnick, 2002b).

3.2.2.1. Theoretical Underpinning of MI

MI is informed by Carl Roger's (1951) Client Centred Therapy and the individuals' stage of behaviour change is informed by the transtheoretical model developed by Prochaska et al. (1992b). Client-entered therapy asserts that people are motivated by a desire for positive personal growth, self-direction and the ideal self. MI helps people to explore their current and ideal selves and to move toward their ideal selves by focussing on their values. Focussing on incongruence between ideal self and their actual self may result in desire from the person to make changes in their behaviours. Ambivalence is caused as the result of multiple conflicting values which may be individualistic or collective, or from valuing one behaviour or experience that interferes with another valued behaviour or experience (Miller and Rollnick, 2002b).

The transtheoretical model asserts that health behaviour change involves a process through five stages of change: pre-contemplation, where there is no intention to change as the person does not identify that there is a problem; contemplation, where there is an awareness that a problem exists but have not yet made a commitment to make change; preparation, combines intention and small behavioural changes; action involves overt behavioural changes and commitment to the change; and maintenance, where there is a continuance of the behaviour change and prevention of relapse (Prochaska et al., 1992b). MI takes into account where the individual is regarding their stage of change and through the MI counselling style, can help the person shift from one stage of change to another. The principle of MI and behaviour change

is that the patient voices the argument for change with the counsellor strengthening the clients' own verbalised motivation and need for change (Miller and Rose, 2009).

3.2.3. Other Conceptual Frameworks

The self-efficacy theory of Bandura (1977), proposes that by exerting control over their behaviours, individuals are better able to realise their desired futures and forestall their undesired ones. An individual's inability to exert control and influence over things breeds apathy, apprehension, and despair. In this approach, motivation is conceptualised as an interpersonal process, which places the emphasis on individual responsibility and the acknowledgement of change.

MI is based on three key components: collaboration, evocation, and autonomy (Miller and Rollnick, 2002b) and applies these components: exploration of thoughts about the problem; for example, feeling in a low mood or depressed, or other feelings of distress; use of reflective listening; which shows the individual respect and that the counsellor has a willingness to understand the problem; providing accurate and relevant information about health and providing explanations which the client can understand; defining personal or community goals; avoiding argument; and assisting individuals to explore their behaviour and the impact it has on others.

Chapter 4. Systematic Review and Meta-Analysis

4.1 Overview

This chapter continues to explore MI, albeit more in terms of its efficacy in facilitating motivation. An exhaustive literature search was conducted and randomized controlled trials which used MI as a pre-treatment were included. The meta-analysis measured the success of the MI intervention by using the outcome measure of treatment attendance post MI. The sample was analyzed as a whole, but also as sub samples in terms of the intended population; that being, individual's not seeking treatment for their mental illness or psychological distress.

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4.2. Introduction

Worldwide, the impact of mental illness and substance abuse is substantial and accounts for 7.4% of the total disease burden (Becker and Kleinman, 2013). These conditions represent the fifth leading disease burden and the leading cause of non-fatal disease burden (Whiteford et al., 2013). Despite common disorders such as depression and anxiety being treatable and possibly preventable (Gulliver et al., 2012), a large proportion of individuals do not receive the care required for their condition (Becker and Kleinman, 2013) and from 2011 to 2030 mental illness is projected to cost $16.3 trillion globally (WHO, 2009).

In high income countries such as Australia, mental illness is the third leading cause of total disease burden (12%) and is the main contributor (24%) to non-fatal disease burdens (AIHW, 2016). Almost half (7.3 million) of the Australian adult population has experienced a mental illness some time in their life (ABS, 2009). In 2007, the Australian National Survey of Mental Health found the prevalence of mental illness in the community to be unchanged since 2002, as was the perceived need for treatment, and there were no changes in access to treatment (Tankel et al., 2011). More recent Australian studies indicate that among those currently experiencing mental illness (mostly affective disorders such as depression) only around 35% sought assistance mainly via community-based health service providers (AIHW, 2015b). However, these data reflect service utilisation, rather than the perceived need for treatment.

Of those whom did not seek treatment for a mental illness, 86% reported that they did not need any help with their mental well-being (AIHW, 2015b). In the US, mental health services were also underutilized and in 1997, unmet need involved 4.3 million individuals, and rose to 7.2 million individuals in 2011 (Roll et al., 2013). In regards to the burden caused by mental

illness, it is the single largest contributor to disability, representing 20% from all causes (Roll et al., 2013).

Due to the high levels of morbidity associated with mental illness, removing barriers to increase service utilization is a priority (Fleury et al., 2012). The development of strategies to enhance health care for individuals that are not seeking treatment for their mental illness, or do not perceive a need for mental health care but may be accessing health services for other conditions, has potential to increase access to health services for this otherwise difficult-to-reach population (Mojtabai et al., 2002). In this context, opportunistic health service presentations offer a chance to screen for underlying mental health conditions and may represent occasions where patients are amenable to intervention (Le Foll et al., 2014, Woodruff et al., 2013). However, whilst underlying mental health problems may be detected through screening, the individual's perceived need for treatment may pose a major barrier to treatment-seeking behaviours (Andrade et al., 2014).

In this context, motivational interviewing (MI) may be a feasible pre-treatment to other intervention or treatment, as it heightens motivation within the individual and stimulates them to seek and engage in further assistance (NICE, 2011). It has been successfully used with psychotic disorders by demonstrating effectiveness in the reduction of excessive drinking (Baker et al., 2012a). It has also been shown to be successful for samples with co-morbid substance use and mental illness when used in conjunction with other treatment therapies, for example; cognitive behaviour therapy (CBT) and relapse prevention, education and support (Horsfall et al., 2009).

Originally developed as a treatment for individuals with substance abuse disorders, MI offers a counselling-style approach (Miller and Rollnick, 2002b) which is also malleable with other

therapy styles (Walitzer et al., 1999). The 'spirit' of MI carries four general principles: expression of empathy; development of discrepancy; rolling with resistance; and supporting self-efficacy. It is not a coercive method of behaviour change, but rather, helps create a degree of ambivalence by shifting the individual's focus to achievable positive lifestyle and behaviour choices, rather than focusing on changing negative behaviour (Miller and Rose, 2009). Rolling with resistance can turn or reframe to create a new impetus towards change (Miller and Rollnick, 2002b) and by taking into account the trans-theoretical construct of change and the fact that change is often not linear. The stages of change are; pre-contemplation, contemplation, preparation, action, maintenance and relapse (Prochaska et al., 1992b). MI can assist the individual to shift from one stage of change to another, even after relapse.

Currently, little is known about the effectiveness of MI as a pre-treatment for both (mental health) treatment-seeking and non-treatment-seeking individuals. In the stages of change model, individuals whom are already seeking treatment would be considered to be motivated and in the 'preparation' or the 'action' stage of change, which is the desired outcome of successful MI interventions. A recent systematic review and meta-analysis of studies reporting on samples with psychotic, mood, anxiety, eating disorders and co-morbid conditions, explored the mechanisms of change with both patient and therapist (Romano and Peters, 2015). Patient factors involved concepts such as readiness, motivation, confidence, engagement and the experience of discrepancy; and therapist factors such as MI consistency, MI spirit and empathy. The reviewers found that a majority of studies reported few MI mechanisms of change and there was also limited evidence for causal links to outcomes (Romano and Peters, 2015). Similarly, the first review which looked at the mechanisms of change with MI, but in samples with substance use disorders (Apodaca and Longabaugh, 2009) also reported that that the evidence was limited.

Psychosocial therapy is based on the interactions between the therapist and their client and the variability of therapist adherence to the principals and processes of delivering interventions impacts on client behaviours (Imel et al., 2011). MI is based on the principles of resisting confrontation and remaining empathetic in order to strategically manoeuvre clients towards change (Imel et al., 2011). The causal chain for MI involves a technical process which relates to the therapist's skills; the relational process relating to the relationship between therapist and client and the impact of the intervention; and the conflict resolution process, which aims to successfully explore and resolve client ambivalence (Magill et al., 2014). Measuring the process of MI can provide feedback regarding the quality and impact of the intervention in relation to outcome measures, such as treatment attendance. Process measures can also highlight areas where improvement in the quality of care is needed (Rubin et al., 2001).

Several other reviews of the literature using MI have looked at samples with mental health problems, but mainly samples with eating disorders. Macdonald et al. (2012) found that the results were promising but difficult compare due to heterogeneity between studies. However, the results indicated that MI was most beneficial in regard to increasing 'readiness to change' and may be useful in preparing individuals for change when they are not ready to instigate the change themselves. Unfortunately, the results did not analyse the outcomes measure of treatment attendance. Dray and Wade (2012) who also reviewed the literature regarding samples with eating disorders found that, similarly to Romano and Peters (2015), the casual factors for the effects of MI were weak, and the results were insufficient to properly assess the efficacy of MI for this sample. However, MI effects on the outcomes measure of treatment attendance were reported and they found one study in which participants in the 'treatment as usual group' were 1.33 times more likely (95% CI = 1.03 1.72) to withdraw from the study, when compared to those in the MI group (Wade et al., 2009).

Although their analysis concerned the mechanisms of change of MI, Romano and Peters (2015) reviewed samples with a broader range of mental health conditions; mood, anxiety, psychotic, and eating disorders, and also co-morbid conditions. 11 of the 16 studies they reviewed reported on the outcomes measure of treatment attendance, post intervention. Their pooled data demonstrated a significantly enhanced attendance for MI samples (d = .38, p = .012) but with substantial heterogeneity (I^2 = 65.85, p < .001). Sub-group analyses (eating disorders, mood, anxiety, psychotic) revealed MI achieved a non-significant effect for samples with eating disorders (d = .08), and a medium effect for samples with anxiety, mood and psychotic disorders (d = .54, p = .003). The authors did not take into account the analysis of treatment seeking and non-treatment seeking samples, as those that are seeking treatment are already motivated or are prepared to change.

In summary, the current evidence (Romano and Peters, 2015) suggests that MI is effective to enhance treatment attendance for people with a mental illness. However, only one meta-analysis appears to have been undertaken (Romano & Peters, 2015), which demonstrated substantial heterogeneity, and did not specifically investigate the effects of MI on non-treatment-seeking samples. Therefore, the primary aim of this systematic review and meta-analysis was to investigate the effectiveness of MI when compared to other interventions or treatment as usual, on both treatment-seeking and non-treatment-seeking groups. MI was assessed as a motivator to enhance attendance for mental health treatment, with outcomes measure of treatment attendance determining MI efficacy.

4.3. Methods

4.3.1. Eligibility Criteria

The study inclusion criteria for the systematic review were as follows:

Population: All participants expressed symptoms of mental ill-health, or had been diagnosed with a mental illness according to validated diagnostic tools

- Intervention: Given as a pre-treatment and was described as 'motivational interviewing', 'motivational interview', 'motivation intervention', or a 'brief intervention', or based on the principles of motivational interviewing

- Control / comparator: The comparison or control groups were: i) any alternative intervention which did not contain elements of motivational interviewing; or, ii) standard treatment or no treatment

- Outcomes: Post-MI treatment attendance was reported

4.3.2. Search and Study Selection

Literature was sourced from the electronic databases of Medline, EMBASE, and CINAHL; including a general internet search using Google scholar. A deliberately broad search strategy was employed, using the following search terms: intervention ("motivational interviewing" OR "motivation interview" OR "motivational intervention" OR "motivation enhancement" OR "brief intervention"), broad population characteristics ("mental health" OR "depression" OR "anxiety" OR "stress"), limited to 'English', 'adult', and 'randomised controlled trials' (RCT). No date limits were applied to the search and additional material was gleaned from reference lists and bibliographies. The final search was conducted in late 2016. There was no single validated critical appraisal tool for assessing RCTs for literature reviews and traditionally, 'risk of bias's is the main focus of assessment. High internal validity is important to prove the

effectiveness of an intervention, although consideration must also be given to the heterogeneity of included studies.

The quality of included studies was assessed using the *Critical Appraisal Skills Program* (CASP); a validated tool for evaluation of methodological rigour of RCTs (CASP, 2013). It was selected over other validated and popular appraisal tools, due to its comprehensive evaluation criteria in the following areas: Population, Intervention, Comparator, Outcomes (PICO) statement; randomisation techniques; blinding of sample, researchers, assessors; intention to treat; treatment fidelity; baseline characteristics of sample; treatment bias; reporting of effect sizes; and accounting of participants at conclusion of study.

4.3.3. Data Collection

Using a modified version of the CASP as a template, all literature was systematically examined and reviewed in terms of: sample characteristics (severity of symptoms, diagnosis, treatment seeking, gender, age); diagnostic screening tools used; sample size; MI treatment fidelity (qualification of intervention therapists, use of a manual, training, supervision of intervention, formal assessment of intervention); MI treatment intensity; comparison treatments; outcome measures; results; and treatment attendance. Biases, limitations, and their effect on outcomes stated by individual studies were also noted.

4.3.4. Synthesis of Results

The primary outcome measure was attendance, expressed as a dichotomous variable, with the end-point measured as the number or proportion of participants whom attended for treatments following MI intervention; regardless of whether they had completed post-MI treatment or not. Only studies that reported results of the number of completers of post-MI

intervention were included in the pooled data for the meta-analysis. Data were analysed using RevMan 5.3™ software (The Cochrane Collaboration, 2014). Initially, data were analysed as a whole, followed by sub-group analysis to compare treatment-seeking and non-treatment-seeking participants. Although all studies included participants with mental health problems, the samples were not homogenous and differed in terms of their sample size, severity of participants' mental illness, types of mental illness, and treatment settings. For these reasons, a random effects model was used, as it takes into consideration the different effect sizes of each study and estimates the mean (Bornenstein et al., 2009, Schroll et al., 2011) whereas a fixed effects model assumes that the effect size is the same for all studies, and smaller studies with smaller effect sizes have little influence on the overall effect (Bornenstein et al., 2009).

The forest plot was visually inspected to observe the confidence interval (CI) overlap (Ried, 2006). Where studies do not overlap the line of no effect, these studies were considered to be too different to combine to a single estimate, were excluded from the pooled data and the analysis re-run (Ried, 2006). Heterogeneity is reported using the I^2 index and the magnitude of heterogeneity can be classified as low (I^2 = 25 or 25%), medium (I^2 = 50 or 50%), and high (I^2 = 75, or 75%) (Higgins and Thompson, 2002). As a measure of effect, odds ratios (OR) were calculated for individual studies, as well as overall. A funnel plot was also generated to investigate potential reporting bias of the studies.

4.4. Results

4.4.1. Study Selection

Including duplicates, the initial search yielded a total of 5,009 articles (refer to Figure 4.1). After the removal of duplicates, protocols, paediatric samples, and literature reviews, there

were 1,129 papers remaining. Following an initial review of the title, abstract and reference list; 54 potentially relevant studies were identified for further examination. Full texts of these studies were then reviewed independently by two members of the review team against the inclusion criteria. Disagreements were arbitrated a third team member. Fourteen randomised controlled trials (RCT) were identified for inclusion in the full review and are summarised in Table 4.1. Most studies originated from the US, with two exceptions: Baker et al. (2002) (Australia) and Westra and Dozois (2006) (Canada).

4.4.2. Quality Appraisal

Results of the quality appraisal are summarised in Table 4.2. Methodological quality of the included studies was restricted, and biases of the studies were due mainly to blinding issues, where blinding of the sample, researchers and clinicians was not reported consistently. Two studies self-reported their sample may be biased due to recruitment methods (Maltby and Tolin, 2005, Buckner and Schmidt, 2009). In the study by Maltby and Tolin (2005), an outpatient clinic sample was recruited that had initially refused to participate in exposure and response therapy. The sample comprised participants with high levels of motivation, where 57% claimed their stage of change category being either in the action or maintenance phase. In the study by Buckner and Schmidt (2009), the researchers masked the study intention by describing it as an 'interview study of anxiety', which may have attracted already motivated participants to discuss and change behaviour.

Table 4.1: Study summary

Authors	Sample and setting	Screening tools	Sample size (n) Intervention	Control/ comparator	Gender Intervention	Control/ comparator	Mean age (SD) Intervention	Control/ comparator	Comments
Baker et al. (2002)	Severe symptoms/ dual diagnosis/ treatment-seeking/ inpatient	SCID DSM	79	81	NR	NR	NR	NR	Overall sample Gender: Male: 75% (n = 120) Mean age: 30.87 (range 16-70 years)
Buckner & Schmidt (2009)	Moderate and severe symptoms/ social anxiety disorder/ non-treatment-seeking/ outpatient	SIAS	12	15	M: 41.7% (n = 5)	M: 33.3% (n = 5)	18.9 (SD: 0.9)	18.7 (SD: 0.7)	
Fiszdon et al. (2016)	Severe symptoms/ schizophrenia/ non-treatment-seeking/ outpatient	SCID, DSM	33	31	M: 48% (n = 16)	M: 65% (n = 20)	46.52 (SD: 9.96)	49.26 (SD: 11.23)	

Korte & Schmidt (2015)	Moderate symptoms/ anxiety sensitivity / non-treatment seeking / outpatient	ASI	12	11	M: 0% (n = 0)	M: 18% (n = 2)	NR	NR	Overall sample Mean age: 19.17 (SD: 3.53)
Maltby & Tolin (2005)	Severe symptoms/ obsessive compulsive disorder/ non-treatment-seeking/ outpatient	SCID, DSM	7	5	M: 42.9% (n = 3)	M: 60% (n = 3)	37.6 (SD: 15.3)	40.0 (SD: 10.2)	
Martino et al. (2000)	Severe symptoms / dual diagnosis / treatment seeking / outpatient	DSM diagnosis by clinical consensus	13	10	NR	NR	NR	NR	Overall sample Mean age: 35.35 (SD: 6.4) Gender: Male: 65% (n = 15)
Martino et al. (2006)	Severe symptoms/ dual diagnosis/ treatment-seeking/ inpatient, outpatient	SCID, DSM	24	20	M: 75% (n = 18)	M: 70% (n = 14)	29.71 (SD: 9.46)	34.10 (SD: 11.48)	
Seal et al. (2012)	Severe symptoms/ post-traumatic stress disorder,	PTSDC-MV, PHQ, PRIME MD, AUDIT,	34	39	M: 52.9% (n = 18)	M: 74.4%	21-29: 55.9%	21-29: 41.0%	

	depression, anxiety, substance use disorder/ non-treatment-seeking/ outpatient	Addiction Severity Index					(n = 29)	30-39: 23.5% 40-70: 20.6%	30-39: 38.5% 40-70: 20.5%	
Simpson et al. (2010)	Moderate and severe symptoms/ obsessive compulsive disorder/ treatment-seeking/ inpatient	YBOCS	15	15	M: 53% (n = 8)	M: 53% (n = 8)	40.7 (SD: 11.1)	39.1 (SD: 15.7)	
Swanson et al. (1999)	Severe symptoms/ dual diagnosis/ treatment-seeking/ inpatient	SCID, DSM	64	57	M: 62% (n = 39)	M: 63% (n = 40)	32.6	34.9	
Syzdek et al. (2014)	Moderate symptoms / internalising symptoms / non-treatment seeking / outpatient	DUKE	12	11	M: 100% (n = 12)	M: 100% (n = 11)	NR	NR	Overall sample Mean age: 37.65 (range: 19-57)
Syzdek et al. (2016)	Moderate symptoms / psychological distress / non-	DUKE	18	13	M: 100% (n = 18)	M: 100% (n = 13)	19.94	19.38	

	treatment seeking / outpatient							
Westra & Dozois (2006)	Severe symptoms/ anxiety/ treatment-seeking/ outpatient	SCID, DSM	25	30	NR	NR	NR	NR	Overall sample Mean age: 38 (SD: 11) Gender: Male: 30% (n = 17)
Zanjani et al. (2008)	Severe symptoms/ dual diagnosis, substance use disorder/ non-treatment-seeking/ outpatient	PHQ	57	56	M: 98% (n = 56)	M: 93% (n = 52)	54 (SD: 12)	51 (SD: 11)	

ASI, Anxiety Sensitivity Index; AUDIT, Alcohol Use Disorders Identification Test; DUKE, DUKE Health profile (anxiety and depression subscale); NR, Not Reported; PHQ, Patient Health Questionnaire; PRIME MD, Primary Care Evaluation of Mental Disorders; PTSDC-MV, Post-Traumatic Stress Disorder Checklist - Military Version; SCID DSM, Structured Clinical Interview for Diagnostic and Statistical Manual of Mental Disorders; SIAS, Social Interaction Anxiety Scale; YBOCS, Yale-Brown Obsessive Compulsive Disorder Scale

Table 4.1.Study selection

Study	PICO	Randomisation	Blinding			Intention to treat	Treatment fidelity	Baseline characteristics	Treatment bias	Reported effect size	Participants accounted for	Quality score
			Participants	Researchers	Assessors							
Baker et al. (2002)	✓	✓		✓				✓	✓	small	✓	7
Buckner & Schmidt (2009)	✓	✓		✓			✓	✓	✓	small	✓	8
Fiszdon et al. (2016)	✓	✓	✓			✓	✓	✓	✓	large	✓	9
Korte & Schmidt (2015)	✓	✓					✓		✓		✓	5
Maltby & Tolin (2005)	✓	✓		✓			✓	✓	✓		✓	7
Martino et al. (2000)	✓	✓						✓	✓		✓	5
Martino et al. (2006)	✓	✓				✓	✓	✓	✓	small	✓	8

Study												
Seal et al. (2012)	✓	✓		✓		✓	✓	✓	✓	large	✓	9
Simpson et al. (2010)	✓	✓		✓			✓	✓	✓		✓	7
Swanson et al. (1999)	✓	✓					✓	✓	✓		✓	6
Syzdek et al. (2014)	✓	✓					✓		✓	none	✓	6
Syzdek et al. (2016)	✓	✓							✓	small to medium	✓	5
Westra & Dozois (2006)	✓	✓			✓		✓	✓	✓	small	✓	8
Zanjani et al. (2008)	✓	✓					✓	✓	✓		✓	6

Figure 4.1: Search findings

Flowchart — PRISMA style

Identification

Records identified during the initial database search
Embase: 113
Cinahl: 2,429
Medline: 2,417

Records identified from additional sources: 30

Screening

TOTAL papers for consideration: 5,009

Removal of papers: 3880
- Duplicates: 3642
- Protocols: 89
- Pediatric: 122
- Literature reviews: 27

Total papers remaining: 1,129

Eligibility

Full-text articles assessed for eligibility: 54

Full-text articles excluded: 40
- Non RCT design: 26
- Secondary analysis: 2
- MI integrated with other therapy techniques: 7
- Not a pre-treatment: 5

Included

Studies included in systematic review: 14

Studies included meta-analysis: 12

Eight studies did not report their randomisation methods (Baker et al., 2002, Fiszdon et al., 2016, Maltby and Tolin, 2005, Westra and Dozois, 2006, Martino et al., 2000, Syzdek et al., 2014, Syzdek et al., 2016, Korte and Schmidt, 2015). Three studies used a stratification method of randomisation to ensure equal distribution between groups (Seal et al., 2012, Simpson et al., 2010, Zanjani et al., 2008); two used a random numbers table (Swanson et al., 1999, Buckner and Schmidt, 2009), and one used an urn procedure (Martino et al., 2006).

All studies reported attrition rates and accounted for all patients at the study conclusion. However, a majority of studies did not report on their intention-to-treat. This may have been due to treatment attendance being the goal (Baker et al., 2002, Fiszdon et al., 2016, Maltby and Tolin, 2005, Simpson et al., 2010, Swanson et al., 1999, Zanjani et al., 2008, Martino et al., 2000, Korte and Schmidt, 2015, Syzdek et al., 2016). Only one study (Seal et al., 2012) conducted follow-up by checking medical records for evidence of attendance (at 4, 8 and 16 weeks) and five studies collected other follow-up data at varying time-points (4 weeks to 6 months). Buckner and Schmidt (2009) conducted follow-up to one month and collected data regarding willingness to schedule CBT appointment, readiness for change, and importance and confidence to change social anxiety related behaviours. Martino et al. (2006) conducted follow up to 12 weeks and collected data regarding substance use, treatment adherence, psychiatric symptoms, readiness to change and satisfaction with interviews. Syzdek et al. (2014) conducted follow up to three months, and collected data regarding mental health functioning, stigmas about internalising disorders, and seeking help from formal and informal sources. Syzdek et al. (2016) conducted follow up to two months and collected data regarding help seeking behaviours and mental health functioning. Westra and Dozois (2006) conducted

follow up to 6 months and collected data regarding changes to mental illness diagnosis by readministering the Structured Clinical Interview for Axis 1 disorders.

4.4.3. Study Characteristics

A total of 803 participants were included in the 14 trials with a mean sample size of 57.4 (range 12-160) (refer to Table 4.3). Four studies reported small sample size as a limitation, lacking power to detect effects on study outcomes (Buckner and Schmidt, 2009, Martino et al., 2006, Simpson et al., 2010). All studies reported on gender with half of the studies reporting only in percentages (Buckner and Schmidt, 2009, Fiszdon et al., 2016, Maltby and Tolin, 2005, Westra and Dozois, 2006, Baker et al., 2002, Martino et al., 2000, Swanson et al., 1999, Korte and Schmidt, 2015). The approximate gender distribution for the entire sample was 546 (68 %) males and 257 (32 %) females. A majority of the studies reported unequal gender recruitment but the settings for recruitment and sample type reflected the disproportionate sampling.

Three studies that recruited participants with anxiety disorders or sensitivity (Buckner and Schmidt, 2009, Westra and Dozois, 2006, Korte and Schmidt, 2015) reported a higher female participation (63%, 91%, and 70% respectively), and four studies recruiting for dual diagnosis reported a larger male participation (62-75%) (Baker et al., 2002, Martino et al., 2006, Martino et al., 2000, Swanson et al., 1999). This is consistent with previous studies across all age groups, that indicate that despite women having a higher prevalence of mental illness, men have a higher prevalence of substance use and behavioural disorders (AIHW, 2015b). Both Seal et al. (2012) and Zanjani et al. (2008) reported male participation of 64% and 96% respectively, however the recruitment settings were veteran medical centres where a large

proportion of men is usual (Hoggatt et al., 2015). Syzdek et al. (2014) only targeted and recruited non-treatment seeking men due to them being less likely to seek help for mental health issues (Clement et al., 2015).

With the exception of two studies (Baker et al., 2002, Swanson et al., 1999), most studies were conducted in outpatient settings. Martino et al. (2006) recruited both inpatients and outpatients. Eight studies recruited non-treatment seeking samples (Buckner and Schmidt, 2009, Fiszdon et al., 2016, Maltby and Tolin, 2005, Seal et al., 2012, Zanjani et al., 2008). The remainder (n = 6) recruited treatment-seeking samples (Baker et al., 2002, Martino et al., 2006, Simpson et al., 2010, Swanson et al., 1999, Westra and Dozois, 2006, Martino et al., 2000, Korte and Schmidt, 2015, Syzdek et al., 2014, Syzdek et al., 2016). Five studies had inclusion criteria that included individuals with sub-threshold symptoms of mental illness. Buckner and Schmidt (2009) used the *Social Interaction Anxiety Scale* with a clinical cut-off score of ≥ 43, indicating probable social anxiety. Korte and Schmidt (2015) used the *Anxiety Sensitivity Index* with a cut off score of 25 to ensure the sample participants were experiencing sufficient symptoms, while excluding participants with a current diagnosis of anxiety and those with a history of a severe mental disorder.

Simpson et al. (2010) used the *Yale-Brown Obsessive Compulsive Disorder Scale* with a cut-off score of 16, to indicate moderate symptoms. The studies by Syzdek et al. (2014), and Syzdek et al. (2016) used the anxiety and depression subscale from the *DUKE Health Profile* with a cut off score of ≥ 30, indicating significant symptoms.

4.4.4. Intervention Intensity and Fidelity

The number and duration of MI interventions varied, ranging from 1 to 2 phone calls for 15 minutes each (total 30 minutes) (Zanjani et al., 2008) to three face-to-face sessions totalling 6.5 hours (Buckner and Schmidt, 2009) (see Table 4.3). All studies, with the exception Seal et al. (2012), described a script or protocol for the MI intervention. Seal et al. (2012) based their intervention on findings from their pilot study, and also from results of a meta-analysis (Hettema et al., 2005) that indicated MI intervention effect size was not predicted by MI duration, purity, counsellor training, or post training support. Hettema et al. (2005) found that a manual-based protocol was the only associated factor that predicted outcome (8.5% of the variance), and studies that did not use a manual reported higher effect scores (d = .65) than studies which had used one (d = .37). All studies reported on MI training and supervision for MI therapists, except four (Fiszdon et al. (2016) Maltby and Tolin (2005), Martino et al. (2000), (Syzdek et al., 2014). However, Fiszdon et al. (2016) formally evaluated a random sample of 20% of recorded interviews (see Table 4.4).

Several tools, such the *Motivational Interviewing Treatment Integrity* (MITI) coding (Moyers et al., 2010), were used to report MI fidelity (see Table 4.4) but studies varied in the level of detail provided. Buckner and Schmidt (2009) reported that the therapists' mean global rating scale ranged from 6.11 to 7.00 (mean 6.45, SD .72), and were competent for MI (a rating above 6 was recommended). Seal et al. (2012) stated that 88% of statements made during the interviews were congruent with MI principles. Only Simpson et al. (2010) reported the MITI ratings for global scores, and the subscale scores for *Evocation*, *Collaboration*, *Autonomy*, and *Direction*. They specifically reported that the *Direction* subscale was not MI congruent and was similar to the control group scores. Fiszdon et al. (2016) used a specially

designed assessment form for their study and stated that the MI interviews were higher than the control group in regard to MI strategy adherence (6.05 vs 2.58, *p* = .001), and MI competence (4.48 vs 3.66, *p* = .006).

There were no significant differences between the MI and control groups regarding general interview adherence or competence (*p* > .05). Martino et al. (2006) used a specially designed assessment tool and reported that the control group and the MI group (dual diagnosis) were distinct from each other as the MI intervention had high rates of adherence (*p* < .001) and competence (*p* < .001). The control group (SI) also reported a high rate of adherence (*p* < .001) and competence (*p* < .001) to the MI intervention. Six studies did not report on the interview fidelity assessment of audio/video of the MI interviews (Baker et al., 2002, Maltby and Tolin, 2005, Martino et al., 2000, Swanson et al., 1999, Syzdek et al., 2014, Korte and Schmidt, 2015, Syzdek et al., 2016).

4.4.5. Comparison Treatments

In five studies the comparison interventions were either no treatment or minimal treatment (Maltby and Tolin, 2005, Westra and Dozois, 2006, Zanjani et al., 2008, Syzdek et al., 2014, Syzdek et al., 2016), while Seal et al. (2012) conducted four short phone calls over eight weeks to discuss logistics regarding appointments. Five studies reported that the comparison group was standard treatment or usual care, i.e. face-to-face interviews that were not MI-based (Baker et al., 2002, Martino et al., 2006, Simpson et al., 2010, Swanson et al., 1999, Martino et al., 2000), while Buckner and Schmidt (2009), (Korte and Schmidt, 2015) , and Fiszdon et al. (2016) used an alternative intervention of psychosocial education as a comparison intervention (see Table 4.3). Martino et al. (2006) and Swanson et al. (1999) both indicated,

however, that the absence of a non-treatment group was a limitation, while Westra and Dozois (2006) indicated that their study was limited by having the same therapist for both the MI group and comparison group.

Several studies explicitly stated having the same therapist for both intervention and control groups but did not acknowledge this as a limitation (Korte and Schmidt, 2015, Martino et al., 2006, Martino et al., 2000, Simpson et al., 2010). Half the studies did not mention whether or not study therapists were exclusive to the MI intervention or conducted both interventions (Baker et al., 2002, Buckner and Schmidt, 2009, Fiszdon et al., 2016, Maltby and Tolin, 2005, Seal et al., 2012, Swanson et al., 1999, Syzdek et al., 2014), and only three studies had study therapists that were exclusive to the MI intervention (Westra and Dozois, 2006, Zanjani et al., 2008, Syzdek et al., 2016).

Table 4.2. Study characteristics

Study	Design	MI intensity	Control/comparator	Outcome
Baker et al. (2002)	MI/no treatment + booklet	1 x 30-45 minutes	Usual care, no or minimal treatment and self-help booklet	MI = no treatment + booklet
Buckner & Schmidt (2009)	MI/comparator	3 sessions totalling 6.5 hours	3 x sessions psycho-education, total, 3 hours	MI > comparator
Fiszdon et al. (2016)	MI/comparator	2 x 30-45 minutes	2 x 30-45 minutes	MI > comparator
Korte & Schmidt (2015)	MI/ comparator	1 x 45-60 minutes	1 x 35-50 minutes	MI > comparator
Maltby & Tolin (2005)	MI/no treatment	4 x 4 weeks, minutes not reported	Wait List (WL); no or minimal treatment	MI > no treatment
Martino et al. (2000)	MI/ standard care	1 x 45-60 minutes	1 x 45-60 minutes	MI > standard care
Martino et al. (2006)	MI/standard care	2 x 1 hour x 1 week	Standard psychiatric Interview (SI), 2 sessions x 1 hour x 1 week	MI > standard care
Seal et al. (2012)	MI/comparator	4 x 20-30 minutes telephone calls	Attention control, 4 short telephone calls x 8 weeks	MI > comparator
Simpson et al. (2010)	MI/standard care	3 x 90 minutes	Standard treatment, 3 x 90 minutes	MI < standard care
Swanson et al. (1999)	MI/standard care	1 x 15 minutes / 1 x 60 minutes	Standard treatment, individualised treatment plan	MI > standard care
Syzdek et al (2014)	MI/no treatment	1 x 2 hours	No Pre-Treatment	MI > no treatment
Syzdek et al (2016)	MI/no treatment	1 x 2 hours	No Pre-Treatment	MI > no treatment

Westra & Dozois (2006)	MI/no treatment	3 x 1 hour	No Pre-Treatment (NPT), no or minimal treatment	MI > no treatment
Zanjani et al. (2008)	MI/no treatment	1-2 calls x 15 mins	Usual care, no or minimal treatment	MI > no treatment

Table 4.3. MI treatment fidelity

Study	Therapists	Specific manual or interview protocol	Training	Supervision	Tapes sessions (audio/video) and assessed
Baker et al. (2002)	4 x psychologists. Unknown if exclusive to MI or control.	Yes, therapist manual	Yes. No details. First author provided initial training	Weekly by first author	Unknown
Buckner & Schmidt (2009)	3 x doctoral students. Unknown if exclusive to MI or control.	Yes, motivation enhancement treatment for cognitive behavioural therapy protocol	Yes. 6 hours of didactic instruction, shadowing, training cases	Weekly	25% randomly selected, MITI, independent rater
Fiszdon et al. (2016)	Non-specific therapist. Unknown if exclusive to MI or control	Yes, DDMI therapist manual	Unknown	Unknown	20% randomly selected, specially designed evaluation form, blind rater
Korte & Schmidt (2015)	1 x doctoral student. Administered both MI and control.	Yes, motivation enhancement treatment protocol	Unknown	Yes, by second author	Unknown
Maltby & Tolin (2005)	Non-specific therapist. Unknown if exclusive to MI or control	Unknown	Unknown	Unknown	Unknown
Martino et al. (2000)	1 x doctoral degree in psychology.	Unknown	Unknown	Unknown	Unknown

	Administered both MI and control.				
Martino et al. (2006)	1 x doctoral degree in psychology, 2 masters in social work, 1 bachelor of psychology. Administered both MI and control.	Yes, DDMI therapist manual	Yes. First author trained therapists, intensive workshop training, post workshop practices	Yes, dependant on treatment sessions	6 randomly selected, specially designed evaluation form, independent rater
Seal et al. (2012)	Minimum of master's degree in psychology or related field. Unknown if exclusive to MI or control	Unscripted	Yes, 16 hours MI training	Monthly. MI trainer provided feedback	Almost all calls were coded and rated, MITI, independent blinded rater
Simpson et al. (2010)	2 x doctoral level therapists. Administered both MI and control.	Yes, exposure and response and motivational interviewing + MI manual	Yes, relevant readings, 3 days training, training cases	Weekly phone supervision	10% assessed, MITI, independent blinded rater
Swanson et al. (1999)	4 upper level undergraduate psychology students. Control was standard treatment. All therapists conducted MI.	Unknown	Yes, relevant readings, 6 hours of didactic instruction, role play with feedback	Daily	Unknown
Syzdek et al. (2014)	Unknown	Yes, GBMI protocol	Unknown	Unknown	Unknown

Syzdek et al. (2016)	2 x graduate students. Control group was no treatment. Therapist exclusive to MI	Yes, GBMI protocol	Yes, fourth author trained therapists	Yes, no details	Assessed during supervision, unknown number assessed, not formally measured
Westra & Dozois (2006)	1 x PhD level clinical psychologist. Control group was no treatment. Therapist exclusive to MI.	Yes, therapist manual	Yes, over 6 months (5 hours per week). First 15 cases videotaped	Yes, closely by first author	Random sample, unknown number assessed, not formally measured
Zanjani et al. (2008)	Registered nurses. Control group had automated calls. Therapists exclusive to MI.	Yes, TBR-CM manual	Therapists has several years of experience - non-specific	Weekly by psychiatrist	Not formally measured
DDMI, dual diagnosis motivation interview; GBMI, Gender-based motivational interview; MITI, Motivational Interview Treatment Integrity; TBR-CM, telephone based referral care management					

4.4.6. Post-Intervention Treatment Attendance

Five studies reported minimal or no effect of MI as a pre-treatment, of which three recruited treatment-seeking participants (Simpson et al., 2010, Martino et al., 2006, Baker et al., 2002), and two recruited non-treatment-seeking samples (Syzdek et al., 2014, Syzdek et al., 2016) . Simpson et al. (2010) found no significant difference between MI pre-treatment intervention and standard care groups in attending or completing post-MI treatments (all randomised: *p* = .23; all completers: *p* = .13). Martino et al. (2006) found that despite more participants from the MI pre-treatment intervention attending more post-MI interventions (75% vs 55%), they attended fewer sessions in the offered program and had reduced attendance. There were no differences between the MI intervention and standard treatment mean days (19.16 vs 19.09 respectively, *p* = .66) and no participant from either group remained in the program at 12 weeks.

The study by Baker et al. (2002) also found no difference in attendance to the offered treatment (16% vs 17.3%), and reported that the control group attended a greater number of post pre-treatment sessions compared to the MI pre-treatment group (5.79 vs 4.46, respectively). Syzdek et al. (2014) found that there was no difference between the intervention and control group in help-seeking from formal sources. However, the MI pre-treatment did facilitate the increase in informal help-seeking from sources such as a parent (25% vs 0%) or significant others (27% vs 0%). Syzdek et al. (2016) found there was a significant increase at two-month follow-up for the MI group to seek informal help from a parent (45% vs 8%), and a non-significant trend for the MI group to seek help from professional sources (39% vs 8%).

4.4.7. Treatment Effects

Six studies reported treatment effect sizes for various outcomes (see Table 4.5). Buckner and Schmidt (2009) reported small effects regarding those in the MI treatment condition and openness to therapist over time (w^2 = .02, p = .02). Westra and Dozois (2006) also reported a large effect on the anxiety change expectancy scale for those in the MI group (d = .60, p < .05), a large effect to homework compliance (d = .96, p < .05), and a moderate effect on depressive symptoms (d = .64, p < .06) with the largest effect on those with generalised anxiety disorder (d = 1.29). Fiszdon et al. (2016) reported that MI pre-treatment had a large effect on motivation to change immediately after the MI pre-treatment (d = 1.49), and after the cognitive rehabilitation (d = 1.19). Seal et al. (2012) reported that MI had a large effect (Cohen's h = 0.74) regarding engagement in the offered post-MI treatment. Martino et al. (2006) reported a small effect in the reduction in primary drug use for both MI intervention and control (d = .47, and .44, respectively).

Syzdek et al. (2014) reported results from follow up at one and three months. At one month, the MI had a small effect on depressive symptoms (d = .50), anxiety symptoms (d = .37), and the intention to seek formal help (d = .39). There were large treatment effects on problematic drinking (d = .81), and intention for informal help seeking (d = -.85), and a moderate effect on stigma (d = -.64). However, these results were not statistically significant with the exception of informal help seeking which approached significance (p = .07). At three months follow up, there were moderate effects on depressive symptoms (d = .50), anxiety symptoms (d = .59) and informal help seeking (d = -.51), and were small effects on hostility (d = .22), problematic drinking (d = .45), stigma (d = .39), and intention to seek formal help (d = .28).

However, these effects were not statistically significant. Syzdek et al. (2016) reported results at two months follow up and found a small but significant effect on treatment seeking from informal sources such as parents (d = .40, p = .04), and a non-significant effect on formal treatment seeking (d = .35, p = .10). Several studies commented that effects may not have been attributable to MI alone. Seal et al. (2012) did not formally assess the MI intervention, while Fiszdon et al. (2016) added the extra element of providing feedback to their intervention while not measuring this effect on outcomes.

Table 4.4: Study outcomes

Authors	Outcome measures	Results
Baker et al. (2002)	SSMS engagement	3 months: No difference in attendance 13/79 (16.5%) vs 14/81 (17.3%). MI averaged 4.46 (3.23) session while control averaged 5.79 (2.81) sessions.
	Readiness to change and substance use	3 months: No percentage difference for treatment attendance according to stages of change (late contemplation/action vs pre-contemplation/early contemplation): threshold drinkers (19.6% vs 9.8%), cannabis users (16.4% vs 13.7%), or amphetamine users (36.0% vs 9.1%).
Buckner & Schmidt (2009)	Attendance at first cognitive behavioural therapy	Greater likelihood of cognitive behavioural therapy attendance [58.3% (7/12) vs 13.3% (2/15), p = .048].
	Openness to therapist	Approached significance (p = .059). Significant time x condition interaction (p = .02, w^2 = .02).
	Willingness to schedule appointment	Significant at appointment 3, p = .006; willingness was related to attending CBT, p = .01
	Willingness to change	Improved confidence (p = .03); time x condition approached significance (p = .06)
Fiszdon et al. (2016)	Intrinsic motivation	Intrinsic motivation scores increased over time (p < .001); after MI (d = 1.49); after cognitive rehabilitation training (d = 1.19)
	Attendance	Better attendance for cognitive rehabilitation (mean sessions: 0.96, control; 5.06, intervention) (p < .001, d = 1.10).
Korte & Schmidt (2015)	Motivation	MI associated with pre-contemplation subscale
	Readiness to change	MI associated with Contemplation subscale
	Importance	Condition favouring MI
	Confidence	Condition favouring MI
	Attendance	MI group more likely to complete ASAT intervention

Maltby & Tolin (2005)	Exposure and response prevention participation	Greater likelihood of agreeing to participate [86% (6/7) vs (20% (1/5), $p < .05$].
	Treatment efficacy	Post pre-treatment: RI group had significant greater decreases in fear of exposure and response prevention than WL, $p < .05$. Post exposure and response prevention: Y-BOCS scores dropped 59%, from severe to mild (mean 28.33, SD 1.53; mean 11.67, SD 7.77). CGI scores showed improvements.
Martino et al. (2000)	ERP participation	Greater likelihood of agreeing to participate 6/7 (86%) vs 1/5 (20%)
	Treatment efficacy	Post pre-treatment: RI group had significant greater decreases in fear of ERP than WL Post ERP: Y-BOCS scores dropped 59%, from severe to mild (M = 28.33, SD = 1.53, to, M = 11.67, SD = 7.77) CGI scores showed improvements
Martino et al. (2006)	Treatment adherence	No differences between groups, but trend in favour for DDMI (79% vs 55%) for program admission. No differences for days of program attendance. No participant remained in program at 12 weeks.
	Days of substance use in 4 weeks	Baseline to 12 weeks, all participants reduced frequency over time: primary drugs (44%), $p < .01$; other drug use (40%), $p = .04$; alcohol use (37%), $p = .02$. No differences between interview groups or group x time. Regression used to determine differences by primary drug use. DDMI: Primary cocaine users, $p = .01$. Reduction in frequency of cocaine use by 80%, and secondary drug use and alcohol over time.
	Substance use problem severity	No differences between groups. Participants achieved 50.11 (SD 28.89) days primary drug abstinence. Abstinence of secondary drugs for 67.84 (SD 24.46) days, and alcohol 65.35 (SD 25.86) days. Changes over time for Addiction Severity Index substance use scores: problem reduction for primary drug use, $p < .01$; secondary drug use, $p = .01$; alcohol use, $p = .04$; Problems with secondary drug use increased over time for DDMI ($p < .01$).

	Days of medication adherence	Increased adherence in both groups by 18.8% ($p < .01$), Mean: 18.33 – 21.77 days, DDMI: $d = 0.17$, SI: $d = 0.51$. No differences between groups over time.
	Psychiatric problem severity	All participants reported reduced psychological problems, all scales ($p = .01$). Group x time for the PANSS negative subscale ($p = .03$). DDMI patients had slower decline in negative psychotic symptoms over time.
	Readiness to change substance use and psychiatric condition	No differences, for groups, between groups over time. Marijuana users less motivated than cocaine users for addressing primary drug use: mean RTC score, 63.0 vs 78.4 ($p = .01$).
	Interview experiences	No differences between groups.
Seal et al. (2012)	MI to improve mental health treatment initiation	More MI group engaged in mental health treatment (62% vs 26%; relative risk = 2.41, 95% CI = 1.33-4.37, $p = .004$, $d = .74$).
	Mental health treatment retention	Greater number of mental health visits (1.68, SD 2.73 vs .38, SD .81; incidence rate ratio = 4.36, 95% CI = 1.96-9.68, $p < .001$).
	Mental health symptoms	Both groups experienced slight decreases in depression scores and post-traumatic stress disorder scores but not significant.
	Barriers to care	Decreased stigma regarding mental health treatment at 8 weeks ($p = .03$), and approached significance at 16 weeks ($p = .07$).
	Readiness	Greater readiness to change at 16 weeks: approached significance ($p = .06$).
	Engagement	Greater intention to engage in mental health treatment at 8 weeks ($p = .02$) and 16 weeks ($p = .05$).
	Patient engagement	EX/RP = 14/15 completions vs EX/RP+MI = 11/15 completions.

Simpson et al. (2010)	Patient adherence to between-sessions EX/RP procedures	No difference between groups in total PEAS scores, p = .61.
	Therapist adherence to treatments	High adherence to EX/RP condition. High MITI global ratings for MI intro sessions except for Direction, which was also low in the MI group, and generally not congruent with MI principles.
	Obsessive compulsive disorder symptoms;	No differences between groups (p = .61).
	Y-BOCS	No differences between groups (p = .51).
	Depression	No difference between groups (p = .86).
	Quality of life	No difference between groups (p = .38).
Swanson et al. (1999)	First outpatient attendance	More MI patients went to first appointment (p < .01): dual diagnosis, p < .01; psychotic: 47% vs 21%, p < .05; affective: 50% vs 20%, p < .05.
	Attendance of inpatient activities	Non-dual diagnosis trend towards attending more cognitive behavioural therapy (46% vs 17%, p = .061).
	Attrition	None.
Syzdek et al. (2014)	Depressive symptoms	T2: small effect, d = .43, p > .05; T3: moderate effect, d = .50 (p > .05). Symptoms decreased from mild to minimal
	Anxiety symptoms	T2: small effect, d = .37, p>.05; T3: moderate effect, d = .59 (p > .05). Symptoms decreased from mild to minimal
	Health seeking behaviours	Formal help seeking; Attitude: no effect at T2 and T3; Intentions: T2: small effect, d = .39 (p > .05); T3: small effect, d = 0.28 (p > .05)
		Informal help seeking: Intentions; T2: large effect, d = -.85 (p = .07); T3: moderate effect, d = -.05 (p>.05)
Westra & Dozois (2006)	MI response	Mental health. Anxiety and depression: not significant.
	Engagement with cognitive behavioural	Cognitive behavioural therapy response. Standard scores principle outcomes measures, both groups showing improvement (p < .05). Significant 2-way interaction (p < .05, d = .38). Greater reductions in principle outcomes

	therapy treatment completion	measures ($p < .05$). Reduction in depression symptoms (BDI-II), approaching significance ($p < .06$, $d = .64$). 84% vs 63% competed cognitive behavioural therapy, approaching significance ($p = .08$). Completers tended to be more highly educated than drop outs ($p < .05$).
	Motivation for change	Baseline to post MI: expectancy for change: ACES x time ($p < .05$, $d = .06$); diagnostic sub groups ($p < .05$).
	Homework	Client rated homework compliance ($p < .05$, $d = .96$).
		Therapist rated homework compliance, not significant
	Attrition	5.5% (3/55) loss at 6 months
Zanjani et al. (2008)	Treatment attendance	More likely to attend psychiatric appointment (70% vs 32%; $p < .001$). Intervention participants that had BMI were more likely to attend scheduled appointment, than intervention group who did not complete BMI (79% vs 22%; $p < .001$). Overall appointments: intervention group attended more appointments over 6 months ($p = .008$). Intervention effect remained significant when controlled for age and diagnostic group.

4.5. Meta-Analysis

Twelve studies were included in the meta-analysis (Baker et al., 2002, Buckner and Schmidt, 2009, Maltby and Tolin, 2005, Martino et al., 2006, Seal et al., 2012, Simpson et al., 2010, Swanson et al., 1999, Westra and Dozois, 2006, Zanjani et al., 2008, Korte and Schmidt, 2015, Syzdek et al., 2014, Syzdek et al., 2016). Syzdek et al. (2014) reported health-seeking behaviours at both follow-ups, and therefore only the first follow up data for formal treatment seeking behaviours were included in the analysis. Two studies were excluded because they only reported results on the number of post MI sessions attended, rather than the number of individuals that attended (Martino et al., 2000, Fiszdon et al., 2016).

A total of 711 participants (359 intervention and 352 controls) was recruited in the 12 studies (Figure 4.2). Overall heterogeneity was moderate (I^2 = 46%, p = .04). Heterogeneity assessment by visual inspection of the vertical line from mid-points of the black diamond, show that Baker et al. (2002) and Simpson et al. (2010) did not intersect. Both studies reported no differences between intervention and control groups. The width of the CI was narrow and did not contain a zero value (95% CI: 1.69-4.98) and the OR revealed that participants in the MI intervention were more likely to attend offered treatment (OR = 2.90), with a significant effect size (Z = 3.87, p < .001). Subjectively, as the funnel plot is symmetrical, there is no evidence of publication bias (see Figure 4.3).

A sensitivity analysis was conducted and the data from Baker et al. (2002) and Simpson et al. (2010) was removed from a re-run of the analysis. The sample was homogenous (I^2 = 0%), and participants who attended MI pre-treatment were more likely to seek post-MI treatment (OR: 4.04, 95% CI: 2.71-6.04), with a significant effect size (Z = 6.83, p < .001).

Figure 4.2: Forest plot: attendance to treatment

Whole sample

Study or Subgroup	Intervention Events	Total	Control Events	Total	Weight	Odds Ratio M-H, Random, 95% CI	Odds Ratio M-H, Random, 95% CI
Baker et al. 2002	13	79	14	81	14.2%	0.94 [0.41, 2.16]	
Buckner et al. 2009	7	12	2	15	5.9%	9.10 [1.39, 59.62]	
Korte & Schmidt 2015	6	12	0	11	2.8%	23.00 [1.11, 477.46]	
Maltby and Tolin 2005	3	7	1	5	3.5%	3.00 [0.21, 42.62]	
Martino et al. 2006	19	24	11	20	9.3%	3.11 [0.83, 11.66]	
Seal et al. 2012	21	34	10	39	12.3%	4.68 [1.73, 12.70]	
Simpson et al. 2010	11	15	14	15	4.3%	0.20 [0.02, 2.02]	
Swanson et al. 1999	30	64	12	57	14.4%	3.31 [1.48, 7.39]	
Syzdek et al. 2014	2	12	2	10	4.8%	0.80 [0.09, 7.00]	
Syzdek et al.2016	7	18	1	13	4.5%	7.64 [0.81, 72.40]	
Westra and Dozois 2006	21	25	19	30	9.5%	3.04 [0.83, 11.17]	
Zanjani et al. 2008	40	57	18	56	14.5%	4.97 [2.24, 11.03]	
Total (95% CI)		359		352	100.0%	2.90 [1.69, 4.98]	
Total events	180		104				

Heterogeneity: Tau² = 0.36; Chi² = 20.24, df = 11 (P = 0.04); I² = 46%
Test for overall effect: Z = 3.87 (P = 0.0001)

0.01 0.1 1 10 100
Favours control   Favours experiment

Whole sample: sensitivity analysis

Study or Subgroup	Intervention Events	Total	Control Events	Total	Weight	Odds Ratio M-H, Random, 95% CI	Odds Ratio M-H, Random, 95% CI
Baker et al. 2002	13	79	14	81	0.0%	0.94 [0.41, 2.16]	
Buckner et al. 2009	7	12	2	15	4.5%	9.10 [1.39, 59.62]	
Korte & Schmidt 2015	6	12	0	11	1.7%	23.00 [1.11, 477.46]	
Maltby and Tolin 2005	3	7	1	5	2.3%	3.00 [0.21, 42.62]	
Martino et al. 2006	19	24	11	20	9.2%	3.11 [0.83, 11.66]	
Seal et al. 2012	21	34	10	39	16.1%	4.68 [1.73, 12.70]	
Simpson et al. 2010	11	15	14	15	0.0%	0.20 [0.02, 2.02]	
Swanson et al. 1999	30	64	12	57	24.8%	3.31 [1.48, 7.39]	
Syzdek et al. 2014	2	12	2	10	3.4%	0.80 [0.09, 7.00]	
Syzdek et al.2016	7	18	1	13	3.2%	7.64 [0.81, 72.40]	
Westra and Dozois 2006	21	25	19	30	9.5%	3.04 [0.83, 11.17]	
Zanjani et al. 2008	40	57	18	56	25.2%	4.97 [2.24, 11.03]	
Total (95% CI)		265		256	100.0%	4.04 [2.71, 6.04]	
Total events	156		76				

Heterogeneity: Tau² = 0.00; Chi² = 5.40, df = 9 (P = 0.80); I² = 0%
Test for overall effect: Z = 6.83 (P < 0.00001)

0.01 0.1 1 10 100
Favours control   Favours experiment

Treatment seeking

Study or Subgroup	MI Events	Total	Control Events	Total	Weight	Odds Ratio M-H, Random, 95% CI	Odds Ratio M-H, Random, 95% CI
Baker et al. 2002	13	79	14	81	26.7%	0.94 [0.41, 2.16]	
Martino et al. 2006	19	24	11	20	18.4%	3.11 [0.83, 11.66]	
Simpson et al. 2010	11	15	14	15	8.9%	0.20 [0.02, 2.02]	
Swanson et al. 1999	30	64	12	57	27.2%	3.31 [1.48, 7.39]	
Westra and Dozois 2006	21	25	19	30	18.7%	3.04 [0.83, 11.17]	
Total (95% CI)		207		203	100.0%	1.79 [0.81, 3.96]	
Total events	94		70				

Heterogeneity: Tau² = 0.44; Chi² = 9.28, df = 4 (P = 0.05); I² = 57%
Test for overall effect: Z = 1.44 (P = 0.15)

0.01 0.1 1 10 100
Favours control   Favours experiment

Non-treatment seeking

Study or Subgroup	Experimental Events	Total	Control Events	Total	Weight	Odds Ratio M-H, Random, 95% CI
Buckner et al. 2009	7	12	2	15	8.0%	9.10 [1.39, 59.62]
Korte & Schmidt 2015	6	12	0	11	3.1%	23.00 [1.11, 477.46]
Maltby and Tolin 2005	3	7	1	5	4.0%	3.00 [0.21, 42.62]
Seal et al. 2012	21	34	10	39	28.6%	4.68 [1.73, 12.70]
Syzdek et al. 2014	2	12	2	10	6.0%	0.80 [0.09, 7.00]
Syzdek et al.2016	7	18	1	13	5.6%	7.64 [0.81, 72.40]
Zanjani et al. 2008	40	57	18	56	44.6%	4.97 [2.24, 11.03]
Total (95% CI)		152		149	100.0%	4.83 [2.84, 8.24]
Total events	86		34			

Heterogeneity: Tau² = 0.00; Chi² = 4.39, df = 6 (P = 0.62); I² = 0%
Test for overall effect: Z = 5.79 (P < 0.00001)

Figure 4.3: Publication bias

4.6. Sub Group Meta-Analysis

4.6.1. Treatment-Seeking and Non-Treatment-Seeking

Data were analysed by sub groups, treatment-seeking for mental illness and non-treatment-seeking for mental illness, to assess if MI was an effective strategy in samples that were not already highly motivated. The treatment-seeking group included five studies (Baker et al., 2002, Martino et al., 2006, Simpson et al., 2010, Swanson et al., 1999, Westra and Dozois, 2006), with an overall sample of 410 participants (207 intervention group, 203 control group). Heterogeneity was substantial (I^2 = 57%) and all confidence intervals intersected the line of no effect. The RE model revealed that although the intervention group was more likely to attend treatment (OR: 1.79, 95%CI: 0.81-3.96) the effect was not significant (Z = 1.44, p = .15). Within this sample, Simpson et al. (2010) reported an OR of 0.20 (95%CI: 0.02-2.02), and Baker et al. (2002) reported an OR of 0.94 (95%CI: 0.41-2.16), suggesting no effect for the MI intervention (refer to Figure 4.2).

Seven studies were included in the non-treatment-seeking analysis component (Buckner and Schmidt, 2009, Maltby and Tolin, 2005, Seal et al., 2012, Zanjani et al., 2008, Korte and Schmidt, 2015, Syzdek et al., 2014, Syzdek et al., 2016), with a smaller overall sample size (n = 301 participants; 152 in the intervention group and 149 controls). All confidence intervals intersected the line of no effect and there was no heterogeneity (I^2 = 0%) and the RE model revealed that the intervention group were more likely to attend treatment (OR: 4.83, 95%CI: 2.84-8.24), with a large treatment effect size (Z = 5.79, p < .001) (see Figure 4.2).

4.7. Discussion

This is the first systematic literature review and meta-analysis to analyse the effectiveness of MI as a pre-treatment in terms of its effect on post-intervention attendance to treatment. MI was most beneficial for samples that were not seeking treatment for mental health problems. The non-treatment seeking intervention group was homogenous and almost five times more likely to attend post MI treatment than samples that were treatment-seeking. This is comparable to a meta-analysis by Hettema et al. (2005), which concluded that MI may be contraindicated for individuals ready for change due to them already being at a high level of motivation and within the preparation or the action stage of the change cycle.

The rationale behind MI is that it raises an individual's ambivalence, taking into account their stage of change, to move that individual to the next stage by enhancing their perceived need for change, and increasing their motivation to change (Prochaska et al., 1992b). Those not seeking treatment may be at the pre-contemplation or contemplation stage, and MI can assist them to increase their motivation to change by exploring ambivalence. An individual's perceived need is the strongest predictor of the use of mental health services (Mills et al., 2012) and the more severe the mental illness, the higher was the perceived need (Andrade et al., 2014). An individual's attitude is an important barrier to initiating and engaging in treatment, where attitudinal barriers are highly prevalent in mild and moderate cases of mental illness (Andrade et al., 2014). Public and personal stigma are known barriers to seeking treatment in some studies (Corrigan et al., 2006).

Individuals already seeking treatment may have complex treatment needs and although MI pre-treatment motivated participants to attend post-MI interventions, participants were not motivated for continued attendance, nor were participants fully engaged with the treatments offered (Baker et al., 2002, Fiszdon et al., 2016, Simpson et al., 2010). This may suggest that either the post-MI treatments were unsuitable for the individual, motivation to attend these interventions needed to be maintained with MI booster sessions, or there were other influencing factors that went unmeasured. Booster sessions, or multi-contact interventions, may help to maintain the impact of the MI intervention on the intended behaviours or therapeutic goals, especially in the long term (Aseltine, 2010). In our review, although there was a wide range of MI intervention intensity between different groups, a brief telephone intervention for as little as 15 minutes on two occasions was effective in motivating participants to attend post-MI therapy (Zanjani et al., 2008).

Although MI was originally developed as a counselling style to be delivered in-person, other studies have also demonstrated the efficacy of MI as a telephone delivered intervention (Gaume et al., 2014, Mello et al., 2012, Mello et al., 2008). Gaume et al. (2014) tested telephone MI on a sample of men from the emergency department who were not seeking treatment for heavy alcohol consumption. They found that MI delivered by telephone was an effective treatment for this sample in reducing alcohol consumption.

Telephone interventions provide a novel method to provide mental health support, and are a relatively low cost and a contextually appropriate tool for use in healthcare settings, particularly when fiscal considerations are paramount (Kaplan, 2006) and have the potential to keep patients motivated to attend further treatments. They also have the potential to

reach populations that may not be able to access effective interventions for their mental illness symptoms (Kazdin and Rabbitt, 2013) and does not have the limitations of computer based interventions which may be restricted due to internet access and its unreliability in remote areas (Harrison et al., 2011). Several studies have demonstrated that psychological therapies delivered by telephone were as effective as face-to-face treatment (Mohr et al., 2008), therapeutic alliance was comparable, and participants were satisfied with this model of delivery (Jenkins-Guarnieri et al., 2015).

As MI appears to be effective for populations that are not seeking treatment for their mental illness, opportunistic health service presentation represents a time when patients may be amenable to an intervention (Drummond et al., 2014, Woodruff et al., 2013). Screening and referral to treatment in settings other than those concerned with mental health may be viable. Using motivation techniques like MI may be a novel approach in engaging patients to attend further treatments.

4.7.1. Limitations

The studies included in this review were generally sound in design and execution. However, a common weakness was limited explanation of the extent of blinding, the small sample sizes, and the general lack of data relating to MI intervention quality and its relationship to the effects of treatment, despite most studies stating that the MI interviews were assessed. Two studies reported that recruitment methods may have influenced the results through unintentionally recruiting a sample which was already high in motivation (Buckner and Schmidt, 2009, Maltby and Tolin, 2005) and it was therefore difficult to ascertain whether the MI intervention had a true effect on motivation levels. Selection bias can compromise

study design and reduce reliability of the results (Akobeng, 2005). Bias was also introduced into studies by the limited blinding of both research personnel and study participants.

Blinding research personnel to treatment allocation reduces selection bias by preventing researchers from influencing group assignment, whether consciously or unconsciously (Akobeng, 2005) and investigators that are not blinded to treatment allocation can transfer their attitudes for or against an intervention to participants (Schulz and Grimes, 2002). Two studies explicitly stated there was only one therapist conducting both the control and intervention (Martino et al., 2006, Simpson et al., 2010). Inadequate blinding of participants can affect patient expectations, their reporting of symptoms, can increase trepidation, and study withdrawal (Devereaux et al., 2002, Schulz and Grimes, 2002). Literature reviews have also indicated that where allocation concealment was either inadequate or unclear, studies reported larger treatment effects where OR can be increased by 30% to 41% (Schulz et al., 1995).

Sample size has an important influence on study quality (Smith & Beh, 2012), with small sample sizes having limited power to detect the true effect of an intervention, which may lead to false positive results (Button et al., 2013). No study reported a power calculation for sample size requirements, however, the samples recruited in these studies represent a population of interest and several of the studies were pilot studies to determine feasibility of an MI intervention (Buckner and Schmidt, 2009, Martino et al., 2006, Simpson et al., 2010, Syzdek et al., 2014, Syzdek et al., 2016). Due to the low reporting of the outcomes of treatment fidelity measures, type 1 error may occur due to unknown factors which may have

influenced the results. Similarly, type 2 error could occur where researchers report non-significant results of an intervention which may be effective (Borrelli, 2011).

Without treatment assessment, it is difficult to ascertain causal effects and whether there were other influences on the results other than the actual MI treatment, such as individual interaction styles, characteristics of the therapist and the study participant. These differences can be assessed through audio or video taped sessions evaluated with a validated tool such as the MITI by an independent rater (Borrelli, 2011). Treatment fidelity measures the process by which the MI was delivered. Measuring process ensures the MI is delivered according to the treatment principals and can measure variability between therapists (Rubin et al., 2001). As a quality indicator, researchers can state that the '*motivational interviewing was conducted according to techniques described by Miller and Rollnick*.' Otherwise, it would be more equivalent to a *motivation style counselling* which is also shown to be beneficial in this review.

4.7.2. Implications for Mental Health Nursing

This review of the literature provides evidence for the use of MI for samples which are not seeking treatment for mental health problems. Although the review focused on mental health settings, MI can be used by clinicians in all health settings to promote and facilitate behaviour change particularly for patients whom are resistant or ambivalent to change. Although the causal links to the success of MI has not been clearly demonstrated in various literature reviews focussing on mental health conditions, the outcome measure of treatment attendance demonstrates the feasibility of using MI as a health promotion tool. Particular

attention can be made to delivering MI by telephone to keep patients motivated to attend mental health appointments and further treatments. Telephone delivered MI is a viable low-cost option in promoting continued mental health care and is novel approach to mental health treatments.

4.8. Conclusions

This systematic review and meta-analysis revealed that MI is an intervention which can be used at opportunistic health care presentations for patients whom are not seeking treatment for their mental ill-health. Due to MIs principles, trained therapists can raise an individual's ambivalence regarding behaviours and help motivate change. Since process measures are underreported in the research and difficult to ascertain the causal links to outcomes, outcome measures like treatment attendance can indicate the quality and the success of the intervention. Future research which utilises MI must report the process in which the MI was delivered to ensure the treatment is in line with the principles of MI and called be called thus, otherwise it is difficult to determine what factors in the therapeutic alliance was the causal factor for change.

Chapter 5. Phase One: prevalence study

5.1. Overview

A prevalence study was conducted to determine underlying psychological distress experienced by ED attendees and whether the ED is suitable for this type of recruitment strategy. The results also provide valuable information regarding protocol development for the intervention phase of the study. An appropriate screening tool needed to be identified that would correctly identify the target sample, while also being sensitive enough to show changes over time. Two validated psychological surveys were used: the K10, which is a widely-utilized for epidemiological surveys; and the DASS-21, which is a validated survey tool that is mainly used in clinical settings.

The methodology for the exploratory factor analysis was the same as for the conceptualization analysis; with additional evidence also gathered from other sources to determine cut off points and methods for determining the accuracy of the analysis. Exploratory factor analysis is a technique used to measure the latent variables of a psychological survey, to determine the 'grouping', or the relationship between the variables in relation to the larger latent variable they may create. The K10 and the DASS-21 were analyzed and assessed for validity, and also compared to measure correlations between the two. Depending on these results, the survey deemed most suitable was then analyzed using multiple regression techniques.

These data analysis methods provide evidence of the robustness of the screening surveys, and aids in the accurate description of the sample. The literature reports on demographic and clinical variables and their relationship with mental illness. Elucidating significant relationships between K10 scores and these variables strengthens the survey's accuracy for the measurement of psychological symptoms, in terms of the severity of the symptoms being experienced. By examining these relationships, it is reasonable to assume that individuals scoring in the high range would be suffering a diagnosable mental illness and can therefore be safely excluded from this study, as the intervention focused on health promotion and being effective in allowing the progression of sub threshold symptoms progressing to levels which are severe. The K10 therefore enable accurate screening for the correct sample.

Results from the DASS-21 and the K10 are shown on Tables 5.1 and 5.2, respectively, including the scores in relation to gender and age. Although descriptive analysis may not necessarily be the most sophisticated form of data analysis available, trends nevertheless highlight, or follow what is known in the literature.

5.2. DASS21 and K10 Results: Descriptives

In the total sample, the DASS21 mean scores for depression, anxiety and stress were 8.29 (SD 10.30), 8.69 (SD 9.05), and 12.06 (SD 10.0), respectively. The median scores (inter-quartile range) for depression, anxiety, and stress were 4 (2-12), 6 (2 − 13.5), and 10 (4 − 18) respectively. Men scored slightly higher (mean 8.38, SD 10.76) than women (mean 8.20, SD 9.85) for depression, whereas women scored higher for anxiety (mean 8.98, SD 8.86) and

stress (mean 12.33, SD 10.25) than men (mean 8.39, SD 9.26; mean 11.78, SD 10.74, respectively). However, these differences were not statistically significant (U = 59446, z = -4.13, p = 0.68; U = 56131, z = -1.42, p = 0.16; and U = 57374, z = -1.20, p = 0.23, respectively).

The DASS sample was fairly evenly distributed across age groups (see Table 5.1) and although the differences in scores between age groups was not large, a Kruskall-Wallis test revealed there was a statistically significant difference in stress scores between age groups [X^2 (6, n = 696) = 29.12, p = < 0.001]. The youngest age groups (18-24, n = 95; 25-34, n = 87; and 35-44, n = 103) recorded the highest DASS21 stress median score (Md = 12), whereas the lowest median score (Md = 6) was recorded in the oldest age group (75 plus, n = 103).

The K10 sample was fairly evenly distributed across age groups (see Table 5.2) and although the differences in scores between groups were not large, a Kruskall-Wallis test revealed they were statistically significant [X^2 (6, n = 681) = 18.41, p = 0.005]. The youngest age group (18-24, n = 93) recorded the highest K10 median score (Md=17), whereas the lowest median score (Md = 14) was recorded in the oldest age groups (65-74, n = 83; 75 plus, n = 101).

The results obtained during our analysis of the K10 and DASS21 self-reporting mental health surveys are generally consistent with other research findings which report less psychological distress among older age groups, when compared to younger age groups (Blazer and Hybels, 2005, Beekman et al., 1999, Alonso et al., 2004b, Wells et al., 2006, Trollor et al., 2007, Henderson et al., 1998, Jorm et al., 2005, Scott et al., 2008, Pirkola et al., 2005, Kessler et al., 1994, Regier et al., 1988, Simon and Von Korff, 1992, Kessler et al., 2010, Bijl et al., 1998).

Table 5.1: DASS21, age and gender

DASS21		Mean scores (SD, n)							
		Age							Total sample
Scale	Gender	18-24	25-34	35-44	45-54	55-64	65-74	≥75	
Depression	Male	8.93 (12.39, 43)	7.61 (9.02, 46)	7.96 (10.59, 47)	9.54 (12.85, 61)	9.24 (10.46, 45)	7.47 (10.03, 49)	7.72 (9.40, 50)	8.38 (10.76, 341)
	Female	10.07 (10.51, 54)	8.98 (11.82, 41)	9.38 (11.77, 55)	6.12 (8.82, 52)	8.50 (8.95, 64)	7.03 (8.16, 37)	6.92 (8.10, 52)	8.20 (9.85, 355)
	Total	9.57 (11.33, 97)	8.25 (10.39, 87)	8.73 (11.21, 102)	7.96 (11.26, 113)	8.81 (9.56, 109)	7.28 (9.22, 86)	7.31 (8.73, 102)	8.29 (10.30, 696)
Anxiety	Male	9.12 (9.76, 43)	7.70 (7.23, 46)	7.36 (8.76, 47)	9.23 (9.84, 60)	9.35 (11.26, 46)	8.00 (9.11, 48)	7.84 (8.59, 50)	8.39 (9.26, 340)
	Female	12.04 (9.57, 53)	9.17 (9.40, 41)	9.18 (9.96, 56)	7.44 (7.31, 50)	9.09 (8.71, 64)	7.76 (8.37, 36)	7.77 (7.88, 52)	8.98 (8.86, 352)
	Total	10.73 (9.72, 96)	8.39 (8.32, 87)	8.35 (9.43, 103)	8.42 (8.79, 110)	9.20 (9.81, 110)	7.86 (8.75, 84)	7.80 (8.19, 102)	8.69 (9.05, 6920
Stress	Male	12.24 (10.78, 42)	12.87 (9.18, 46)	14.21 (11.26, 48)	11.34 (11.90, 61)	11.78 (10.53, 46)	10.41 (10.21, 49)	10.00 (10.82, 51)	11.78 (10.74, 343)
	Female	15.70	15.61	13.24	10.39	11.84	11.14	8.73	12.33

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		(10.54, 53)	(10.56, 41)	(10.64, 55)	(9.21, 51)	(9.79, 64)	(10.82, 37)	(9.02, 52)	(10.25, 52)
	Total	14.17 (10.73, 95)	14.16 (9.89, 87)	13.69 (10.89, 103)	10.91 (10.72, 112)	11.82 (10.06, 110)	10.72 (10.42, 86)	9.36 (9.93, 103)	12.06 (10.49, 696)

Table 5.2: K10, age and gender

K10		Mean scores (SD, n)							
		Age							
Age group		18-24	25-34	35-44	45-54	55-64	65-74	≥75	Total sample
Gender	**Male**	18.40 (8.24, 40)	17.93 (7.05, 45)	19.31 (9.29,48)	17.86 (8.43, 59)	18.29 (9.11, 45)	16.35 (7.42, 48)	16.57 (7.18, 51)	17.79 (8.13, 336)
	Female	20.09 (7.18, 53)	19.05 (7.92, 41)	19.00 (9.20, 54)	17.08 (7.67, 51)	18.34 (7.95, 61)	17.00 (6.27, 35)	16.00 (4.95, 50)	18.14 (7.54, 345)
Total		19.37 (7.66, 93)	18.47 (7.45, 86)	19.15 (9.20, 102)	17.50 (8.06, 110)	18.32 (8.42, 106)	16.63 (6.93, 83)	16.29 (6.15, 101)	17.96 (7.83, 681)

However, both tools displayed a peak in the mean scores in the 55-64-year age group. A review of the literature regarding the age of onset of mental disorders (Kessler et al., 2007) found that anxiety and mood disorders are similar, with low prevalence rates until the early teens, followed by a roughly linear increase through to late middle age, and declining thereafter. Another literature review on the same theme (Jorm, 2000), however, suggested more variable results. Many studies of depressive and anxiety disorders show an initial increase across the age groups, followed by a decline. However, this pattern has not been shown in all studies and the peak age for prevalence varies greatly.

Women in our study also reported higher levels of psychological distress when compared to men, which is consistent with other research (Alonso et al., 2004b, Wells et al., 2006, Oakley Brown et al., 2006, Seedat et al., 2009b, Pirkola et al., 2005, Kessler et al., 1994, Regier et al., 1988, Slade et al., 2011a, Bijl et al., 1998). However, the DASS21 reported an exception to these results and revealed that men reported higher levels of depression than women, although this was not statistically significant ($p > 0.05$). Further analyses of the screening tools is described later in this chapter.

5.3. Screening tool validation

5.3.1 Kessler 10

Factor structure of the K10 from a sample from a general emergency department

5.3.1.1. Background

There is potential to screen for mental health disorders in the emergency department (ED) as it represents an unplanned hospital presentation and is an opportunistic time to identify people with underlying mental health problems (Downey et al., 2012). For some, this ED presentation might represent a rare contact with the health care system (AIHW, 2014a) and systematic screening for mental health problems in this environment may enable appropriate and timely treatment, leading to improved health outcomes and enhanced quality of life (Marchesi et al., 2004, Perruche et al., 2011, Downey et al., 2012, Saliou et al., 2005, Richmond et al., 2007). Mental health status may not be a priority for many ED attendees, especially when their symptoms are not severe and their reasons for ED attendance are not related to mental health (Saliou et al., 2005, Richmond et al., 2007).

Consequently, these patients may not discuss their mental health unless specifically asked. However, although the majority of people attend for primarily medical or surgical reasons, several studies have shown that the ED is a high yield setting for common mental health problems and the reported ED prevalence of anxiety and depressive disorders has ranged from 9% to 47% (Boudreaux et al., 2008, Downey et al., 2012, Marchesi et al., 2004, Perruche et al., 2011, Richmond et al., 2007, Saliou et al., 2005).

If opportunistic screening for symptoms of mental health disorders was to take place in the high turnover setting of the ED, then the time burden for doing so and its associated cost

would represent important considerations. In psychiatry, the commonly used mental health diagnostic tools must often be purchased, and many require the use of lengthy formal interviews which must be administered by a clinician or trained mental health professional. Such assessments can take anywhere from 15 minutes to several hours, depending on psychopathology and mental health history (American Psychiatric Association, 2015). Such tools would be impractical for screening use in the ED. One quick and freely available tool that has been used extensively and does not require an in-depth interview or specialised training to administer is the Kessler 10 (K10) (Kessler et al., 2002). This 10-item self-reporting questionnaire, which measures symptoms of depression and anxiety over the previous 30 days, only takes around 2 minutes to complete. Considering the high yield of common mental health problems in the ED, the K10 would appear to be an ideal screening tool for use in this setting.

The K10 was originally designed for use with large population surveys (Kessler et al., 2002), and due to its psychometric properties and ease of use, it has been used in national population surveys in the US, Canada and Australia, and globally in World Health Organisation surveys (Berle et al., 2010). Although the K10 was not designed as a diagnostic tool, per se; it nevertheless can aid in the screening for serious mental illness (Kessler et al., 2002, Kessler et al., 2003a). It has also demonstrated good to excellent discrimination between cases and non-cases of anxiety disorders and particularly mood disorders, and has been validated against several mental health diagnostic tools such as the Structured Clinical Interview for DSM-5 (SCID) (Carrà et al., 2011, Spies et al., 2009), the Composite International Diagnostic Interview (CIDI) (Furukawa et al., 2008b, Donker et al., 2010, Cairney et al., 2007, Oakley Browne et al., 2010), and the MINI International Neuropsychiatric Interview (MINI) (Hides et al., 2007).

Using questions based on feelings of nervousness, agitation, psychological fatigue and depression, the K10 measures the severity of non-specific psychological distress. Its 10 questions are rated using a 5-point scale (1 = none of the time; 2 = a little of the time; 3 = some of the time; 4 = most of the time; 5 = all of the time), giving a total score range from 10 to 50. There is no defined category grouping of the K10 scoring and the scoring categories are generally determined by the purpose of the survey (ABS, 2012b). The category system used in this study was derived by the Collaborative Health and Wellbeing Survey 2000 (WANTS Health West, 2000), which determined the cut off scores. Overall, higher scores indicate greater distress (Low = 10-15; Moderate = 16-21; High = 22-29; Very high = 30-50) with high scores and very high scores indicating psychological distress (WANTS Health West, 2000); and very high scores often correlating with mental illness (Andrews and Slade, 2001).

The structural validity of the K10 has been examined in several studies using a variety of factor analysis options. Generally, factor analysis is a complex statistical method for interpreting self-report surveys (Bryant et al., 1999), mostly in the fields of psychology and education (Hogarty et al., 2005), and there are two main types – exploratory factor analysis (EFA), and confirmatory factor analysis (CFA). EFA allows researchers to explore the data to discover the dimensions, or factors, which are represented by the groupings of a set of items within the survey. This type analysis assists in developing theories, or to model the data (Williams et al., 2010). Within this method there are two main types of analysis, principal components analysis (PCA), and principal axis factor (PAF) analysis. There are different views regarding the use of these two methods and when they should be used (Costello and Osborne, 2005). Although PCA is usually the default setting in statistical software packages (Costello and Osborne, 2005), it is considered to be a general purpose data reduction method rather than factor analysis (Bentler and Kano, 1990, Gorsuch, 1990) as this method does not discriminate between variance which is unique or shared and can therefore produce inflated values (Costello and

Osborne, 2005, Williams et al., 2010). Whereas with PAF, only the shared variance is analysed without regard to unique or error variance (Costello and Osborne, 2005).

Within these methods of exploratory analysis, the data may also be rotated, where different algorithms are used to further simplify the factor structure. These rotations are described in broadly as orthogonal rotation (varimax, quartimax, equamax) or oblique rotation (oblimin, quartimin, promax) (Costello and Osborne, 2005), which refers to the angle between the X and Y axis (Osborne, 2015). Orthogonal rotation maintains a 90 degree angle between X and Y axis and considered a more simple method of analysis, while oblique rotation is more complex as it allows for the X and Y axis to have variation of angles between the X and Y axis, rather than only 90 degrees (Osborne, 2015).

Confirmatory factor analysis (CFA) is a type of structural equation modelling and differs from EFA because it is not exploring the data but rather measures the models and theories which have already been identified (Hoyle, 2000). It is used to validate the construct of the model or theory (a priori) and is used to verify latent factors, and factor relationships (Brown, 2015).

In their development and validation article, using a non-treatment-seeking community sample, Kessler et al. (2002) used the EFA option of principal axis factor analysis (PAF) and did not rotate the data. By exploring the factor loadings and the high ratio between first and second eigenvalues (11.5, and 1.1 respectively), the authors presented a one-factor structure of non-specific psychological distress, demonstrated by the dominant first factor. Exploration of eigenvalues is a common way to test for factors and the percentage of total variance explained by one eigenvalue is regarded as an index of uni-dimensionality (Yu et al., 2007); although it is also regarded as an inaccurate method of factor retention as it tends to overestimate the number of factors (Hayton et al., 2004). Brooks et al. (2006) suggest that this

high ratio between first and second eigenvalue scores in the Kessler et al. (2002) study may indicate that more than one factor is present and the data may have been examined further by exploration of the residuals for evidence of a multi-factor structure. Using a large community sample of people with a probable mental disorder (n = 1,407 at baseline; 942 at follow-up), Brooks et al. (2006) used PAF with oblimin rotation and exploration of residuals, and found a four-factor structure compromised of nervousness, negative affect, fatigue and agitation.

Further analysis of their data using CFA found a second-order structure comprised of two factors: anxiety (nervousness and agitation) and depression (fatigue and negative affect). They cross-validated their findings using data from a national survey (n = 10,641) with CFA, producing a similar four first-order two second-order structure. Brooks et al. (2006) considered this structure to be indicative of the overall theoretical conceptualisation of the K10 scale, thereby enhancing its interpretation. Sunderland et al. (2012), similarly to Kessler et al. (2002), analysed data from a non-treatment-seeking community sample (n = 8,841). By using CFA, they also revealed a one-factor structure of general psychological distress. However, they initially found a one-factor structure to be an inadequate fit (RSMEA 0.14) suggesting that the variance between several items could not be explained with one factor and therefore correlated errors between three pairs of items (*nervous* and *so nervous*; *restless* and *so restless*; and *sad / depressed* and *so sad*), which improved the model fit (RMSEA 0.05).

Other studies using clinical samples have reported multi-factor structures. In a sample of 149 psychiatric inpatients, for example, O'Conner et al. (2012) found a first order two-factor structure comprising anxiety and depression by using the EFA option of maximum likelihood extraction with promax (oblique) rotation and examination of eigenvalues. Sunderland et al. (2012) used CFA and found a first order, two-factor structure comprised of anxiety and

depression in a sample of 2,967 patients from an anxiety disorders clinic. A study by Berle et al. (2010) led the authors to question the suitability of the K10 for a treatment-seeking population and recommended that the scoring method required revision. By using CFA with their sample of 183 patients from an anxiety disorders clinic, they failed to identify an adequate fitting model for their sample. Furthermore, they were unable to establish an adequate fit with the original one-factor structure proposed by Kessler et al. (2002), nor a first order four-factor structure (including the two second-order factors); or a first order two-factor structure.

However, the authors acknowledged their sample limitations in terms of generalizability, concluding that further research was needed. Only one study was found which investigated the K10 structure within an ED clinical setting (Arnaud et al., 2010). In this French study of 71 patients with alcohol use disorders, the authors used the PFA option with varimax rotation and reported a first order three-factor structure, with the third factor derived from a single question (*How often did you feel nervous?*).

In order to gain further insight into the suitability of the K10 as a potential screening tool to identify underlying mental health problems, the aim of the current study was to investigate the factor structure of the K10 in a clinical sample of treatment-seeking ED patients.

5.3.1.2. Methods

5.3.1.2.1. Setting and sample

Data were collected from a voluntary sample of ED presentations at a major tertiary referral hospital in Brisbane, Australia; as described elsewhere (Fulbrook and Lawrence, 2015). The

hospital has 630 beds and provides a broad range of specialties, with its ED managing approximately 60,000 presentations annually. All adults presenting to the ED during a 24 hour, 14-day equivalent period were approached by a research assistant and invited to participate in the study. Exclusion criteria included: ED attendees under the age of 18; those with severe injuries defined by the treating doctors who had jurisdiction over the patients' participation; those which were intoxicated; under police escort; unable to understand or read English; cognitively impaired; or unwilling to consent. Data were collected using several validated self-report instruments, including the K10. Ethical approval for the study was provided by the hospital's Human Research Ethics Committee (HREC/10/QPCH/190).

5.3.1.2.2. Data collection and analysis

Following consent, participants completed the K10 using pen and paper. All complete K10 surveys were entered into SPSS (version 22) for analysis. Significance was set at $p < 0.05$. Means were examined to describe K10 categories. Due to K10 score data skew (skewness: 1.551, SD 0.094; kurtosis: 2.220, SD 0.187), with a predominance of scores in the lower range, non-parametric tests were used to examine differences and relationships in the data. K10 score, gender and age were explored using the Mann-Whitney U and Kruskall-Wallis test.

The factorability of the data was examined with the Kaiser-Meyer-Olkin (KMO) value at 0.6 or above and the test of sphericity significant at $p < 0.05$. There have been several options used for determining the number of factors to retain in the K10. However, there has been an emerging consensus around the use of parallel analysis (PA) (Horn, 1965) which aims to adjust for sampling error effects of the data. It involves the construction of a correlation matrix using random data of the same sample size and number of variables. Several of these matrices are constructed and the average value of the eigenvalues is then compared to the real dataset.

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The number of factors retained is determined by the number of eigenvalues in the real dataset which are larger than the eigenvalues in the random dataset (Hayton et al., 2004). The number of factors for this analysis was determined using a variety of methods such as, parallel analysis (PA) (Patil et al., 2007), and a visual inspection of the scree plot (Cattell, 1966), which is a graphical representation of the eigenvalues to observe where the last significant break in the line takes place and where the line begins to level which indicates the number of factors, and the retention of eigenvalues greater than 1 (Kaiser, 1960).

For the current study, an exploratory PAF with oblimin rotation was undertaken and the pattern matrix was observed by examining the number of factors (showing factor loadings above .30), plus, using the methods described by Brooks et al. (2006) where the number of factors is determined by the examination of residuals, with an ultimate goal of having less than 5% of residuals greater than .05 (Pett et al., 2003; Brooks et al., 2006). Or in other words, where factors are removed from the residuals until the residuals are too small to contribute another factor (Comrey and Lee, 1992). To measure consistency, the sample will also be randomly divided into 2 halves (340 and 341 respectively) and an analysis of the number of factors will be conducted.

5.3.1.3. Results

5.3.1.3.1. Sample characteristics

During the data collection period, there were 1,615 ED presentations of which 708 consented to participate. The main reason for refusing consent was 'too stressed' or 'not interested'. Due to incomplete K10 surveys, 27 were excluded from analysis. The mean age of the K10 sample was 50.2 years (SD 20.5, range 18-92), with similar numbers recruited across the all age

groups. The K10 mean score was in the moderate distress category, 17.96 (SD 7.83) although the majority (50.4%, n = 343) scored within the low distress category (see Table 5.3). There were statistically significant differences for K10 scores found between age groups, with younger age groups scoring more highly [X^2 (6, n = 681, p = 0.005)]. Slightly more than half the overall sample was female (50.7%, n = 345) (see Table 5.4). The mean age for women was 51.0 (SD 19.91, range 18 to 91), with the mean age for men being 49.4 (SD 20.01, range 18 to 92). Although the median score (16) for women was marginally higher than for men (med = 15), the difference was not statistically significant (p = 0.211). Based on examination of International Classification of Disease (ICD) category, only a small proportion of participants presented to the ED for treatment of a mental or behavioural disorder (3.1%, n = 21) and their mean K10 score was higher than the other diagnosis categories, with the exception of 'external causes of morbidity and mortality' which had the highest K10 score. With regards to diagnosis categories, ED attendees reported some level of psychological distress with the exception of diseases of musculoskeletal and connective tissues, and neoplasms (see Table 5.5).

Table 5.3. K10, overall sample

K10 category (score range)	Mean (SD)	Median	Mode	Total n (%)
Low (10-15)	12.41 (1.61)	12	12	343 (50.4)
Moderate (16-21)	18.03 (1.64)	18	16	176 (25.8)
High (22-29)	24.68 (2.26)	24	22	93 (13.7)
Very high (30-50)	36.32 (5.29)	35	30	69 (10.1)
Overall	17.96 (7.83)	15	12	681 (100)

Table 5.4. K10, by gender and overall sample

K10 category (score range)	Male Mean (SD)	Median	Mode	Total n (%)	Female Mean (SD)	Median	Mode	Total n (%)
Low (10-15)	13.82 (2.69)	14	11	248 (73.8)	13.80 (2.64)	13	12	231 (67.0)
Moderate (16-21)	21.67 (1.50)	22	20	33 (9.8)	21.86 (1.36)	22	22	57 (16.5)
High (22-29)	26.61 (1.29)	27	25	18 (5.4)	26.88 (1.59)	27	25	25 (7.2)
Very high (30-50)	36.62 (6.08)	34	30	37 (11.0)	35.97 (4.27)	36	37	32 (9.3)
Overall	17.79 (8.13)	15	11	336 (49.3)	18.14 (7.54)	16	12	345 (50.7)

Table 5.5: K10 disease domain, overall sample

Disease domain	n	Mean	SD
External causes of morbidity and mortality	6	27.67	17.00
Mental and behavioural disorders	21	26.29	11.50
Unknown	3	24.00	9.54
Factors influencing health status and contact health services	35	19.46	9.18
Diseases of the digestive system	43	18.70	8.68
Diseases of the skin and subcutaneous tissue	29	18.31	8.10
Symptoms signs and abnormal clinical and laboratory findings	212	17.87	7.41
Injury, poisoning and certain other consequences of external causes	102	17.81	8.21
Certain infections and parasitic diseases	27	17.15	5.92
Diseases of the genitourinary system	36	17.03	5.54
Endocrine, nutritional and metabolic diseases	9	17.00	6.82
Disease of the ear and mastoid process	9	16.89	5.84
Diseases of the respiratory system	49	16.76	7.13
Diseases of the circulatory system	70	16.61	6.37
Pregnancy childbirth and puerperium	2	16.50	6.36
Diseases of the nervous system	12	16.33	5.99
Diseases of the blood and blood forming organs and certain disorders involving the immune system	2	16.00	1.41
Diseases of the musculoskeletal and connective tissue	13	14.15	3.62
Neoplasm	1	13.00	0.00
Total	**681**	**17.96**	**7.83**

5.3.1.3.2. Exploratory factor analysis

5.3.1.3.2.1. Overall sample

The KMO score was 0.903, and Bartlett's test of sphericity was significant at $p < 0.05$, supporting the factorability of a correlation matrix. The PFA displayed 2 factors with eigenvalues above 1, (5.77, 1.07, .79) explaining 57.67% and 10.68% of variance, with an accumulative value of 68.35%. Two factors were also evident on the scree plot with the break occurring after the second factor. The inspection of residuals revealed that a four-factor structure had zero % of non-redundant residuals, explaining 82.3% of the variance (see Table 5.6). The results of the PA demonstrated a one factor structure with only one eigenvalue from the real dataset exceeding the corresponding eigenvalues from a randomly generated data matrix (2.09, 1.49). An inspection of the pattern matrix revealed the presence of many coefficients of .30 and above (see Table 5.7) and supporting either two factors, three factors or a four-factor solution.

Table 5.6. Residuals, overall sample

ED sample (n = 681)	Variance explained (%)	Non-redundant residuals (%)
Single factor	57.7	51.0
Two factors	68.4	15.0
Three factors	76.3	6.0
Four factors	82.3	0

Table 5.7. Pattern matrix, overall sample

| | Number of factors | | | | | | | | | |
| | One | Two | | Three | | | Four | | | |
	1*	1	2	1	2	3	1	2	3	4
10. Worthless	.821	.897		.956			.946			
7. Depressed	.821	.897		.677			.695			
4. Hopeless	.824	.888		.859			.856			
9. So sad	.830	.815		.736			.724			
6. So restless	.626		.900		.918			.840		
5. Restless	.667		.773		.754			.844		
8. Effort	.740	.709				.596			.565	
1. Tired	.511	.417				.629			.548	
3. So nervous	.719		.523		.536					.864
2. Nervous	.674		.429		.413					.491
*unrotated										

5.3.1.4. Discussion

Typically, the number of factors to retain when conducting EFA can be determined by a variety of methods such as eigenvalues, scree test, factor loadings, parallel analysis, and practical or theoretical concerns. Despite research and opinions regarding the best methods for the retention of factors, there is no clear rule in this decision, and although different methods produce different results (Hayton et al., 2004) it is imperative for researchers to use methods which are the most accurate (Velicer et al., 2000). Selecting either too few or too many factors can have consequences in the interpretation of the results (Zwick and Velicer, 1986). The more traditional approach of observing the eigenvalues over 1 (Kaiser, 1960) and the scree test (Cattell, 1966) approaches are considered to be highly inaccurate methods as these approaches often over-estimate the number of factors to be retained (Zwick and Velicer, 1986), and decisions regarding what constitutes a major or a minor factor can be somewhat rigid.

For example, a factor with an eigenvalue of 1.01 may be considered a major factor, while a factor with an eigenvalue below the cut-off of one, such as the value of .99, may not be taken into consideration despite the value being close to one (Ledesma and Valero-Mora, 2007). The scree test is also considered subjective and results depend upon the examiners interpretation of the results which leads to inaccuracies and therefore should also not be used (Zwick and Velicer, 1986).

However, both of these methods determined that the K10 is a two-factor structure. Results from the principal components analysis also displayed a two-factor solution and a four-factor solution. A few previous studies have analysed the factorability of the K10 using the EFA option with the eigenvalues as a guide. Arnaud et al. (2010), O'Connor et al. (2012) and Brooks

et al. (2006) recruited individuals with mental health problems and found a multi factor solution, while Kessler et al. (2002) sampled from the community and found a single factor structure of psychological distress. Other studies used the CFA option for determining factor retention; a one factor solution was found in community samples (Bougie et al., 2016, Fassaert et al., 2009, Sunderland et al., 2012), and multi factor solution in samples with confirmed or probable mental health problems (Sunderland et al., 2012, Brooks et al., 2006).

In this sample, parallel analysis, which is considered to be highly accurate method of deciding factor retention (Hayton et al., 2004), revealed only one factor of measurement for the K10, which is in line with the original interpretation of the K10 as a single construct measure of non-specific psychological distress. However, Brooks et al. (2006) believed that the Kessler et al. (2002) analysis did not go far enough when observing for the number of factors and stated that the size of the first eigenvalue in relation to the second eigenvalue indicated the possibility of a multi-factor solution. In our results, there was also a high ratio between the first and second eigenvalues; while the residuals test concluded that the K10 was a multi factor structure consisting of four factors, which corresponds with the results of Brooks et al. (2006). Few studies have examined the validity of the residuals test, with current consensus being that parallel analysis is the most accurate method for deciding on the number of factors to keep for interpretation, despite the fact that this method is not widely utilised (Hayton et al., 2004, Lance et al., 2006). It should also be noted that Kessler et al. (2002) had conducted a parallel analysis when determining their results and this was the only study analysing the K10 factor structure to do so.

The decision for model appropriateness must be considered in terms of what is most parsimonious, practical and theoretically sound. With this in mind, the K10 is a one factor construct of psychological distress reflected in studies involving community samples. This can also be a reflection of the type of patient which presents to the ED. Despite the participants being a treatment-seeking clinical sample, the ED is a unique environment which provides the first point of contact to medical services for many people and accommodates the health needs of the wider community, some of whom do not access health care from other services which may not be available (Weiss et al., 2014). The ED provides emergency and non-emergency care, and is a 'bridge' between outpatients and access to inpatient health care; although but many also attend the ED when they could have sought other services outside of the hospital. The ED provides care 24 hours a day, 7 days a week, is attended by all age groups and for any condition (AIHW, 2014b), and is therefore more reflective of a community sample than; for instance, a cardiac inpatient ward in a general hospital.

The K10 is a suitable instrument for screening for psychological distress in ED attendees and in this context, can quickly identify those at risk of, or which already have, a mental health problem. There is no separation of the scores to determine levels of anxiety and depression as it measures this as one construct of general psychological distress. Anxiety and depression are considered to be conceptually similar, as studies have demonstrated a correlation between the two states (Clarke and Watson, 1991), and they can be examined together singularly as 'psychological distress' (Uher and Goodman, 2010, Dyrbye et al., 2006, Brown et al., 1998).

Previous research studies have shown that anxiety and depression often share non-specific symptoms of general psychological distress that can be labelled as 'negative affect'. High negative affect is a subjective state with symptoms including irritability, un-pleasurable

engagement, sleeping problems, agitation. Low negative affect reflect the absence of these feelings (Clarke and Watson, 1991). Anxiety and depression also have symptoms distinct from each other, where anxiety is characterised by autonomic arousal with symptoms such as breathlessness, feeling faint, perspiration, and trembling; and depression is characterised by low positive affect where symptoms include crying, hopelessness, and a loss of pleasure (Watson and Kendall, 1989).

Despite the K10 being one factor representing non-specific psychological distress, the replication of results published by Brooks et al. (2006) in our residuals test and the pattern matrix, it would be viable to also consider that the K10 is a multi-factor structure comprising a first order of four factors of 'nervous (nervous, so nervous), agitation (restless, so restless), fatigue (tired, effort), and negative affect (hopeless, depressed, so sad, worthless)'; under the higher order second factor of symptoms distinctive of anxiety (nervous, agitation), and depression (fatigue, negative affect) (Clarke and Watson, 1991, Brooks et al., 2006). Although anxiety and depression share high levels of non-specific psychological distress, interpretation of the K10 at this level enables clinicians to better understand an individual's mental health status, and relate symptoms of psychological distress to their medical diagnosis and other measures of disability and life satisfaction (Brooks et al., 2006) which may assist clinical treatment after the initial referral, or in this case, their ED presentation.

In our current study, 50% of participants reported some measure of psychological distress (26% moderate, 14% high, and 10% very high), which is higher than levels reported in the community (21% moderate, 9% high and 4% very high) (ABS, 2009). The K10 has good discriminating abilities to distinguish between cases and non-cases of anxiety disorders and particularly mood disorders, with very high scores often correlating with mental illness

(Andrews and Slade, 2001). Official statistics suggest that mental health presentations comprise 1.8% to 5.4% of all ED presentations (Dunn and Fernando, 1989, Fry and Brunero, 2004, Johansen et al., 2009, Kalucy et al., 2005, Knott et al., 2007, Tankel et al., 2011, Shafiei et al., 2011, Larkin et al., 2005), and only 3% of our sample presented with mental health problems, the high levels of 'very high' psychological distress suggesting that many individuals presenting to the ED whom are not assessed for mental health problems, but who may be significantly impacted by their symptoms.

This high level of distress is clinically significant especially because a patients' mental health status impacts significantly on quality of life, has societal and healthcare costs (WHO, 2009), and its co-morbidity may affect health outcomes negatively. For example, ED attendees with acute injury may continue to experience psychological distress several months after the event, which can impact recovery times and creates the potential for long term disability (Richmond and Kauder, 2000, Ross et al., 2015, O'Donnell et al., 2003, Hall et al., 2011). Furthermore, individuals with chronic physical conditions are more likely to experience symptoms of anxiety and depression (Clarke and Currie, 2009), which also has a negative impact on health outcomes in terms of an individual's motivation to follow treatment plans and their ability to cope with pain (Turner and Kelly, 2000).

For individuals with chronic diseases, depression is a secondary co-morbidity affecting 14% of asthma patients, 7% - 50% of cancer patients, 1.6% - 50% of cardiac patients, 8% - 52% of patients with diabetes, 5% - 44% of patients with stroke, and 13% - 80% for patients with arthritis conditions (Clarke and Currie, 2009). Studies have also described how individuals with mental health problems have high rates of repeat ED visitation (Billings and Raven, 2013, Ko

et al., 2015, Markham and Graudins, 2011), as do those with chronic conditions (Billings and Raven, 2013, Hunt et al., 2006).

Screening for mental health conditions in the ED, with the aim of referral to interventions which aim to reduce psychological distress, may help ameliorate the potential long term negative impact which psychological distress may cause and also avoid the high rates of re-representation for these types of conditions (Hill et al., 2013).

5.3.1.4.1. Limitations

This study has some limitations which are worth considering. For example, the factor structure of the K10 may have been affected by some sample bias, since only 40% of individuals presenting to the ED during the data collection period participated. It is possible that greater (or less) psychological distress may have existed in the non-consenting sample (Henderson, 1994, Allgulander, 1989). Furthermore, participant responses may have been influenced by the situational stress of their injury or disease resulting in higher K10 scores than might otherwise have been recorded. Some studies, for example, have demonstrated that unexpected visits to the ED may increase a patient's levels of anxiety (Ekwall, 2013, Kelly, 2005). Additionally, the subjective nature of self-reporting questionnaires can be problematic, as symptoms of medical conditions or medication, such as drowsiness or sleeplessness, may mask or exacerbate symptoms of mental disorders, contributing to over- or under-estimation of psychological distress (Turner and Kelly, 2000).

Another potential limitation of the study is that the K10 scores were not compared to a validated mental health questionnaire such as the CIDI. Despite the K10 displaying good

diagnostic capabilities in other studies, it may have been beneficial to determine AUC coefficients for this sample. However, it is worth noting that the purpose of this study was not to validate the K10 as a diagnostic instrument, but rather, to establish whether it is suitable for screening a real-world ED sample. Furthermore, there has been variation in the use of factor analysis options to explore and validate the K10 factor structure. Additional studies examining the residuals in determining factor selection may be beneficial to establish reliability of this method.

5.3.1.5. Conclusion

The results from this study add to the body of knowledge regarding underlying mental health problems among emergency department attendees. The screening of psychological distress in clinical treatment-seeking samples and in the context of opportunistic emergency department presentations, must consider methods which afford the least complexity, that accurately explain a known behaviour phenomenon, and are consistent with current knowledge (that is, a model that has been cross-validated and replicated in other similar independent studies). Thus, we conclude that the one factor structure of the K10 representing non-specific psychological distress is the most suitable model for examining our dataset, due to its fit for purpose and the fact that it replicates previous independent studies. In a clinical context, the K10 represents an appropriate tool for health professionals to use to assess psychological distress of ED patients due to the self-reporting nature of the survey, its ease of use, and without the need for a lengthy diagnostic interview.

These are important considerations as EDs represent a hectic environment, and as such, the potential to quickly screen and refer may be beneficial for the patient in terms of alleviating

psychological distress following acute illness or injury; which will help minimise long term impact. Similarly, ED attendees with chronic illness who may not be managing their conditions at optimum levels would also benefit from this approach. The potential breakdown of the K10 into its sub-domains also affords better insight into the patient's condition, thereby clarifying their clinical picture.

5.3.2. Depression Anxiety Stress Scales-21

The Depression Anxiety Stress Scales-21 (DASS-21): psychometric properties and factor structure in a sample from a general emergency department

5.3.2.1. Background

The emergency department (ED) has been identified as an entry point to mental health services and treatment for those already in crisis (Downey et al., 2012). There are, however, large numbers of patients who present to the ED with undiagnosed depression and anxiety problems, with prevalence rates ranging from 9% to 47% (Downey et al., 2012, Marchesi et al., 2004, Boudreaux et al., 2008, Perruche et al., 2011, Richmond et al., 2007, Saliou et al., 2005). Long-term outcomes for these individuals could be improved with early identification and referral to appropriate treatment. Identifying these patients must involve a reliable tool that is easy to administer and score due to the hectic and busy nature of the ED.

One commonly used mood scale in this regard is the Depression Anxiety Stress Scales – 21 (DASS-21), which is a short version of the original 42 questions DASS (Lovibond and Lovibond, 1995b). The DASS-21 is a self-report questionnaire measuring symptoms of anxiety and depression, but also measuring a third factor related to the stress syndrome described by

Selye (1952), with symptoms such as nonspecific persistent arousal and tension. Although mood disorders such as anxiety and depression may seem distinct from one another, it has been hypothesised that they share a significant, nonspecific component of general affective distress; and this has been referred to as the tripartite model, with three factors involved (Clarke and Watson, 1991): negative affect (NA), positive affect (PA) and autonomic hyper-arousal (PH).

Both anxiety and depression are conditions which suffer from the shared common factor of general NA, whereby high NA represents a subjective state of distress and unpleasant interactions shared by both states, including sleep difficulties, and irritability. Low levels of PA is seen in depression and is characterised by loss of pleasure, fatigue, social withdrawal, and hopelessness. The third factor of PH produces symptoms of anxiety often characterised by physical symptoms of such as trembling and faintness. The DASS, which emphasises states rather than traits, has no direct implications for the allocation of patients to discrete diagnostic categories such as in the DSM or ICD (Lovibond and Lovibond, 1995b). However, DASS-21 has been reported to predict the diagnostic presence of generalised anxiety disorder, depression and panic disorder (Brown et al., 1997, Gloster et al., 2008). The DASS and DASS-21 was not created to be a diagnostic tool, but it is considered appropriate in a wide range settings, both clinical and community-based, where emotional distress may need to be examined (Osman et al., 2012, Davies et al., 2015).

There is a large body of evidence supporting the validity and reliability of both the full DASS and the short version DASS-21 across a variety of clinical and community settings. In clinical settings, some studies have observed patients with mental health problems, such as anxiety and depressive disorders (Brown et al., 1997, Page et al., 2007, Clara et al., 2001, Antony et al., 1998, Bottesi et al., 2015, Apostolo et al., 2006, Daza et al., 2002), and psychiatric

inpatients (Ng et al., 2007). Other medical patients have also been studied, such as those in an outpatient clinic (Vignola and Tucci, 2014), patients with chronic and persistent pain (Wood et al., 2010, Taylor et al., 2005), older primary care patients (Gloster et al., 2008), traumatic brain injury patients (Wong et al., 2013), and patients with rheumatoid arthritis (Covic et al., 2012). The DASS and DASS-21 have also been examined in community samples (Crawford and Henry, 2003, Henry and Crawford, 2005, Nieuwenhuijsen et al., 2003, Antony et al., 1998, Bottesi et al., 2015, Gomez et al., 2013, Tonsing, 2014, Sinclaire et al., 2012, Oei et al., 2013, Tran et al., 2013), and among university students (Imam, 2008, Osman et al., 2012).

Variations in the internal consistency of the DASS-21 have been shown to range from acceptable to excellent. Its Cronbach's alpha coefficients range from 0.83 to 0.94 for depression; 0.69 to 0.86 for anxiety; and 0.84 to 0.95 for stress (Sinclaire et al., 2012, Antony et al., 1998, Daza et al., 2002, Henry and Crawford, 2005, Ramli et al., 2009, Gloster et al., 2008, Vignola and Tucci, 2014, Norton, 2007, Bados et al., 2005, Tran et al., 2013, Imam, 2008, Apostolo et al., 2006, Tully et al., 2009, Osman et al., 2012). Three studies which investigated samples of patients with pre-existing mental health problems reported the highest internal consistency (depression: 0.94, 0.93, 0.90; anxiety: 0.87, 0.86, 0.86; stress: 0.91, 0.91, 0.95 respectively) (Antony et al., 1998, Daza et al., 2002, Apostolo et al., 2006).

Various methods have been used to explore the different factors of the DASS-21. Exploratory factor analysis (EFA), for example, was used by both Sinclaire et al. (2012) and Antony et al. (1998) using the principal components analysis (PCA) option with oblique rotation; consistent with the original scale development (Lovibond and Lovibond, 1995b). Antony et al. (1998) found a three factor solution similar to Lovibond and Lovibond (1995b); while Sinclaire et al. (2012) identified four components with eigenvalues over 1, albeit with their scree plot only

supporting a one factor solution. However, a confirmatory factor analysis (CFA) by Sinclaire et al. (2012) reported that a three factor model fit the data best. Apostolo et al. (2006), Imam (2008) and Vignola and Tucci (2014) also used the PCA option, but used orthogonal rotation. Apostolo et al. (2006) found that a forced two factor solution using orthogonal rotation fit their data best, while Vignola and Tucci (2014) confirmed the three factor structure reported by Lovibond and Lovibond (1995b). Imam (2008) also found that a three-factor structure was likely, but did not support previous findings, given that a simple structure did not emerge and there were a large number of cross loadings.

Osman et al. (2012) used principal axis factoring (PAF) with oblique rotation and similar to (Sinclaire et al., 2012), identified four factors with eigenvalues over 1; although further analysis with CFA identified a one factor solution of general distress factor. Oei et al. (2013), whose sample consisted of an Asian cohort, utilised maximum likelihood analysis and found a modified 18 question, three factor solution fit their data best. These authors reported large residuals and cross loading for three items in the stress subscale relating to agitation, difficulties relaxing, and using nervous energy; but commonly found deviations to the original DASS-21 structure. Tran et al. (2013) did not describe their EFA option, although they did use orthogonal rotation and also found a one factor solution.

Several studies have investigated the DASS-21 by CFA only, and there is further evidence of the model originally identified by Lovibond and Lovibond (1995b) (Bados et al., 2005, Daza et al., 2002, Norton, 2007, Gloster et al., 2008, Clara et al., 2001, Wood et al., 2010, Sinclaire et al., 2012, Crawford and Henry, 2003). Osman et al. (2012), Bottesi et al. (2015), and Henry and Crawford (2005) reported a bifactor model where the three factors were highly related to a latent variable of general psychological distress, rather than being specific to the constructs

of depression, anxiety and stress. Daza et al. (2002) concluded that the second order with the factor of general psychological distress and first orders of depression, anxiety and stress, was suitable for the data even though the fit indices were almost identical to the first order three-factor model (RSMEA = 0.90, NFI = 0.80, NNFI = 0.89, PNFI = 0.72). As a result, this decision was made for the best conceptual understanding of emotional distress and to facilitate discussion.

Several studies have investigated mental heal questionnaires among adolescents (Szabo, 2010, Tully et al., 2009, Duffy et al., 2005). Duffy et al. (2005), for example, found a two-factor structure and concluded that adolescents do not differentiate between depression, anxiety and stress, but rather; there is a generalised negative mood and anxious arousal states. Research by Tully et al. (2009) supports the three-factor model by Lovibond and Lovibond (1995b). Szabo (2010) reported a bifactor structure but found the stress / tension factor patterns were difficult to interpret as it cross loaded to a general negative affect. The authors consider it possible that the stress state is still emerging at this age.

From our search of the literature, we concluded that the DASS-21 has not been used to briefly screen for mental health problems in a general ED. The ED represents an opportunistic hospital presentation and can be an ideal opportunity to identify patient's underlying mental health conditions, with the potential for referral to the appropriate mental health services when necessary (Downey et al., 2012, Marchesi et al., 2004). The current study therefore sought to determine the factor structure of the DASS-21 and whether the DASS-21 is a suitable tool for screening mental health problems in the ED.

5.3.2.2. Methods

5.3.2.2.1. Sample

The primary sample was drawn from the general emergency department of a major tertiary referral hospital in the Brisbane, Australia metropolitan area. This hospital has over 600 beds and provides a broad range of specialties. All available adult patients who were admitted to the emergency department were approached to participate in the study which involved several validated self-report instruments, one being the DASS21. Ethical approval for the study was given by the Human Research Ethics Committee (HREC/10/QPCH/190).

Following consent, participants completed the DASS-21 using pen and paper. Participants also completed the Kessler Psychological Distress Scale (K10) to enable comparison between the two surveys and their anxiety and depression subscale. As there is no instrument comparable to the DASS-21 subscale, it will therefore be excluded from the following analysis.

5.3.2.2.2. Instruments

DASS-21: The DASS questionnaire was originally developed from large pool of questions, particularly focussing on anxiety and depression symptoms. It was administered to a sample of university students and EFA of the responses. The PCA method with oblique rotation found the survey had three latent factors. Firstly, the factors regarding anxiety and depression; as well as a third factor related to stress. The DASS originally consisted of 42 questions with 14 questions in each sub-scale, although a 21 question short form survey is also available with 7 questions for each subscale (Lovibond and Lovibond, 1995b). Depression, anxiety and stress symptoms experienced during the past 7 days are scored on a 4-point Likert scale. The

symptoms experienced range from 0 (never), to 3 (almost always); with higher scores indicating higher levels of depression, anxiety and stress (see Table 5.1).

K10: The K10 was designed for use with large population surveys and was also developed from a large pool of questions derived from other surveys which had explored anxiety and depression (Kessler et al., 2002). It has since been used in national population surveys in the US, Canada and Australia; and world-wide in World Health Organisation surveys (Berle et al., 2010). The K10 has 10 questions based on feelings of nervousness, agitation, psychological fatigue and depression and measures the severity of non-specific psychological distress in the past 30 days. Symptoms of distress are answered on a 5-point scale, where 1 indicates that symptoms were experienced none of the time, up to a maximum score of 5; where symptoms were experienced all of the time. Total scores range from 10 to 50, and there are 4 categories of distress; low (10-15); moderate (16-21), high (22-29), and very high (30-50).

The K10 has been validated against several mental health diagnostic tools including the Structured Clinical Interview for DSM-5 (SCID) (Carrà et al., 2011, Spies et al., 2009), the Composite International Diagnostic Interview (CIDI) (Furukawa et al., 2008b, Donker et al., 2010, Cairney et al., 2007, Oakley Browne et al., 2010), and the MINI International Neuropsychiatric Interview (MINI) (Hides et al., 2007) with very high K10 scores often correlating with mental illness (Andrews and Slade, 2001).

5.3.2.2.3. Data analysis

For this study, all complete DASS-21 surveys were entered into SPSS (version 22) for analysis. Significance was set at $p < 0.05$. DASS-21 scores were then multiplied by 2 to determine categories (see Table 5.8).

Inspection of the histogram revealed the distribution of scores was skewed to the left (depression: skewness = 1.621, kurtosis = 1.89; anxiety: skewness = 1.31, kurtosis = 1.17; stress: skewness = 0.98, kurtosis = 0.17), with a predominance of scores in the lower range, non-parametric tests were used to examine differences and relationships in the data. DASS-21 score, gender and age (age groups: 18 – 24, 25 – 34, 35 – 44, 45 – 54, 55 – 64, 65 – 74, 75+) were explored using the Mann-Whitney U and Kruskall-Wallis test. Reliability of the DASS-21, as a whole survey and the subscales, was examined with Cronbach's alpha coefficient with values between 0.70 and 0.95 considered to be optimal (Tavakol and Dennick, 2011).

The EFA was used to determine the structure of the latent, or hidden, variables (factors) of the DASS-21. The Kaiser-Meyer-Olkin Measure (KMO) with values close to one, the Bartlett's test of sphericity significance at < 0.05 indicate that an EFA may be performed (Yong and Pearce, 2013). The correlation matrix was inspected to detect observed variables (DASS-21 questions) with a large number of low correlated coefficients (r < +/- 0.30), as this may indicate a patterned relationship, while correlations over 0.90 may indicate a problem with multicollinearity (Yong and Pearce, 2013). Communalities were also explored and values under 0.3 indicate that an observed variable may not fit well with other items (Pallant, 2011). The factors having eigenvalues over 1 (Kaiser, 1960) were retained and the eigenvalues were also visually explored using the scree test (Cattell, 1966). To account for sampling error and

improve the accuracy of the factor retention, a randomly generated parallel analysis (PA) was also conducted to compare to the real data set. With this method, the number of factors are determined by the number of eigenvalues of the real dataset which are larger than the random data eigenvalues (Horn, 1965); as it is considered that PA is a more accurate way to determine the number of factors (Hayton et al., 2004).

The EFA used the principal components analysis (PCA) method with oblimin (oblique) rotation, which is consistent with the original analysis (Lovibond and Lovibond, 1995b). Comrey and Lee (1992) recommend that factor loadings exceed 0.71 which is considered excellent and describes 50% of the overlapping variance. A cut-off of 0.63 is very good, explaining 40% of the overlapping variance; while 0.55 is considered good and explains 30% of the overlapping variance. A cut-off of 0.45 explains 20% of the overlapping variance and is considered fair, while a cut-off of 0.32 is considered poor as it only explains 10% of the overlapping variance. It is worth noting however, that cut-off choice is a matter of researcher preference (Pett et al., 2003).

The current study also aimed to assess the agreement between DASS-21 and the K10, which are both used to classify anxiety and depression, in the overall sample. The K10 is based on a composite of anxiety and depression in clinical samples (Brooks et al., 2006, Sunderland et al., 2012). To compare instruments on the same scale, the DASS-21 scores were recoded for comparison with the K10 categories. Thus the DASS-21 categories for normal and mild were combined (Bergin and Pakenham, 2014): 1 = normal + mild, 2 =moderate, 3 = severe, 4 = extreme.

Each of the DASS-21 scores (i.e. separate anxiety and depression scores) were then compared to the composite K10. Consistency between the scales was assessed using the intraclass correlation coefficient (ICC). These were estimated using two-way mixed effects models (with patient as a random effect and instrument as a fixed effect) to determine the overall consistency in absolute agreement between individual measurements (Koo and Li, 2016) (see Table 5.9).

Table 5.8. DASS21 category

	Depression	Anxiety	Stress
Normal	0 – 9	0 - 7	0 - 14
Mild	10 - 13	8 - 9	15 - 18
Moderate	14 - 20	10 - 14	19 - 25
Severe	21 - 27	15 - 19	26 - 33
Extremely severe	28+	20+	34+

Table 5.9. Inter-class correlation

< 0.50 Poor
0.50–0.75 Moderate
0.75–0.90 Good
> 0.90 Excellent

5.3.2.3 Results

Data were collected from 708 ED attendees, although only 685 individuals were used due to missing data (males = 336 (49.1%); females = 349 (50.9%)). The DASS-21 demonstrated high reliability in Cronbach's alpha for the observed variables as one instrument: 0.942, and also high for the subscales; depression: 0.910, anxiety: 0.814, and stress: 0.890. The mean age of the sample was 50.18 years (SD 20.05) with a range of 18 to 92 years.

The Mann-Whitney U test revealed no statistically significant difference in the DASS-21 categories or overall scores between males and females (p>0.05). The Kruskall-Wallis test revealed a statistically significant difference in stress scores across the age groups, X2 (6, n = 685) = 29.382, p = 0.000. The older age group (75+) recorded the lowest median score (Md = 6) than all other groups, particularly the younger age groups (18-24, 25-34, 35-44) which recorded median values of 12. The mean overall DASS-21 score for the total sample was 29 (SD 26.82). The mean score for depression was 8.21 (SD: 10.25), anxiety was 8.7 (SD: 9.07), and stress was 12.10 (SDS: 10.55). Overall, the sample displayed normal levels of depression and stress, and mild levels of anxiety.

5.3.2.3.1. Exploratory factor analysis

The KMO was 0.956 and Bartlett's test of sphericity was statistically significant (p<0.05), indicating that EFA may be feasible. The correlation matrix revealed 19 correlations under 0.3, with the lowest correlation being 0.219 between 'faintness' and impatient', with no correlations over 0.90. The communalities revealed no values under 0.30, with a range from 0.348 to 0.826. There were 3 eigenvalues over 1 (9.996, 1.474, 1.220) explaining 60.43% of

the variance and the scree plot showed a break after the third eigenvalue, representing three latent factors. However, the PA determined that the DASS-21 determined that there were two factors to the DASS-21, as only 2 of the real eigenvalues were greater in value than the random generated set (1.324, 1.266, 1.227). A one factor solution and a 2-factor solution were forced. For ease of evaluation of the pattern matrix, the loadings equal to or higher in value to 0.38 are displayed (see Tables 5.10a, 5.10b, and 5.10c) and the subscales are presented in the format first described by Lovibond and Lovibond (1995b).

The depression and stress subscales clearly demonstrate the latent factors representing this mood, or internal state, for all three solutions. Negative correlations in the three-factor model for the stress subscale revealed a negative linear association, which indicates that those which scored highly on the stress subscale scored low on the anxiety and depression subscales; and vice versa. The anxiety subscale for both the 2-factor and 3-factor solutions suggests shared features with depression and stress, with loadings on observed variables not in line with the original three factor structure. The three-factor structure demonstrated here, indicates that Question 20 (feeling scared) correlated to the depression factor, although it was low (0.383). Question 9, regarding situations which made a person anxious, was negatively correlated with the stress factor (-0.496). The 2-factor structure revealed that depression and stress subcategories correlate onto the same factor (depression / stress) as well as 2 questions from the anxiety subscale: Question 9, regarding situations which made a person anxious, and Question 20 regarding feeling scared. The questions remaining on the anxiety subscale reflect the physical symptoms of anxiety, or hyper-arousal: dry mouth, breathing difficulty, shakiness, faintness, and increased perspiration.

5.3.23.2. DASS-21 and K10 comparison

Results are shown in Table 5.11. Thus, an ICC of 0.51 would be considered poor / moderate,

while the value of 0.71 would be considered moderate.

Tables 5.10a, b, c. Sub scales

10a. PCA, Depression sub scale						
	Factors					
	One	**Two**		**Three**		
N=685	**1***	**1**	**2**	**1**	**2**	**3**
3. No positive feeling	0.724	0.705		0.537		
5. Not enthusiastic	0.615	0.446		0.382		
10. Nothing to look forward to	0.789	0.929		0.797		
13. Sad and depressed	0.792	0.845		0.540		
16. Lost interest	0.788	0.846		0.710		
17. No worth as a person	0.748	0.894		0.759		
21. Life not worthwhile	0.773	0.962		0.886		
Only loadings above 0.38 are displayed | * unrotated data						

10b. PCA, Anxiety sub scale

N=685	One	Two		Three		
	Factors					
	1*	1	2	1	2	3
2. Dry mouth	0.522		0.559		0.637	
4. Breathing difficulty	0.524		0.480		0.609	
7. Shakiness	0.530		0.763		0.680	
9. Situations anxious	0.723	0.491				-0.496
15. Faintness	0.465		0.820		0.745	
19. Perspired noticeably	0.616		0.435		0.525	
20. Scared	0.714	0.519		0.383		
Only loadings above 0.38 are displayed	* unrotated data						

10c. **PCA, Stress subscale**

N=685	One	Two		Three		
	Factors					
	1*	1	2	1	2	3
1. Upset by trivial things	0.721	0.664				-0.855
6. Over react	0.672	0.574				-0.802
8. Difficult to relax	0.696	0.450				-0.669
11. Easily upset	0.797	0.738				-0.784
12. Nervous energy	0.765	0.599				-0.685
14. Impatient	0.539	0.462				-0.558
18. Touchy	0.781	0.674				-0.649
Only loadings above 0.38 are displayed	* unrotated data						

Table 5.5. DASS21 and K10 inter-correlation

Measure	ICC	95% CI	
		Lower bound	**Upper bound**
Anxiety	0.51	0.45	0.56
Depression	0.71	0.68	0.75

5.3.2.4. Discussion

The DASS-21 is a scale measuring the frequency and severity of symptoms of anxiety, depression and stress among both clinical and non-clinical samples. It attempts to measure emotional responses to stressors which are a complex interaction of many inter-related factors (Kret and De Gelder, 2012). The emotional experience involves concepts such as negative and positive emotions, arousal or activation, and dominance or control (Bradley and Lang, 1994); and depending on how a person processes and interprets life stressors, this determines their mood, or their affect (either positive or negative). Mental wellbeing and mental illness are not mutually exclusive categories but can be seen as points on a continuum, from positive mental health, through to serious mental illness. A person's mood is dependent on a large number of biological, psychosocial and social factors, and the symptoms and disability associated with these symptoms move back and forth along the continuum, where the need for mental health treatment will vary accordingly (Davis, 2002).

In this study, we aimed to measure the factor structure of the DASS-21 in a sample from a general emergency department to determine if the tripartite model described in the original

scale development is evident in this cohort, and consequently; whether the DASS-21 could be used as an accurate screening tool in this context.

The internal reliability of the DASS-21 as a whole was demonstrated by a high Cronbach's alpha coefficient (0.942), and also high levels for the three subscales (depression: 0.91; anxiety: 0.814; and stress: 0.89) which validates the reliability of the DASS-21. However, this study does not support the tripartite structure of the DASS-21 as defined Lovibond and Lovibond (1995b). Parallel analysis revealed that the DASS-21 was a 2-factor structure, which the factor analysis with forced 2-factor extraction supported. This was despite the three-factor solution also showing clear factor separation and good factor loadings, with the exception of the anxiety subscale. Among our clinical sample of emergency department patients, the DASS-21 can be described as one factor of the physical symptoms of hyper-arousal of anxiety, and a second factor of combined depression and stress.

There is disagreement between studies regarding the DASS-21's underlying hierarchical structure which may be due to different sample characteristics and the analytic techniques used between different studies. Previous studies have used both methods of factor analysis options (EFA and CFA) and have revealed a one factor structure, a two-factor structure, three factor structure, a modified three factor structure, a bifactor structure; and a higher order structure incorporating the second order of one factor of psychological distress and a first order with three factors representing depression, anxiety and stress. Our study used the factor analytic method of PCA analysis which was the method used during the development of the tool (Lovibond and Lovibond, 1995b), and overall; we determined the structure of the DASS-21 as being a multi-factor solution. The eigenvalues revealed a three-factor solution, which is congruent with the original analysis, although the parallel analysis revealed that the DASS-21 is a two factor structure.

The consensus is that parallel analysis is the most accurate method for factor number determination (Hayton et al., 2004) and with this in mind, the DASS-21 can be described as a two factor structure for the ED sample we examined. The variables which correlate onto the first factor (anxiety) are all physical symptoms of hyper-arousal: question 2 (dry mouth); question 4 (breathing difficulty); question 7 (shakiness); question 15 (faintness); and question 19 (perspired noticeably). The variables concerning depression and stress correlate onto the second factor (depression / stress) along with two questions from the original anxiety subscale; question 9 (situational anxiety), and question 20 (being scared for no good reason).

It may be hypothesised that depression and anxiety do share some qualities, although the stress scale is not a separate construct which incorporates features common to both anxiety and depression; but is identical to the depression scale. This is not surprising as the stress scale emerged from questions related to anxiety and depression and one can question as to whether the stress subscale is a valid measure as a separate construct of general psychological distress (Crawford and Henry, 2003). Or, this scale is instead one factor of general psychological distress, or negative affect; with physical symptoms of anxiety representing a separate dimension. It has been shown that depression and negative affect have a stronger correlation than with anxiety (Watson and Kendall, 1989), which in this sample; appear to represent the same construct. The forced one factor solution displayed strong factor loadings, particularly with the depression subscale, however, the 2-factor displayed higher correlations.

A previous study by Apostolo et al. (2006), whose sample consisted of psychiatric out patients, also supports a two factor model of the DASS-21; although the factors in their study consisted

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of anxiety / stress, and depression. They state that stress is a complex concept related to emotions which are influenced by motivation, cognition and context. It is an emotional reaction to internal and external states caused by being unable to effectively cope with threats and challenges. The findings from our study demonstrate that anxiety and depression can be viewed as two separate states. Manifestations of the depression / stress factor in the ED sample may have contributed to the negative effects of the perception of chronic stress. It can be hypothesised that depression is specifically related to events from the past causing feelings of despair, while the psychological components of anxiety can be defined as an emotional state associated with uncertainty and feelings of danger about the future (Eysenck et al., 2006); which result in autonomic responses of hyper-arousal.

Participants in our sample reported low levels of depression and stress, and mild levels of anxiety. This higher level of anxiety may be partially explained by the samples' medical characteristics and the acute nature of the ED presentation, which likely raises an individual's anxiety levels (Marchesi et al., 2004). Previous studies have revealed a higher prevalence of anxiety disorders and mixed anxiety-depression among ED attendees (Marchesi et al., 2004, Demiryoguran et al., 2006, Kalucy et al., 2005, Katerndahl and Realini, 1995, Perruche et al., 2011, Fleet et al., 1996). On the other hand however, it has been suggested that mental health problems might be overestimated within the ED, with patients presenting transient symptoms of anxiety and depression which dissipate after leaving the ED (Saliou et al., 2005).

Results from the factor analysis in the current study may reflect hyper-arousal due to the uncertainty of an ED presentation. The physical effects of anxiety are highlighted in this sample as the DASS-21 asks an individual to assess their mental health in the previous 7 days;

whereas symptoms of depression are caused by the longer term negative reaction to stressors resulting in different symptoms; such as low mood, tiredness, and irritability (Martin et al., 2013).

Different theoretical structures for psychological surveys is not exclusive to the DASS-21 and also occurs in other anxiety and depression scales; including for example, the Hospital Anxiety and Depression Scale (HADS) (Zigmond and Snaith, 1983). The HADS was developed with two factors which assessed symptoms of anxiety and depression. A meta-confirmatory factor analysis using data from 28 clinical and non-clinical samples reported that a bifactor model provided best fit and that the HADS did not provide good separation of anxiety and depression, but was rather, a measure of general distress (Norton et al., 2013).

The comparison of the DASS-21 to the K10 revealed poor agreement between the anxiety subscales (0.51) and moderate agreement between the depression subscales (0.71). However, the K10 asks participants to rate their mental health over the previous 30 days. The moderate agreement between the depression subscales may be due to the effects of chronic stressors over a longer period of time which also would also be captured in the DASS-21, while the anxiety questions for the DASS-21 may be more reflective of short term physiological adaptive changes; in this case caused by an unexpected visit to the ED; from which 30 days may be too long a time frame.

5.3.2.5. Conclusion

The findings from this analysis demonstrated that the autonomic hyper-arousal components specific to anxiety are separate from depressive symptoms and the symptoms of general psychological distress, or negative affect. The findings do demonstrate some support for a multi factor model of anxiety and depression, as there is distinct separation of the anxiety symptoms of autonomic arousal, while the depressive symptoms and stress symptoms shared a common factor construct of negative affect. It may be considered that anxiety and depression are similar and can be assessed together under a single factor of general psychological distress; although these results demonstrate anxiety's the specific relationship with autonomic arousal. The use of an assessment tool like the DASS-21 would need to be established based on the purpose of screening for these conditions.

Overall, it can be seen that the DASS-21 is an appropriate tool to use in the ED when screening for individuals with situational stress; an event highly likely from an ED presentation. However, it is lengthy at 21 questions and scoring and interpretation is determined by a sub-scale with a multitude of categories; which for an ED environment, may be considered too lengthy and time consuming. Also, it is uncertain if the DASS-21 can capture those with problematic anxiety and depressive states which can cause long term morbidity and poor health outcomes. More research is needed to ascertain an individual's mood after the ED presentation, and whether the factor structure of the DASS-21 remains consistent.

5.3.2.5.1. Limitations

There are some potential limitations in this study which are worth considering. Firstly, sample

bias may have influenced the factor structure of the DASS-21 since only 40% of ED attendees

consented to participate. As such, it is possible that the non-consenting sample is experiencing

higher, or lower levels psychological distress which was not captured, thereby skewing the

results (Henderson, 1994, Allgulander, 1989). Secondly, the nature of self-reporting

questionnaires is problematic as the survey responses may have been influenced by the

unexpected visit to the ED; an event which is known to increase anxiety levels (Ekwall, 2013,

Kelly, 2005). Thirdly, medical conditions or medication taken by the consenting participant

may contribute to an over- or under-estimation of psychological distress (Turner and Kelly,

2000); thereby also contributing to bias in the results if it masks or contributes to symptoms

of psychological distress.

5.3.3. Kessler 10 regression analysis

'Very high' category and serious mental illness

5.3.3.1 Overview

Factor analysis of the K10 and the DASS-21 revealed that the K10 was the most valid survey for the purposes of this study and was therefore chosen to be the screening tool for the Phase Two intervention. Not only did the statistical analysis reveal the K10 to be the better option of the two surveys; but also the fact that the K10 has only 10 questions and is easy to score makes it a highly desirable and accurate screening tool, especially in the ED which is a hectic and fast paced environment. Regression analysis measured the significance of the relationships between the clinical and demographic variables which are known to either contribute to mental illness, or be a cause of it. By finding significance here, justification can be given for the exclusion of individuals with scores in the 'very high' category. There are a few reasons for this.

Firstly, studies have shown that individuals with high levels of psychological distress have a higher perceived need for treatment; whereas individuals with lower levels of psychological distress have a consequently lower perceived need for treatments. As the intervention is a health promotion to prevent the escalation of psychological distress, it was revealed in the systematic review and meta-analysis that MI was not effective in samples which are seeking treatment for mental illness. Those seeking treatment are already motivated and therefore, MI has little impact on their motivation. The aim of Phase Two in the current study was to recruit individuals with lower levels of psychological distress and therefore lower levels of perceived need. The success of the MI intervention would therefore be determined by the outcome measure of treatment attendance. If individuals with lower psychological distress,

and lower perceived need attend more treatments post MI, the effect on motivation can be measured. Individuals with very high K10 scores were due to the high probability that these individuals would already have high perceived need of mental health treatment, and motivation to seek and attend therapies.

Psychological distress of attendees at an emergency department: demographic and clinical variables and their relationship to the Kessler 10 'very high' category.

5.3.3.2. Introduction

Mental health issues such as anxiety and depression, are common in the community and result in significant morbidity, mortality and overall financial burden (Charlson et al., 2014, Department of Health and Aging, 2013). Worldwide, depression is the third leading cause of this burden (Collins et al., 2011), with 30% of the population experiencing depression symptoms in the previous year (LGMHG, 2007). In Australia, it is estimated that 20% of adults will experience symptoms of a mental health disorder in the last 12 months, and 45% of adults will experience these symptoms at some point in their lifetime (AIHW, 2014c).

Despite the personal, societal, and health costs associated with mental health disorders, many individuals remain undiagnosed and / or untreated (Boudreaux et al., 2008, Kazdin and Rabbitt, 2013). In Australia, only 35% of those with a mental health issue sought assistance from health professionals, (AIHW, 2015b) reflecting the low level of service utilization rather than a low need for treatment. The 2007 Australian National Survey of Mental health revealed that the proportion of individuals with a mental illness has remained unchanged since 1997,

as too; the perceived need for treatment and access rates for treatment (Tankel et al., 2011).

There is consensus that psychological treatments must be developed along with alternative models of delivery to be incorporated into settings which are not exclusively for psychological services, such as in emergency departments (ED) (Kazdin and Rabbitt, 2013).

The ED is a 24 hour, 7 days a week service and mental health problems are common in ED populations (Kalucy et al., 2005, Shafiei et al., 2011), although mental health assessment is uncommon unless the mental health problem in overt (Fulbrook and Lawrence, 2015). Generally, EDs have not implemented or widely used effective preventative and screening interventions (Bernstein et al., 2007) despite the potential to do so when patients come into unplanned contact with health services.

Early identification through systematic screening and referral to appropriate treatment can reduce the progression of psychological distress and its complications, improving long term outcomes (Downey et al., 2012). Evidence-based medicine promotes the use of diagnostic screening tools to identify mental health disorders and guide clinician decision making (Furukawa et al., 2003). Due to the busy and hectic nature of the ED environment, it is imperative that screening tools be easy to use, do not require a lengthy interview process, are self-reporting in nature, be of low cost, have useful results that can be readily discussed with patients (Ng et al., 2007); and which can be administered and scored by non-psychologists (Furukawa et al., 2003, Lovibond and Lovibond, 1995a). It is also important to be able to access reference data regarding general population norms for comparison (Kessler et al., 2003a).

Several international studies have investigated underlying common mental health problems in the ED and reported prevalence rates of anxiety and depression disorders ranging from 9% to 47% (Boudreaux et al., 2008, Downey et al., 2012, Marchesi et al., 2004, Perruche et al., 2011, Richmond et al., 2007, Saliou et al., 2005). There are a few studies which measure the levels of psychological distress of ED attendees using the Kessler Psychological Distress Scales (K10) (Kessler et al., 2002). A single site French study measured levels of co-morbid psychological distress for alcohol related disorders and found that 60% reported some level of psychological distress (Arnaud et al., 2010). The authors stated that mental health problems can be easily identified with the concept of 'psychological distress' as a variety of disorders exhibit emotional and behavioural symptoms which are not exclusive to any particular disorder (Arnaud et al., 2010). Another study measuring psychological distress targeted women who have had a miscarriage (Stallman et al., 2010) in which 117 women were interviewed, finding that 81.2% experienced distress, with 24.8% experiencing serious levels.

The K10 has been used in general ED settings but only focusing on certain patient cohorts rather than the general ED population. In this context, the current study aimed to screen all consenting patients presenting to a general ED in order to measure the level of nonspecific psychological distress being experienced by this sample, and the relationship of the K10s 'very high' scores between the socio-demographic and clinical variables which are known to be related to serious mental illness; and to determine whether the K10 is suitable as a tool to screen for mental health problems in this environment.

5.3.3.3. Methods

5.3.3.3.1. Sample and setting

The current study utilised a cross-sectional survey collecting data from ED presentations at a major tertiary referral hospital in Brisbane, Australia. The hospital has over 600 beds and provides a broad range of specialties, with its ED managing over 50,000 presentations annually. All adult patients presenting to ED during a 24 hour 14-day period were approached by a research assistant and invited to participate in the study. Exclusion criteria included, ED attendees under the age of 18, those with severe medical injury, intoxication, arrival with police escort, inability to read and understand English, cognitive impairment and refusal to participate. Data were collected using several validated self-report instruments, including the K10. Ethical approval was provided (HREC/10/QPCH/190).

5.3.3.3.2. Data collection

Data were collected during a 12-week period between February and April 2011, and five 6-hour data collection periods (00.00-0600, 06.00-1200, 12.00-18.00, 18.00-24.00) were randomly selected from each week. Data collection periods were assigned randomly in advance, until two or each 6-hour period had been assigned to each day of the week to ensure the equivalent of two weeks of 24 hours ED presentations was reported.

5.3.3.3.3. Measures

Demographic information was collected from consenting ED attendees using a standardized survey instrument. Data collected from the Emergency Department Information System (EDIS) database included, day and time of arrival, arrival by ambulance, diagnostic category, and

their triage score which is the patient's level of acuity determined by the Australasian College of Medicine (ACEM, 2016). This scale details the number of minutes from presentation to being seen by a health professional: Triage 1 (immediately); Triage 2 (10 minutes); Triage 3 (30 minutes); Triage 4 (60 minutes); and Triage 5 (120 minutes).

5.3.3.3.4. Kessler Psychological Distress Scale (K10)

The K10s measures nonspecific psychological distress which is a common feature to mental illness (Kessler et al., 2002). It is not used to screen for a particular diagnosis, but rather, for broadly defined mental disorders (Furukawa et al., 2003). It was developed by using known screening scales which focus on severe mental illness, and the final ten questions of the K10 were based from a large general population sample and determined by comprehensive psychometric analysis (Brooks et al., 2006, Furukawa et al., 2003). It is very precise, in the 90th – 99th percentile, and is comparable in identifying severe mental disorders to the more comprehensive Composite International Diagnostic Interview Short Form (CIDI-SF) (Brooks et al., 2006). It also surpasses the General Health Questionnaire (GHQ) (Goldberg et al., 1991) in differentiating between symptoms of depression and anxiety disorders (Furukawa et al., 2003), and its reliability and validity has been studied across a wide range of settings (Baillie, 2005, Brooks et al., 2006, Donker et al., 2010, Furukawa et al., 2008b, Hides et al., 2007, Slade et al., 2011b, Spies et al., 2009, Arnaud et al., 2010).

The K10 was originally developed to be imbedded in a larger population survey, and was derived from a total of 612 questions taken from 18 existing psychological questionnaires. Item response theory analysis reduced the questionnaire to ten questions and produced an accurate scale with high discrimination for the detection of DSM-IV diagnosable depressive

and anxiety disorders (Kessler et al., 2002, Furukawa et al., 2003). At the development stage, the K10 demonstrated excellent internal reliability with AUC at 0.879, and Cronbach's alpha coefficient of 0.93 (Kessler et al., 2002). The K10 measures the severity of psychological distress the individual has experienced in the last 30 days, and answers range on a 5-point Likert scale, scored from one (none of the time) to five (all of the time), with a possible minimum score of 10, and a maximum score of 50. The scoring categories are: low (10-15), moderate (16-21), high (22-29), and very high (30-50). Questions are based on the view that anxiety and depression share common features and can be measured under one factor or 'psychological distress', which is based on feelings of nervousness, agitation, psychological fatigue and depression (Kessler et al., 2002). Higher scores indicate higher levels of psychological distress being experienced and very high scores indicate the individual may have a mental illness (Andrews and Slade, 2001). The reliability of the K10 makes this instrument a desirable screening tool as clinicians can gain an insight into a patient's mental health status without requiring an in-depth interview.

5.3.3.3.5. Data analysis

Data were entered into SPSS (Statistical package for Social Scientists, version 22) for analysis. Analysis was only conducted on completed K10 surveys (n = 681). There were originally 708 participants, although 3.8% of the surveys had incomplete K10 data and were therefore not included in analysis. Significance was set at $p < 0.05$. The K10 was assessed for reliability with Cronbach's Alpha as the sample size is high and the alpha coefficient should be stable (Gudaganavar, 2011). It has been suggested that minimum sample sizes should be between 300 (Nunnally and Bernstein, 1994, Rouquette and Falissard, 2011) and 400 (Charter, 1999), as small sample sizes will generate unstable alpha coefficients (Charter, 2003). The ED sample was described by using chi-square test for independence between categorical variables to

explore the relationship between demographics, clinical features, gender and K10 categories. A one-way analysis of variance (ANOVA) was used to compare mean K10 scores between categorical variables. Univariate logistic regression models were fitted to explore associations between demographic and clinical categorical variables, and the binary K10 outcome variable. A binary outcome variable was derived based on collapsing the low, moderate and high K10 categories into a single group for comparison with the "very high" category. Variables with p-values < 0.2 were entered into a multivariable logistic regression model and a backwards stepwise elimination process was applied whereby the variable with the highest p-value was excluded at each step. Variables significantly associated with the outcome at the 5% level remained in the final adjusted model.

5.3.3.4. Results

5.3.3.4.1. Sample description

Overall, 1615 patients presented to the ED during the data collection period, of whom 40.2% were not approached to participate in the survey primarily because ED specialists determined they were too unwell to participate, or receiving treatment. From those eligible to participate (n=966), 73.3% (n=708) provided consent, 26.3% (n=254) did not provide consent, and 0.04% (n=4) completed the survey but were excluded as they did not meet the inclusion criteria. Thus, the resultant sample may be summarily described as 'stable' patients. Of those who did not wish to participate in the survey, the main reasons given were: not interested; in too much pain; too sick; or too stressed.

There were 336 males, mean age of 50.98 (SD: 19.91), and 345 females, mean age of 49.37 (SD: 20.01). Significantly more women reported that their main occupation was 'home duties' X^2(10, n = 646) = 21.78, p < 0.05) (see Table 5.12a). ED attendance regarding time of the day was not statistically significant X^2(23, n = 681) = 10.03, p > 0.05, but more women presented on Friday and more men on Saturday, X^2 (6, 681) = 11.83. ED attendance by mental health diagnosis was not significant either by time (00.00 – 05.59; 06.00 – 11.59; 12.00 – 17.59; 23.59) of presentation, X^2(3, 21) = 0.58, p > 0.05, or day of the week, X^2(6, 21) = 6.14, p>0.05. Significantly more patients with 4 or more ED presentations in the previous 12 months were admitted to hospital, X^2(2, n = 660) = 7.0, p < 0.05. Patients 18 to 34 years old were less likely to be admitted, and those over 75 years were most likely to be admitted, X^2(6, n = 681) = 59.82, p < 0.05. Overall, 255 participants were admitted to hospital, and significantly more were men (n = 144), X^2(1, n = 681) = 7.84, p < 0.05 (see Table 5.12b). When the ICD specific diagnosis was analysed, males had the most presentations for acute alcohol intoxication and withdrawal (6 vs 1), but it was not significant, X^2(11, n = 21) = 0.25, p > 0.05 (see Table 5.13 for diagnosis categories).

Table 5.12a. Demographics

		Gender		
		Male **n (%)**	**Female** **n (%)**	**Total** **n (%)**
Private health insurance	Yes	24 (3.5)	47 (6.9)	71 (10.4)
	No	312 (45.8)	298 (43.8)	610 (89.6)
	Total	336 (49.3)	345 (50.7)	681 (100)
Relationship status	Single	92 (13.5)	103 (15.1)	195 (28.7)
	Married / De-facto	179 (26.3)	163 (24.0)	342 (50.3)
	Divorced	7 (1.0)	9 (1.3)	16 (2.4)
	Widow/ Widower	21 (3.1)	25 (3.7)	46 (6.8)
	Other	17 (2.5)	34 (5.0)	51 (7.5)
	Total	316 (48.6)	334 (51.4)	650 (100)
Occupation	Full time	133 (20.6)	115 (17.8)	248 (38.4)
	Part time work	15 (2.3)	27 (4.2)	42 (6.5)
	Casual work	12 (1.9)	15 (2.3)	27 (4.2)
	Self employed	7 (1.1)	4 (0.6)	11 (1.7)
	Full time student	9 (1.4)	4 (0.6)	13 (2.0)
	Unemployed	12 (1.9)	16 (2.5)	28 (4.3)
	Disability benefits	26 (4.0)	16 (2.5)	28 (4.3)
	Aged pension	69 (10.7)	63 (9.8)	132 (20.4)
	Self-funded retiree	22 (3.4)	17 (2.6)	39 (6.0)
	Home duties	10 (1.5)*	33 (5.1)*	43 (6.7)
	Other	7 (1.1)	7 (1.1)	14 (2.2)
	Total	322 (49.8)	324 (50.2)	646 (100)
Identify as Indigenous, Torres Strait islander, or Pacific islander	Yes	11 (1.7)	11 (1.5)	22 (3.4)
	No	315 (48.2)	316 (48.4)	631 (96.6)
	Total	326 (49.9)	327 (50.1)	653 (100)
* significant at 0.05 level				

Table 5.12b. Clinical presentation

| | | Gender | | |
		Male	Female	Total
		Male n (%)	**Female** n (%)	**Total** n (%)
Arrived by ambulance	Yes	130 (19.1)	142 (20.9)	272 (39.9)
	No	206 (30.2)	203 (29.8)	409 (60.1)
	Total	336 (49.3)	345(50.7)	681 (100)
Triage category	1	0 (0.0)	2 (0.3)	2 (0.3)
	2	58 (8.5)*	38 (5.6)*	96 (14.1)
	3	193 (28.3)	237 (34.8)	430 (63.1)
	4	79 (11.6)	64 (9.4)	143 (21.0)
	5	6 (0.9)	4 (0.6)	10 (1.5)
	Total	336 (49.3)	345 (50.7)	681 (100)
Hospital admission	Yes	144 (21.1)*	111 (16.3)*	255 (37.4)
	No	192 (28.2)	234 (34.4)	426 (62.6)
	Total	336 (49.3)	345 (50.7)	681 (100)
Mental health issues? (self-report)	Yes	36 (5.5)*	75 (11.5)*	111 (17.0)
	No	290 (44.3)	253 (38.7)	543 (83.0)
	Total	326 (49.8)	328 (50.2)	654 (100)
Alcohol/ drug issues? (self-report)	Yes	21 (3.2)*	7 (1.1)*	28 (4.3)
	No	305 (46.7)	320 (49.0)	625 (95.7)
	Total	326 (49.9)	327 (50.1)	653 (100)
ED in last 12 months (self-report)	0 – 1	212 (32.1)	235 (35.6)	447 (67.7)
	2 – 3	74 (11.2)	67 (10.2)	141 (21.4)
	4 +	41 (6.2)	31 (4.7)	72 (10.9)
	Total	327 (49.5)	333 (50.5)	660 (100)
AUDIT	Abstainer	50 (7.8)*	96 (15.1)*	146 (22.9)
	Low risk	162 (25.4)	180 (28.3)	342 (53.7)
	Risky/harmful	51 (8.0)*	25 (3.9)*	76 (11.9)
	Dependence	53 (8.3)*	20 (3.1)*	637 (100)
* significant at 0.05 level				

Table 5.13. ICD Categories

	Gender		
	Male	**Female**	**Total**
Certain infections and parasitic diseases	8 (1.2)*	19 (2.8)*	27 (4.0)
Neoplasms	1 (0.1)	0 (0.0)	1 (0.1)
Blood and blood forming organs and immune system	1 (0.1)	1 (0.1)	2 (0.3)
Endocrine nutritional and metabolic	3 (0.4)	6 (0.9)	9 (1.3)
Mental and behavioural disorders	15 (2.2)*	6 (0.9)*	21 (3.1)
Nervous system	3 (0.4)	9 (1.3)	12 (1.8)
Ear and mastoid process	4 (0.6)	5 (0.7)	9 (1.3)
Circulatory system	41 (6.0)	29 (4.3)	70 (10.3)
Respiratory system	25 (3.7)	24 (3.5)	49 (7.2)
Digestive system	21 (3.1)	22 (3.2)	43 (6.3)
Skin and subcutaneous tissue	20 (2.9)*	9 (1.3)*	29 (4.3)
Musculoskeletal system and connective tissue	10 (1.5)*	3 (0.4)*	13 (1.9)
Genitourinary system	19 (2.8)	17 (2.5)	36 (5.3)
Abnormal clinical and laboratory findings	92 (13.5)*	120 (17.6)*	212 (31.1)
Injury poisoning and certain other external causes	52 (7.6)	50 (7.3)	102 (15.0)
External causes of morbidity and mortality	3 (0.4)	3 (0.4)	6 (0.9)
Factors influencing health status and contact services	17 (2.5)	18 (2.6)	35 (5.1)
Pregnancy childbirth and the puerperium	0 (0.0)	2 (0.3)	2 (0.3)
Unknown	1 (0.1)	2 (0.3)	3 (0.4)
Total	336 (49.3)	345 (50.7)	681 (100.0)
* significant at 0.05 level			

5.3.3.4.2 K10

The K10's reliability was high with a Cronbach's Alpha score of 0.913. The overall sample displayed moderate levels of distress, with women significantly more so than men, X^2 (3, n = 681) = 8.39, p < 0.05. Individuals in the low to moderate distress categories were older, while those in the high and very high categories were younger, approaching significance (p = 0.069) (see Table 5.14). There were no statistically significant differences in K10 categories when analysed by triage, X^2(12, n = 681) = 11.56, p > 0.05.

5.3.3.4.3. K10 mean scores

The mean score for males was 17.79 (SD: 8.13) and the mean score for females was 18.14 (SD: 7.54). Younger ages (18 to 44 years) significantly experienced higher levels of distress: F (6, 674) = 2.24, p<0.05, while those 75 years old and over experienced the least distress (see Table 5.15). There were no significant differences when analysed by gender and age group: F (13, 667) = 1.19, p>0.05. However, the most distress was experienced by females aged from 18 to 24 years (mean: 20.09; SD: 7.18), and males aged 35 to 44 years (mean: 19.31; SD: 9.20), p > 0.05. There were no significant differences in mean scores when analysed by triage only, F (4, 680) = 0.786, p > 0.05.

Table 5.14. K10 categories

	Gender		Total, n (%)	Age
	Male, n (%)	Female, n (%)		Mean (SD)
Low	248 (36.4)	231 (33.9)	479 (70.3)	51.15 (19.79)
Moderate	33 (4.8)*	57 (8.4)*	90 (13.2)	50.40 (20.72)
High	18 (2.6)	25 (3.7)	43 (6.3)	44.19 (21.30)
Very high	37 (5.4)	32 (4.7)	69 (10.1)	46.74 (18.61)
Total	336 (49.3)	345 (50.7)	681 (100.0)	50.16 (19.96)
* significant at 0.05 level				

Table 5.15. Age groups and K10 mean scores

	N	Mean	SD	95% CI		Min	Max
				Lower	Upper		
18 to 24	93	19.37	7.660	17.79	20.94	10	45
25 to 34	86	18.47	7.450	16.87	20.06	10	43
35 to 44	102	19.15	9.198	17.34	20.95	10	50
45 to 54	110	17.50	8.057	15.98	19.02	10	50
55 to 64	106	18.32	8.419	16.70	19.94	10	47
65 to 74	83	16.63	6.926	15.11	18.14	10	40
75+	101	16.29	6.154	15.07	17.50	10	34
Total	681	17.96	7.832	17.38	18.55	10	50

5.3.3.4.4. Categorical variables and relationship to K10

Although some variables when unadjusted had statistically significant p-values <0.05, (which are not shown: arrival by ambulance, relationship status, alcohol frequency, living alone/with others, and income per year), they did not remain significantly associated with very high K10 scores in the adjusted multivariable model. Multivariable (adjusted) predictors of the K10 'very high' category are displayed in Table 5.16.

Table 5.16. Multivariable logistical regression

Variable & category	n	Adjusted OR*	95% CI		p-value	Wald p-value
			lower	upper		
ED presentations last 12 months	660					<0.001
0		ref				
1		2.8	1.2	6.9	0.020	
2		2.6	1.0	7.2	0.057	
3		7.7	2.7	21.8	<0.001	
4-6		4.3	1.5	12.6	0.008	
>6		10.0	3.1	32.5	<0.001	
Indigenous / TSI / PI	653					0.031
no		ref				
yes		4.3	1.1	16.1	0.031	
Mental Health Issues	654					< 0.001
no		ref				
yes		7.4	3.80	14.54	<0.001	
Occupation	646					
Full time		ref				0.030
Part time		1.3	0.3	5.4	0.703	
Casual		5.7	1.5	21.1	0.009	
Student		1.3	0.1	13.0	0.851	
Unemployed		5.8	1.8	18.3	0.003	
Disability benefits		1.8	0.6	5.6	0.286	
Aged pension		3.7	1.4	9.5	0.007	
Self-funded retiree		2.8	0.5	14.5	0.230	
Home duties		5.4	1.8	16.8	0.003	
Other		2.1	0.3	14.2	0.428	
AUDIT: dependant category	673					
Not dependent		ref				0.001
Dependent		3.5	1.7	7.1	0.001	
AUDIT: harmful category	640					<0.001
Not harmful		ref				
Harmful		2.6	1.5	4.5	0.000	
Drugs & Alcohol issues	653					<0.001
no		ref				
yes		7.9	3.6	17.6	<0.001	
ICD	678					0.059
Infection / parasite		ref				
Neoplasm / blood / tests		3.9	0.4	35.8	0.224	
Neuro-endocrine / pregnancy		1.2	0.1	20.0	0.908	
Mental health		16.0	1.8	141.9	0.013	
Ear / skin		2.2	0.2	22.7	0.498	
Circulatory		2.4	0.3	21.3	0.420	
Respiratory		2.3	0.2	21.8	0.464	

		3.4	0.4	31.0	0.274	
Digestive		3.4	0.4	31.0	0.274	
Musculoskeletal/injury		3.1	0.3	36.4	0.376	
Genitourinary		1.5	0.1	17.8	0.734	
Abnormal signs/symptoms		2.4	0.3	18.8	0.401	
Poisoning		3.8	0.5	30.4	0.209	
*Multivariable model (adjusted) contains 627 patients.						
ICD, International Statistical Classification of Diseases; PI, Pacific Islander; TSI, Torres Strait Islander						

5.3.3.4.5. ED presentation the previous 12 months

Individuals in the current study who had presented to an ED more than 6 times in the previous 12 months were 10 times more likely to report 'very high' psychological distress. Those which went to the ED 3 times and over 6 times in the last 12 months had significantly higher mean scores than other presentations (21.5 and 26.11 respectively, $F_{(7, 659)} = 10.324$, $p < 0.05$). Studies have confirmed that patients with mental health and behavioural disorders are frequent users of the ED (Billings and Raven, 2013, Hunt et al., 2006, Ko et al., 2015, Markham and Graudins, 2011, Vu et al., 2015), particularly for substance abuse (Billings and Raven, 2013, Vu et al., 2015) and those with higher levels of psychological distress are more likely to present to ED when compared to individuals with low level distress (Indig et al., 2007).

5.3.3.4.6. Mental health and substance use

Of those with a mental health diagnosis, 38.1% had 'very high score' while another 38.1% had a 'low' category score, but this was not statistically significant ($p > 0.05$). Self-reported 'mental health issues' were significantly more reported by women, and displayed an increased OR of 7.4 for having 'very high' psychological distress. Self-reported 'drug and alcohol issues' were significantly more reported by men, whom were nearly 8 times more likely to score 'very high' psychological distress. Those with an official mental health diagnosis were 16 times more likely to report very high levels of psychological distress. There were more men with a mental

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health diagnosis (15 vs 6 respectively) and were more likely to have a diagnosis related to alcohol (6 vs 1 respectively). Men were also significantly more represented in the AUDIT harmful and dependant categories and were (3.5 and 2.6 times respectively) more likely to report 'very high' psychological distress. Studies have shown that K10 scores are higher in people with mental and substance abuse disorders (Slade et al., 2011b) and men are twice as likely to have substance abuse disorders compared to women (Slade et al., 2009b).

5.3.3.4.7. Occupation

Being unemployed, having casual work, and home duties increased the OR by 5 in reporting 'very high' distress scores, while being on the aged pension almost quadrupled the risk, when measured by increased odds ratios. Other ED studies have found that unemployment or being on welfare were significantly associated with mental health diagnosis (Vu et al., 2015, Cassar et al., 2002). Epidemiological studies have found, even though having money does not guarantee optimal mental health, in high income countries there is a relationship between poverty, low education levels and low social capital having detrimental effects on mental and physical wellbeing, both directly and indirectly (Lund et al., 2010). Individuals in low income groups have fewer resources and are exposed to more stressors, and they cope by engaging in risky health behaviours which provides some stress relief. Unemployment doubles the OR of experiencing emotional disturbances such as anxiety and depression and quadrupled the rates of substance abuse disorders (Murali and Oyebode, 2004).

5.3.3.4.8. Indigenous

Participants in the current study who identified as Indigenous, Torres Strait Islander or Pacific Islander had a 4-fold increased risk of reporting 'very high' psychological distress. Studies have

found that Indigenous populations are 2 to 3 times as likely as the general population in their experience of high / very high psychological distress (Jorm et al., 2012, AIHW, 2010b). They also had lower income and higher rates of being dependant on welfare, had less educational opportunities, more hazardous health behaviours and more chronic illness (Jorm et al., 2012).

5.3.3.4.9. Arrival by ambulance

The results of the univariate (unadjusted) logistic regression of 'very high' K10 scores found that arrival by ambulance was a significant predictor of very high psychological distress (p < 0.05). This effect disappeared during multivariate (adjusted) analysis, however, suggesting that arrival by ambulance was not a reliable predictor of 'very high' K10 scores. Overall, for those reporting 'very high' K10 scores (n =69), 38 arrived by ambulance while 31 did not arrive by ambulance, and this was statistically significant, X^2(3, n=681) = 9.13, p<0.05. Other ED studies have also reported that a large proportion of mental health and substance abuse presentations arrive by ambulance, ranging from 39% to 49% (Fry and Brunero, 2004, Knott et al., 2007, Shafiei et al., 2011).

5.3.3.4.10. Psychological distress: age and gender

In the current study, we found some similarities and differences regarding gender and age when compared to Australian population norms. For example, 70% of our sample reported low levels of psychological distress; which is very similar to the Australian population norm of 68% (ABS, 2015). The younger age groups in our sample experienced the highest levels of psychological distress, especially ages 18 to 44 years (p < 0.05), and older individuals experienced the least psychological distress. Again, this is similar to the Australian population norms which suggest that people in the older age groups experience the least distress, while

younger people; particularly females 18 to 24 years old, experience the most (ABS, 2015). In the current study we also found that 16.4% experienced high to very high levels of psychological distress, a rate which is higher than the population norm (11.7%); with women and men in our sample reporting similarly levels of high and very high psychological distress (8.4% and 8.3% respectively). Australian population norms state that it is women which suffer these symptoms the most (13.5 and 9.9% respectively) (ABS, 2015).

5.3.3.5. Discussion

The ED provides an access point to mental health support services and crisis support for individuals experiencing mental health problems. In our study, 3.1% of ED attendees were discharged with a primary mental health diagnosis, and worldwide, mental health diagnosis accounts for 1.8% to 5.4% of all ED presentations (Fry and Brunero, 2004, Dunn and Fernando, 1989, Johansen et al., 2009, Kalucy et al., 2005, Knott et al., 2007, Tankel et al., 2011, Shafiei et al., 2011, Larkin et al., 2005). However, nearly 10% of our sample reported having 'very high' psychological distress, indicating that the potential need for mental health care is higher, but not being met. The predictors of the 'very high' category are in line with what is known about mental health. The psychological distress experienced by this sample has been found in epidemiological surveys where younger age groups experience higher levels of psychological distress when compared to older age groups, women experience greater levels of psychological distress (although not statistically significant in this sample), and men experience higher levels of substance use problems. These results suggest that the K10 is useful for capturing cohorts in the ED setting which may be experiencing higher levels of psychological distress; while at the same time, being an accurate and easy to use screening tool for an ED environment. The ED plays an important role in mental health treatment and presentations are unlikely to diminish in the future.

The ED represents an ideal opportunity to capture at-risk populations, such as those with mental health problems; because it offers a rare contact with health service providers (Bernstein and D'Onofrio, 2009). Some other patients, however, may be well-known to hospital staff due to their frequent attendance (Newton et al., 2011). Systematic screening of non-mental health presentations may not be realistic due to ED overcrowding and the additional burden placed on staff; plus it also poses further strain on patient flow through the department (Horowitz et al., 2010). This creates a paradoxical situation, however, as it is conditions such as mental health which contribute to staff and departmental overload as they increase waiting times, place an increased demand on ED staff, and generally consume a disproportionately high share of ED resources due to their repeat presentations and investigations (Newton et al., 2011). Early identification of these patients would be beneficial to hospital systems and beneficial for the acceleration of other, more acute, ED presentations. Although ED patients with high levels of psychological distress certainly have legitimate medical and psychosocial complaints; early intervention by health care providers with appropriate care plan solutions will enhance health management of these patients at the primary care level (Bernstein and D'Onofrio, 2009). Reducing the burden of mental health problems will also have an impact on an individuals' physical illness, and by providing screening an accessible intervention may benefit those who may not seek help (Kazdin and Rabbitt, 2013).

There is also potential for ED screening of issues such as problematic alcohol and drug use (Bogenschulz et al., 2014, Aseltine, 2010, Hankin et al., 2013), and other conditions such as type 2 diabetes (George et al., 2005), poorly controlled hypertension (Twiner et al., 2016), suicide risk (Boudreaux et al., 2016), eating disorders (Dooley-Hash et al., 2013), and adult

illiteracy (Carpenter et al., 2014). However, most patients with mental health problems will ultimately pass through the ED undetected (Saliou et al., 2005); and most mental health issues will only be revealed through the systematic screening of all patients, regardless of their initial presentation. Studies have shown underlying mental health problems to be as high as 47% (Downey et al., 2012).

Only a small proportion of these individuals with mental health problems will receive treatment in the health care system and initial treatment may only occur after symptoms have been suffered for many years (Kohn et al., 2004). Some studies have shown that 40% of individuals with affective and anxiety disorders seek treatment within the first year of symptoms developing, and for those which do not seek treatment, there is a median delay of 8 years (Christiana et al., 2000). Patients attending the ED allows significant clinical opportunities to identify those with mental health co-morbidity and refer them for appropriate therapy (Richmond et al., 2007).

ED staff attitudes towards individuals with mental health problems must also be considered, as patients with mental health issues are often considered to be challenging due to lack of staff training, fear, and lack of experience and confidence; as well as limited resources available in dealing with this cohort (Sivakumar et al., 2011). ED staff feel more confident in dealing with an individual's physical conditions rather than mental health needs; and generally, clinical staff lack interest and motivation in attending mental health education training due to personal beliefs, clinical pressures of providing medical care, and stigma (Brunero et al., 2012). Historically, ED staff have been reluctant to screen for preventable health risks and so it is important that screening and the subsequent interventions are

evidence-based, with care being taken to ensure that new protocols do not add extra constraints and additional work load for staff (Bernstein and D'Onofrio, 2009). Indeed, many ED staff will already be experiencing time constraints and might not believe that the ED is an appropriate environment to provide care for this group (Marynowski-Traczyk and Broadbent, 2011).

Perhaps new models of care should be considered, with the provision of mental health nurse practitioners representing a feasible solution for streamlining mental health support services in EDs of the future. Research looking at ED nurse practitioners has reported a significant reduction in psychological distress experienced by ED patients when measured by the K10 ($p<0.001$), including improved self-efficacy ($p<0.05$) (Wand et al., 2011a). ED staff also acknowledged that there were improvements to patient flow through the ED, and captured a sample of patient that would normally be missed. The ED nurse practitioner role improved mental health awareness in their study, with ED staff also feeling more confident with the care that the overall ED was providing (Wand et al., 2011b).

5.3.3.6. Conclusions

Considering the high community prevalence of mental health issues and their considerable psychosocial, medical and economic burden; it is clear that this condition must become a public health priority. Screening for mental health problems and the promotion of good health should become an essential part of medical care, including in more critical care focussed environments such as the ED. An easy to use and validated screening tool such as the K10 is appropriate for use in a busy clinical area such as the ED. The K10 comprises only 10 questions, utilises self-reporting and is easily scored; and can be discussed with the patient by clinical staff whom are not necessarily specialist mental health professionals. Earlier identification

and treatment of mental health problems can result in decreasing the morbidity and mortality associated with this condition, which may result in a reduction of the disease burden to both society and the individual.

5.3.3.6.1. Limitations

Certain potential limitations of this study may be considered. The sampling techniques, for example, may have resulted in an incorrect estimation of mental health problems in the ED, particularly regarding individuals with an acute physical disorder who were triaged at 1 and 2; as these ED patients were not interviewed or were less likely to be interviewed due to their extreme physical incapacity. Many people also refused to be interviewed because they were 'stressed' or 'not interested'. It has been demonstrated that levels of psychological distress could be higher in people who refuse to participate in surveys (Henderson, 1994); and individuals with mental health issues are generally more reluctant to participate in surveys (Allgulander, 1989), which may also bias the results. The self-reporting, subjective nature of mental health questionnaires may also be problematic as symptoms of medical conditions or medications may have symptoms of mental disorders, such as drowsiness and sleeplessness; which may lead to an increased estimation of physiological distress. Furthermore, older individuals may be less likely to report being sad, down or in a depressed mood (Henderson, 1994); a situation which may further affect the results.

Chapter 6. Phase Two: intervention study

6.1. Research protocol for phase 2

The Phase Two aims to recruit individuals with moderate and high levels of psychological distress and measure the efficacy of a telephone intervention of a motivational interview. The study aims to raise levels of motivation, so participants can seek further treatment or support for their symptoms.

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Protocol for a pragmatic randomised controlled trial to evaluate effects of a brief intervention for emergency department attendees who present with moderate or high levels of non-specific psychological distress: a pilot study

6.2. Overview

6.2.1. Background

Mental illness is a major public health issue due to morbidity and other associated costs (AIHW, 2014c). However, there are also individuals who may be free from a diagnosable mental illness but who may not feel healthy and/or are functionally impaired (Keyes, 2005). These sub-threshold symptoms are significant due to their prevalence, clinical significance, costs and risk of progression to more severe symptoms (Kessler et al., 2003b). The ED is a potentially effective setting to target these issues due to the high prevalence of mental health problems in attendees (Downey et al., 2012, Heslop et al., 2002, Marchesi et al., 2004, Perruche et al., 2011, Richmond et al., 2007, Saliou et al., 2005). Detection of mental health problems and treatment seeking before problems become severe, may improve health and prevent further deterioration (Fledderus et al., 2010). This is consistent with the recommendations from several Australian government reports and publications regarding mental health and its management (Australian Health Ministers, 2009, National Mental Health Commission, 2013).

The World Health Organisation (WHO) describes mental health as being more than an absence of a mental disorder. It is a state of well-being, where the individual flourishes and realises their own potential, can deal with normal life stressors, work productively and can contribute to society where they live (WHO, 2014). Mental health can therefore be described as a condition free from mental illness, while mental illness describes symptoms of insufficient

mental health. In Australia, almost half of the adult population (7.3 million) will experience a mental illness at some point in their life, while 20% (3.2 million) will experience a mental illness this year, the most common being depression and anxiety (ABS, 2007b). However, there are many people in the community who, despite being free from a diagnosable mental disorder, may be languishing and not leading productive and healthy lives (Keyes, 2005).

In 2003, mental health disorders contributed to 13% of the total disease burden in Australia (Begg et al., 2007) and its annual cost is approximately $20 billion due to loss of productivity and reduced workforce participation (COAG, 2006). In a 12 month period, almost 12% of the Australian adult population made use of services for mental health problems and from this group, only 35% met the criteria for a mental health disorder, and a small proportion (6.1%) of people with no mental health disorder also made use of these mental health services (Burgess et al., 2009). This reveals that there are other indicators of need for mental health services rather than mental illness alone.

Although sub-threshold syndromes are less defined than diagnosable mental illness, they still pose serious problems from psychological distress, which can impair a person's development, career and education opportunities and increases the risk of future mental illness (Druss et al., 2007, Pincus et al., 1999). The Australian Bureau of Statistics (ABS) uses the Kessler Psychological Distress Scales (K10) to determine levels of non-specific psychological stress in its population surveys. Studies involving the K10 reveal a strong association between very high levels of psychological distress and diagnosable mental illnesses such as anxiety and depression (Andrews and Slade, 2001). The ABS National Survey of Mental Health and Wellbeing 2007 revealed that 67% of the population had low level psychological distress, 21% had a moderate level, 9% had high level, and 4% had a very high level (ABS, 2009, ABS, 2007b).

The absence of mental illness does not necessarily mean the presence of flourishing mental health, and it is important to consider the risk of sub-threshold symptoms progressing from moderate symptoms to more severe disorders (Druss et al., 2007, Kessler et al., 2003b). The promotion and protection of mental health may be beneficial and more cost effective, rather than to alleviate mental illness (Fledderus et al., 2010).

Early interventions and the recognition of the spectrum of mental health issues including those with mild or moderate impact with high and low prevalence was identified as a key area for reform in the 4th National Mental Health Strategy (Australian Health Ministers, 2009). The National Report Card on Mental Health and Suicide Prevention (National Mental Health Commission, 2013) also states that increased access to timely and appropriate health services reduces the longer term need for crisis intervention. Consumers can access mental health services either through hospitalisation, residential care, outpatient services or community services. From the 12% of the population who accessed mental health services, one-third consulted community based providers, mainly general practitioners (GP) who generally managed problems such as anxiety, depression and sleep disturbances (AIHW, 2011). However, GPs may have limited time in their practice as well as limited training and experience with mental health disorders (Sharma et al., 2008). EDs also provide mental health services, but usually for patients who have an urgent or semi-urgent need (AIHW, 2013b) and the number of people accessing mental health services through the ED is increasing. In 2011-12 from the total of 7.8 million (AIHW, 2013a) presentations to public EDs, there were 248,501 (AIHW, 2013b) mental health related presentations, representing 3.2% of all presentations. This is an increase from 2008-09, when there were 172,000 (AIHW, 2009) mental health presentations from a total of over 7.2 million (AIHW, 2010a) ED presentations, representing about 2.4% of all ED presentations.

Some EDs in major hospitals have developed an increasingly important role in providing crisis services to patients with mental health issues (Shafiei et al., 2011) and it is considered an appropriate setting for the detection of mental health problems (Kinner et al., 2005). Considering the ED has a high yield of attendees with mental health problems, and that in the community 30% of the adult population are currently experiencing moderate and high levels of psychological distress, the ED would seem an appropriate setting for the detection of mental health problems in a non-mental health treatment seeking population. Screening and identification of ED attendees with moderate or high psychological distress and encouraging them to seek follow up care and support, may improve health outcomes and further deterioration of symptoms may be prevented.

6.2.2. Prevalence study

A single site cross-sectional study (n = 708) was conducted in 2011 to establish the prevalence of mental health issues of ED attendees (Fulbrook and Lawrence, 2015). Several mental health measures were employed, including the K10. Our data revealed that only 18 participants (2.6%) received a primary ICD diagnosis related to mental health whereas 10.1% scored in the very high K10 distress category. We also included a question on our general demographic and general health survey asking whether patients had any 'mental health issues?' and almost 17% of participants answered positively. Based on norm data from the Australian population and the observed K10 scores from our pilot study we were able to calculate the probability of ED attendees having a mental health disorder (Slade et al., 2011b). Stratum specific likelihood ratios were applied to the sample of the 708 attendees. It was found that 37% of all participants may have had an actual mental health disorder, which is higher than the population norm. Our data also showed that almost 40% of ED attendees were affected by moderate/high non-specific psychological stress (identified using K10) (Fulbrook and

Lawrence, 2015). This latter group is our target sample for the proposed study (moderate/high psychological distress).

6.2.3. Current evidence - Motivational interviewing

Motivational interviewing (MI) is a non-confrontational, client-centred, directed therapy, which prepares individuals to become more receptive to change by exploring dissonance in the perceived benefits and costs of behaviours (Miller and Rollnick, 2002a, Rubak et al., 2005b, Leffingwell et al., 2006). MI was developed originally for the treatment of substance use (Miller and Rollnick, 2002a) and its central principle is that motivation to change should be elicited from people, not somehow imposed on them (Rollnick and Allison, 2004). MI is an approach used to help a client realise they may have a problem, build commitment to treatment, increase clients' engagement in treatment and enables behaviour change. The stages of change model (DiClemente and Prochaska, 1998) has proved useful for the understanding and conduct of an MI session. All change is preceded by some degree of ambivalence (Rollnick and Allison, 2004), however MI is particularly useful for working with clients who are ambivalent, resistant or reluctant to change (Miller and Rollnick, 2002a, Mills et al., 2009).

In the ED, MI has been shown to be effective in reducing alcohol consumption (Aseltine, 2010, Barnett et al., 2010, Blow et al., 2006, Crawford et al., 2004, Mello et al., 2008, Mello et al., 2012). There are several studies which use MI as a pre-treatment to encourage treatment seeking behaviours and therapy engagement. These studies have been set in an inpatient environment (Santa Ana et al., 2007, Swanson et al., 1999), veterans medical centres (Seal et al., 2012, Zanjani et al., 2008), specialist outpatient clinics (Maltby and Tolin, 2005, Westra and Dozois, 2006) and a university psychology clinic (Buckner, 2009). All studies delivered the

MI face-to-face, except for Seal et al. (2012), and Zinjani et al. (2008) which delivered the MI by telephone. The studies have demonstrated participants randomised to MI pre-treatment had an increased attendance to psychiatric appointments. MI as a pre-treatment has also been shown to help reduce symptoms of worry (Westra et al., 2009), and fear (Maltby and Tolin, 2005) . The inclusion of MI to treatment strategies has benefits; however, efficacy has been demonstrated on patients with diagnosed mental illness. Only one other study has been found which focused on participants with mild and moderate distress (Fledderus et al., 2010). This study did not use MI but acceptance and commitment therapy, and mindfulness to promote positive mental health. The authors stated they used clinical judgement to identify patients and did not document whether they also used a screening tool. So far, we have found no studies which focus exclusively on MI with a sample with lower severity mental health problems.

The proposed pilot study focuses primarily on participants with moderate or high levels of psychological distress (identified by the K10) due to the high prevalence, and excludes those with very high levels of psychological distress as this may indicate a pre-existing mental health disorder (Andrews and Slade, 2001). The purpose of the MI is to promote early intervention and to motivate participants to seek assistance for psychological distress. This study will also trial the provision of telephone MI which has been shown to be effective in samples with severe mental illness (Seal et al., 2012, Zanjani et al., 2008), and alcohol studies based in the ED (Mello et al., 2008, Mello et al., 2012). In summary, there is extensive evidence of the effectiveness of brief intervention (MI) in the ED for alcohol related populations, but it is relatively untested in mental health populations.

6.2.4. Aim

The main aim of this pilot study is to provide information for the planning of a future larger trial. The socio-demographic characteristics of participants will be assessed and its relationship with recruitment rates and attrition rates. Satisfaction to the intervention will also be assessed.

Other secondary aims are to assess are whether the telephone intervention has an effect on psychological distress levels, and to determine if the K10 is a suitable method of screening and monitoring psychological distress. This is an unfunded PhD study which will inform the viability of applying for a substantive grant for a larger RCT with an economic evaluation.

6.2.5. Methods

6.2.5.1. Design

Pragmatic randomised controlled pilot study.

6.2.5.2. Ethical approval

Ethical approval for this study has been provided by the Human Research Ethics Committee from Metro North Hospital and Health Service (ref: HREC/13/QPCH/244) and the Australian Catholic University Human Research Ethics Committee (ref: 2013 294Q).

6.2.5.3. Participants

All adult patients presenting to the ED of a public hospital during the specified data collection period will be screened to participate in the study. Those who meet the screening criteria and consent to participate in the study will be able to enter the pilot RCT.

Based on psychological distress assessment, consenting ED patients will be categorised into three initial groups; those with:

I)   Moderate or high psychological distress

II)   Low psychological distress

III)   Very high psychological distress.

Subsequently, group I will be randomly allocated to receive either the MI or usual care (usual care does not involve MI). A randomised sample of participants which report low psychological distress will form group II, to represent a 'low-stress' population control group. The inclusion of a 'low stress' control group will allow for further assessment of recruitment strategies and retention of participants. Group III will be excluded from the study (but provided with advice to contact a health professional). Thus, there will be three arms to the study (see Table 6.1).

6.2.5.4. Inclusion criteria

Inclusion criteria will include all alert and orientated English-speaking adults (over 18 years of age) who present to ED. Those attendees who have moderate or high levels of non-specific psychological distress, identified by the K10 (score 16-29), and do not require hospital admission will be eligible to enter the RCT study arm. They will be randomly allocated to either

the intervention or control groups. Of the remaining participants, those with low psychological distress (score 10-15) will be enrolled in the 'low stress' control group.

Table 6.1. Randomisation of groups

Condition 1		Intervention
Group I	Moderate/high psychological distress	MI plus usual care
	Moderate/high psychological distress	Usual care
Group II	Low psychological distress	Usual care

6.2.5.5. Screening

All participants will be screened using the K10. The K10 has been used in the WHO surveys, with over 200 000 participants across 26 countries, as well as US, Canada and Australian surveys (Berle et al., 2010). It is a self-report tool that was developed based on extensive psychometric analysis in large general population sample and was derived from existing screening scales by applying item response theory in identifying items which produced maximal discrimination of respondents at the 90-99th percentile, with a focus on severe mental illness (Furukawa et al., 2003, Kessler et al., 2002). The resulting scale produced high discrimination scores between community and non-community cases of DSM defined psychiatric disorders and had excellent discrimination in severe cases. The purpose of the screening scales is to screen for broadly defined mental disorders rather than for one particular diagnosis (Furukawa et al., 2003).

The K10 requires respondents to identify the frequency of symptoms of psychological distress within the past 30 days, and focuses on anxiety and depressive states. It comprises four

questions regarding anxiety, which focus on agitation and nervousness, and six questions about fatigue and negative affect. Each item is scored using a 5 point scale, ranging from 1 (none of the time) to 5 (all of the time), that defines behavioural, emotional, cognitive and psychological manifestations (Brooks et al., 2006). Participants' distress may be categorised as low (score 10-15) and are likely to be well; moderate (score 16-21) and are likely to have a mild mental health disorder; high (score 22-29) and are likely to have a moderate mental health disorder; or very high (score 30-50) and are likely to have a severe mental disorder (ABS, 2009). There is a strong association between very high K10 scores and a current Composite International Diagnostic Interview (CIDI) diagnosis of anxiety and affective disorders, and a lesser but still significant association between other mental health categories, or the presence of any current mental disorder (Andrews and Slade, 2001).

It could be argued that people coming into the ED would have higher distress scores due to the nature of their presentation. However, the K10 is assessing psychological distress over a 30-day period; not distress experienced on the day of presentation to ED or the few days immediately prior.

6.2.5.6. Intervention

The MI is used to encourage and motivate study participants to seek and obtain further assistance for their psychological needs. The overall spirit of MI is described as collaborative, evocative, and honours patient autonomy. An MI follows four guiding principles: resisting the fighting reflex; understanding and exploring the patients' own motivations; listening with empathy; and empowering the patient and encouraging hope and optimism (Rollnick et al.,

2008). The MI intervention has been designed to be pragmatic in that it will be tailored to each participant's individual circumstances and needs.

Following recruitment, all participants will be provided with 'standard care' i.e. usual care from their ED attendance. Participants who are randomised into the intervention arm will receive an initial MI, delivered by telephone interview 48-96 hours after their ED attendance, with up to three additional MIs by telephone during the following two weeks. Each MI is expected to be up to 60 minutes duration (a total of not more than four hours for each study participant).

6.2.5.7. Follow up

For all of the study participants, longitudinal follow up will occur at one, three, six and twelve months by telephone interview. The purpose of a twelve month follow-up is to ensure the usefulness of longitudinal data by measuring the impact of the intervention over time (Woolard, 2004). We also want to track the natural course of mental health from all participants. The primary goal of using the K10 at each follow-up time point is to measure changes in psychological distress over twelve months and to be able to compare data with other population studies.

6.2.5.8. Outcomes

The main outcomes:

- recruitment rates as a percentage of eligible participants,
- attrition rates by measuring the completion of follow up data,

- participant satisfaction by measuring whether the intervention is acceptable to participants.

Secondary outcomes:

- measurement of the demographic characteristics of participants recruited to each arm: age, gender, and education to determine inequities in retention rates,

- determining whether the intervention had an effect on K10 scores,

6.2.5.9. Sample size

There is a limited amount of published data regarding the ideal size for pilot studies and it has been commented that it seems that sample calculations may not be required for this type of study (Thabane et al., 2010, Billingham et al., 2013). An audit of registered studies found that the median sample size per arm for pilot studies was 30 (range from 8 to 114) (Billingham et al., 2013). Based on this evidence we will recruit the median sample of 30 participants per arm.

6.2.5.10. Recruitment and randomisation

6.2.5.10.1. Recruitment

All adult attendees who present to the participating ED and meet the inclusion criteria will be eligible to enter the study. Recruitment of study participants will occur in the ED by a research assistant (RA), which will ensure that the existing staffing levels at the ED research site are not affected. Recruitment will occur at the time of the patient's presentation to ED, with due consideration given to the patient's particular circumstances. Those who are indisposed,

severely injured or severely distressed due to their injuries may not be approached; in such circumstances guidance will be sought from attending ED staff on an individual basis. Each potential participant will be provided with an information letter by a researcher, explaining the study. Those who agree to participate will be required to provide written consent.

6.2.5.11.2. Randomisation

Attendees who have moderate or high psychological distress will be randomised into intervention and control arms. Those with low psychological distress will be randomly selected (simple randomisation) to form a low distress comparison group for the purpose to measure retention rates at follow-up, and changes in K10 scores over time.

6.2.5.11. Allocation concealment

Randomisation to groups will be done with computer generated numbers tables. A stratified randomisation method will be used. Screened participants will be allocated to groups using a balanced block design to ensure that there are equal numbers of participants in the intervention and control group. A separate randomisation list will be drawn up for each of the four health professionals (strata) to ensure there are equal numbers of participants managed by each health professional. This method will be used rather than a remote service to simplify procedures in the busy ED setting. The participant will not know at baseline whether they will have the MI intervention. Potential MI participants will be allocated by the health professional to treatment group or non-treatment group using an experiment to control ratio of 1:1. Follow-up at the designated time points will be conducted by a RA who is not involved with data collection and will be blinded to the participant's group allocation.

6.2.6. Data collection

Data collection will be completed in randomly selected 5-hour blocks (5 per week/one per day) on randomly selected days between the hours of 0700-2200 (0700-1200; 1200-1700; 1700-2200), until the required sample size has been achieved. These periods have been selected based on the presentation patterns found in our prevalence study. Participants will initially be contacted by a RA when they are admitted to the ED and this contact will primarily be concerned with consent screening and baseline data collection. Participants will be approached by the RA whilst they are in the ED. The RA will not be present when the participants complete the assessments. Paper surveys will be in the control of the RA at all times while in the ED and kept in a locked filing system. ED staff will be blinded to the results.

Data will be initially logged into an Excel database then transferred to SPSS version 21, on a computer which can only be accessed by password which will be known only to investigators. Paper surveys will be kept in a secure filing cabinet in a lockable office for a period of five years (5) years from the date of publication as per National Health and Medical Research Council guidelines (NHMRC, 2007). Data entry will be checked for inconsistencies and errors by the research team.

6.2.7. Intervention

The MI will be conducted over the telephone. The MI health professionals (one senior psychologist and three advanced practice mental health nurses) will be provided with extra training sessions through an accredited training provider regarding the 'spirit' of motivational interviewing. Clinical performance will be monitored by taking a random sample of interviews.

MI will be assessed using the Motivational Interviewing Treatment Integrity 3.1.1 (MITI 3.1.1) (Moyers et al., 2010). Feedback of performance will be provided as necessary.

6.2.8. Measures

The main outcome of this pilot trial is recruitment and retention rates from baseline to all follow-up time points. Table 6.2 summarises the measures, instruments and their administration timetable. Instruments have been carefully selected due to their specific relevance to the population of interest. General measures have been selected due to their widespread use, robust reliability and validity testing, and availability of norm values (Kessler et al., 2002, Lovibond and Lovibond, 1995b, Diener et al., 1985, WHO, 1998, Prochaska et al., 1992a, Schwarzer and Jerusalem, 1995, ABS, 2013).

6.2.8.1. Baseline

At recruitment, all consenting participants will be screened at time-point-a (T1a) and either included or excluded depending on K10 scores. Time-point-b (T1b) will commence post screening and data will then be collected from all eligible participants. Other data (such as primary ED diagnosis), will be collected from patient's medical records.

6.2.8.2. Follow-up

Satisfaction of MI will be assessed with a specifically designed tool five item Likert scale questionnaire. Pre- and post- intervention measures will be used to assess outcomes including motivation, confidence and health seeking behaviour and utilisation, mental health and well-being, and subjective quality of life. All participants will be followed up at four time-points: 1 month (T2), 3 months (T3), 6 months (T4), and 12 months (T5). Data will be collected by a

registered nurse RA via telephone. Data will be input initially via onscreen software, into an Excel database, where they will be checked and verified for transcript error before importing into an SPSS (version 21) database for analysis.

6.2.9. Data analysis

Attrition rates will be measured by successful follow up and completion of telephone survey at each time point. Due to the small sample size of the pilot study and therefore being underpowered to detect change between groups (Cocks and Torgerson, 2013) descriptive data will be used to analyse patient characteristics and socio-demographic data, using measures of central tendency to measure sample distribution and spread of the data (mean and standard deviation, median and percentiles), and confidence intervals. Percentages will be used for categorical variables. We will also compare to those who are lost to follow-up. Data analysis will be performed using SPSS (v 21). We will use regression/ANCOVA analysis to compare variables such as age, gender, and education on secondary outcomes at the different follow-up time points. However, the results from this analysis must be viewed with uncertainty due to the small sample size. Participants lost to follow-up will be excluded from later analysis at follow-up time points, and basic socio-demographic data and K10 scores used to describe this group.

Table 6.2. Measures

Measure	Instruments	T1a Screening	T1b Baseline	T2	T3	T4	T5
Demographics	Demographics	X	✓	X	X	X	X
Mental health and wellbeing	K10 (Kessler et al., 2002)	✓	✓	✓	✓	✓	✓
	DASS 21 (Lovibond and Lovibond, 1995a).	X	✓	X	X	✓	✓
	Satisfaction with Life Scale (Diener et al., 1985).	X	✓	✓	X	X	✓
	WHO – BREF (WHO, 1998).	X	✓	X	✓	X	✓
Moderators	Readiness to change stage (Prochaska et al., 1992a).	X	✓	X	X	X	X
	General self-efficacy scale (Schwarzer and Jerusalem, 1995).	X	✓	✓	X	X	✓
Outcomes	Health Service Usage and Health Related Actions survey (ABS, 2013).	X	✓	✓	✓	✓	✓
	MI Satisfaction Questionnaire	X	X	✓	X	X	X

6.2.10. Discussion

There is evidence regarding the effectiveness of screening and intervention in the ED for people with alcohol use disorders (Aseltine, 2010, Barnett et al., 2010, Blow et al., 2006, Crawford et al., 2004, Mello et al., 2012, Mello et al., 2008). However, screening and intervention in the ED for mental health problems has not been well investigated and has the potential to significantly improve the quality of life of people who have moderate and high levels of psychological distress who might not otherwise seek mental health services. As mentioned in the aims section, this project will provide evidence to inform a larger study in the form of measurable outcomes regarding recruitment rates, retention rates at follow-up and satisfaction with the telephone intervention. The findings will enable practical questions to be answered about the most effective way to implement and recruit for a future study which will test the intervention on a larger scale. The findings will also provide a prospective longitudinal study of the natural history of at-risk and vulnerable population groups after their ED attendance, and also information about the mental health of those who reported low levels of psychological distress at baseline.

Systematic screening of ED patients has the potential to bring about a major change in environment and culture. Currently, there is no routine follow-up of these attendees. Thus, it is possible that many of them – if they are not supported – will experience deterioration in their mental health, which will place an increased demand on future health services. Furthermore, for some patients, their mental health deterioration may lead to crisis situations such as extreme anxiety and depression and the possibility of other behaviours. Therefore, the longitudinal follow-up is essential to measure these possible changes.

Our project is unique in that it will pilot test an intervention that is not well tested in mental health contexts, and which is both practical and sustainable, and has the potential to integrate services from several healthcare disciplines. The project is targeted at the delivery level of healthcare services, focusing primarily on preventative health care and mental health promotion. Whereas previous research has focused on a single lifestyle problem group e.g. alcohol users, or those with severe mental health problems, this study will focus on those with moderate and high psychological distress. In this context, we have found limited research to date that has investigated this population.

Chapter 7. Intervention study

7.1. Overview

Chapter 7 describes Phase Two of the study, where the efficacy of a telephone delivered intervention was assessed in terms of its influence on treatment seeking behaviours, its effect on psychological distress, and also the acceptability of the intervention from the participants' point of view.

7.2. Introduction

The absence of a mental illness does not necessarily indicate mental well-being, and as such; the treatment of moderate or high levels of mental ill-heath, or sub-threshold symptoms, may prevent progression to more serious disorders (Kessler et al., 2003b). The promotion and protection of mental well-being may be more beneficial than the alternative of mitigating mental illness when it occurs; as well as being a more cost-effective option in the longer term (Fledderus et al., 2010, WHO, 2004). Due to limited evidence, current guidelines are unclear regarding the management of individuals with sub-threshold symptoms of mental illness (Davidson et al., 2015). Indeed, many current guidelines recommend a wait and see approach, which includes monitoring of symptoms, and use of low intensity interventions, if necessary (NICE, 2009).

In Australia, mental illness affects almost half (45%) of the adult population at some point in their life; while 20% will be affected in the previous year (ABS, 2007a) and 10% in the past 30 days (Slade et al., 2009a). In this context, it is believed that a certain proportion of the

community whom do not have a diagnosed mental illness, may not necessarily be mentally healthy. The Australian National Survey of Mental Health and Wellbeing (ABS, 2007a) revealed that 21% of the population had experienced moderate levels of distress and 13% had high or very high level levels (ABS, 2009). Compared to the general population, individuals with moderate to high symptoms of psychological distress have higher levels of impairment, similar to those with a mental illness (Wagner et al., 2000). Some studies have shown that mental ill-health is not a good indicator of the need for treatment (Aoun et al., 2004, Mechanic, 2003); but rather, the need for treatment is more related to recognition of symptoms (Mojtabai et al., 2002). Compared to women, men are less likely to recognise mental ill-health symptoms (Mojtabai et al., 2002), and some individuals may be aware of their symptoms but would nevertheless prefer to deal with the issue themselves (Harris et al., 2010). Others are concerned about the stigma and judgement associated with mental illness (Clement et al., 2015, Mechanic, 2003). Data from the 2002 and 2007 Australian population surveys, for example, suggests that the prevalence of mental ill-health and treatment-seeking over the years has changed very little (Tankel et al., 2011). In the Australian adult population, for example, almost 12% had used mental health services, commonly a general practitioner or a psychologist (Slade et al., 2009b); however, of these only 35% met the criteria for mental illness (Burgess et al., 2009).

7.3. Background

In the acute healthcare setting, emergency departments (ED) play an important role in the provision of mental health services (Shafiei et al., 2011), usually for those with serious symptoms and urgent treatment needs (AIHW, 2013b). Although mental illness represents only 3.5% of all ED presentations (AIHW, 2015a), ED attendees have a higher prevalence of psychological distress when compared to the general population. For example, a recent study

measuring psychological distress within ED found that 40% of attendees had experienced symptoms of moderate or high level of distress, with a further 10% experiencing very high levels (Fulbrook and Lawrence, 2015). There is potential to implement early intervention strategies within this high prevalence group, to assist them to seek support for their distress before their symptoms deteriorate further. However, due to the busy and time-poor nature of the ED, any such intervention would need to be brief.

Screening for mental ill-health, with the aim of motivating attendees to pursue further help beyond the ED for their mental health, may be feasible using a brief intervention based on motivational interview (MI) techniques. Several studies have used MI as a pre-treatment for individuals whom were not specifically seeking treatment for their mental ill-health to motivate them to attend further treatment (Buckner and Schmidt, 2009, Fiszdon et al., 2016, Seal et al., 2012, Syzdek et al., 2014, Zanjani et al., 2008). Most previous studies have involved participants with symptoms of mental illness, some with severe levels, as diagnosed by validated tools such as the Structured Clinical Interview for Diagnostic and Statistical Manual of Mental Disorders (SCID DSM). Studies by Buckner and Schmidt (2009) and Syzdek et al. (2014) also included individuals with lower levels of psychological distress. Buckner and Schmidt (2009) used the *Social Interaction Anxiety Scale* with a clinical cut-off score of 43 to indicate that social anxiety was probable; while Syzdek et al. (2014) used the *DUKE-21 Anxiety and Depression* scale with a cut-off score of 30 to indicate high risk for anxiety and depression. Some studies (Buckner and Schmidt, 2009, Fiszdon et al., 2016, Seal et al., 2012, Zanjani et al., 2008) have reported positive effects of MI as a pre-treatment; as indicated by higher numbers of participants attending interventions. However, the study by Syzdek et al. (2014) was different in that the intervention group had sought more informal forms of support from

friends and family, as opposed to seeking formal sources of treatment from health professionals.

Motivational interviewing was originally developed for substance abuse disorders; aiming to promote change by enhancing intrinsic motivation (Arkowitz et al., 2008). It is based on four general principles: expression of empathy; development of discrepancy; rolling with resistance; and supporting self-efficacy (Miller and Rollnick, 2002b). When used properly, MI should not be coercive, but rather should facilitate exploration and resolution of ambivalence by focusing on the individual's own interests and concerns. Through reflective listening, divergence between present behaviour and broader goals and values can trigger awareness of the perceived advantage of changing behaviour; which is more likely to occur when existing behaviour is seen to be incompatible with personal goals (Miller and Rose, 2009). Because MI employs a communication style which focusses on the individual's own values and experiences, their responsibility to decide and direct their own change is asserted. In this context, the promotion of self-efficacy is an important motivator of change that positively influences treatment outcomes (Miller and Rollnick, 2002b).

7.4. Aim

Set against the background described above, the primary aim of this study was to test a brief intervention, employing MI, for individuals attending the ED with moderate to high levels of non-specific psychological distress; and to enhance their health-seeking behaviour for further support. In this context, recruitment, treatment attendance, attrition rates, and intervention

satisfaction were assessed. A secondary aim was to measure the impact of MI on psychological distress over time, when compared to standard care models.

7.5. Methods

This pilot study was designed as a randomised controlled trial and registered with the Australian and New Zealand Clinical Trials Registry (ref: ACTRN1261 4000031662). The protocol is described in detail elsewhere (Lawrence and Fulbrook, 2015). A brief intervention, comprising an individualised MI lasting up to 60 minutes, was delivered by telephone, within 2 to 4 days of the individual's ED attendance, with up to four booster sessions over the following 2 weeks. The purpose of the MI was to motivate participants to seek further treatment for their self-reported psychological distress.

7.5.1. Sample screening, allocation and randomisation

All ED attendees aged 18 years or over were invited to participate. All those that provided consent and were alert and orientated were eligible for inclusion. Attendees with a very high K10 score were excluded but were provided written information regarding where to access further help, including phone numbers for community mental health services. Other exclusions included those in police custody, those about to be admitted to hospital, those already receiving therapy for mental ill-health, and those with a cognitive impairment.

The Kessler 10 (K10) was used to screen the participants' non-specific psychological distress, which was categorised as low (10-15), moderate (16-21), high (22-29) or very high (30-50) (ABS, 2012b). The K10 is a validated and commonly used tool that focuses on self-rated symptoms of anxiety and depression within the previous 30 days; with higher levels of distress

indicating the possibility of a diagnosable mental illness (Andrews and Slade, 2001). It has been used in Australian population surveys, and worldwide. Based on their K10 score, participants were randomly allocated to one of three arms: *Intervention group IX* (moderate or high K10 score); *Control group IO* (moderate or high K10 score); and *Control group IIO* (low K10 score). Participants with moderate or high K10 scores were allocated within the ED to a MI-experienced counsellor (MIC) who then randomised their allocated sample (1:1) to receive either intervention or non-intervention. Thus, the researcher undertaking recruitment was blinded to treatment allocation. Participants with low K10 scores were randomly (1:1) allocated to a second control group. The latter control group was included to enable comparison of healthcare treatment-seeking behaviours in a non-psychological distress group over time. Because the study was designed as a pilot, a priori power calculations were not undertaken. The aim was instead, to recruit 30 participants for each arm of the study.

The MICs involved in this study were health professionals experienced with therapeutic communications such as MI and did not work at the study site ED, to reduce bias of the intervention. Two (1 psychologist, and 1 clinical nurse) were employed in an ED within the health district and specialised in mental health assessments of ED patients presenting with mental health problems. The other two clinicians (2 clinical nurses) were employed in the alcohol and drugs specialty and had used MI communication techniques frequently within their patient cohort.

7.5.2. Intervention

The intervention comprised an individualised, telephone-delivered MI by one of four MI-experienced counsellors within 2 to 4 days after discharge from the ED, with the intention to

provide up to four booster calls during the following two-week period. Each call lasted up to one hour, although the number of calls varied according to participant needs. When participants were unable to be contacted, the counsellor left a message stating that they would call back later. Non-responders were called back a maximum of four times. With participants' permission, telephone calls were digitally recorded. Counsellor performance was assessed using the *Motivational Interviewing Treatment Integrity* tool (MITI 3.1.1) (Moyers et al., 2010) with a random sample of interviews. Feedback of performance was provided as necessary. Participant satisfaction with MI was evaluated using a simple questionnaire comprising of six questions with dichotomous responses (yes / no).

7.5.3. Follow-up

All participants were contacted by telephone at 1, 3, 6 and 12 months by a research assistant blinded to group and treatment allocation. When participants were unable to be contacted a message was left stating they would be called back at another time. Non-responders were called back a maximum of four times within the following two weeks. Those unable to be contacted were considered lost to follow-up for that time point but were contacted again at the next time point.

7.5.4. Data analysis

Data were analysed using the Statistical Package for Social Scientists (SPSS™, version 23), with statistical significance set at $p < .05$. Baseline characteristics of the sample were described using means and percentages, and differences between groups were analysed using the Chi-squared test. Attrition was assessed with the Chi-squared test, with treatment integrity being compared between MI counsellors using descriptive statistics. Mixed between-within ANOVA was used to analyse differences in health-seeking behaviour and psychological distress

between groups over time, and one-way ANOVA was used to compare differences at single time points. T-tests were used to compare differences between baseline and follow-up scores at individual time points.

7.6. Results

7.6.1. Sample

Of 344 ED attendees invited to participate, 162 (47%) declined. Of those that consented initially (n = 182), 55 individuals (30%) were excluded following screening, for various reasons as shown on Table 7.1. Following randomisation, 15 participants were lost from the intervention arm as they could not be contacted within two to four days (as per protocol) following ED attendance, however recruitment continued until there were 30 participants in the intervention group (see Figure 7.1). When comparing demographic variables, there were no statistically significant differences were identified between the 15 participants lost to intervention and those who remained. Characteristics of the final sample are shown in Table 7.2. No statistically significant baseline differences were found between the three groups, although some differences in gender distribution were noted.

7.6.2. Attrition

Chi square analysis did not identify any statistically significant trends between attrition, demographics and K10 categories (see Table 7.3). At six months follow up, significantly more individuals without a high school certificate were lost to follow-up (15 vs 7), although significantly more participants with a tertiary certificate were successfully followed up (32 vs 20), (X^2 (2, n = 91) = .261, p = .045).

7.6.3. Intervention

The mean time from recruitment to first call was 3.3 days (mode = 4), with the length of time between the first to last call ranging from 2 to 44 days. Fifteen participants received two calls, which were all within two weeks of their ED presentation. Of the remainder whom received more than two calls, the period of intervention ranged from 26 to 44 days. Overall, a total of 57 calls were made, with a mean duration of 28 minutes (see Table 7.4). There were no statistically significant, within-sample differences based on the number of calls received; with the exception that those whom received four calls whom were found to have had more ED presentations (two or more) within the previous year (X^2 (1) = 4.75, p = .029).
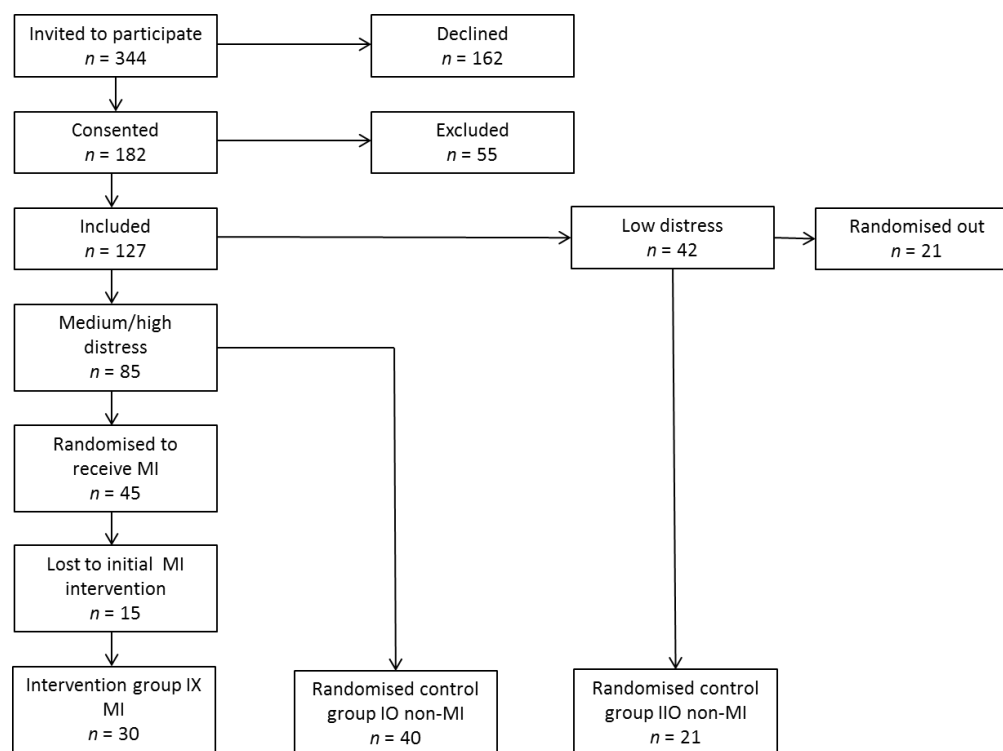
Figure 7.1. Recruitment, allocation and randomisation

Table 7.1. Refusals and exclusions

Declined	n	Excluded	n
Not interested	118	Hospital admission	34
Too unwell / stressed	28	Very high K10 score	18
Already in counselling	9	Did not complete screening	2
Communication problems	7	Not adult aged	1
Total	162	Total	55

Table 7.2. Baseline demographics

Variable		Overall sample n = 91	IIO Control group Low distress n = 21(23%)	Post randomisation	
				IO Control group Moderate/high distress n = 40 (44%)	IX Intervention Group Moderate/high distress n = 30 (33%)
Age	18-44	44 (48.4)	9 (42.9)	23 (57.5)	12 (40.0)
	45-64	36 (39.6)	11 (52.4)	11 (27.5)	14 (46.7)
	$\geq$ 65	11 (12.1)	1 (4.8)	6 (15.0)	4 (13.3)
Gender	Male/female	45/46 (49.5/50.5)	14/7 (66.7/33.3)	16/24 (40/60)	15/15 (50/50)
Living alone		11 (12.1)	1 (4.8)	6 (15.0)	4 (13.3)
Alcohol use	Weekly or more	36 (39.6)	6 (28.6)	14 (35.0)	16 (53.3)
	Monthly	22 (24.2)	6 (28.6)	12 (30.0)	4 (13.3)
	Less than monthly	28 (30.8)	8 (38.1)	12 (30.0)	8 (26.7)
	Never	5 (5.5)	1 (4.8)	2 (5.0)	2 (6.7)
Arrived by ambulance		22 (24.2)	4 (19.0)	9 (22.5)	9 (30.0)
ED presentations within previous year	0-1	61 (67.0)	14 (66.7)	25 (62.5)	22 (73.3)
	2-3	23 (25.3)	7 (33.3)	10 (25.0)	6 (20.0)
	$\geq$ 4	7 (7.7)	0 (0.0)	5 (12.5)	2 (6.7)
Chronic health condition		41 (48.8)	8 (40.0)	17 (48.6)	16 (55.2)
Current mental health problem		29 (31.9)	4 (19.0)	15 (37.5)	10 (33.3)
Mental health diagnosis in prior year		15 (20.0)	2 (12.5)	7 (20.0)	6 (25.0)
Education level	< High school	22 (24.2)	3 (14.3)	10 (25.0)	9 (30.0)
	High school grad +/- some tertiary or trade	17 (18.7)	4 (19.0)	8 (20.0)	5 (16.7)
	Grad =/> university/ college/trade	52 (57.1)	14 (66.7)	22 (55.0)	16 (53.3)
Employed		59 (64.8)	16 (76.2)	26 (65.0)	17 (56.7)
	0-24,999	15 (16.5)	2 (9.5)	6 (15.0)	7 (23.3)

Household income ($ Aus)	25,000-49,999	17 (18.7)	3 (14.3)	7 (17.5)	7 (23.3)
	50,000- 99,999	34 (37.4)	8 (38.1)	15 (37.5)	11 (36.7)
	100,000-149,999	14 (15.4)	6 (28.6)	7 (17.5)	1 (3.3)
	≥ 150,000	11 (12.1)	2 (9.5)	5 (12.5)	4 (13.3)

Table 7.3. Attrition

Time point		Group *n* (%)			
		Low distress 21 (100)	Control 40 (100)	Intervention 30 (100)	Total 91 (100)
One month	Lost	4 (19.0)	7 (17.5)	7 (23.3)	18 (19.8)
	Followed up	17 (81.0)	33 (82.5)	23 (76.7)	73 (80.2)
Three months	Lost	11 (52.4)	18 (45.0)	16 (53.3)	45 (49.5)
	Followed up	10 (47.6)	22 (55.0)	14 (46.7)	46 (50.5)
Six months	Lost	12 (57.1)	21 (52.5)	12 (40.0)	45 (49.5)
	Followed up	9 (42.9)	19 (47.5)	18 (60.0)	46 (50.5)
Twelve months	Lost	8 (38.1)	18 (45.0)	11 (36.7)	37 (40.7)
	Followed up	13 (61.9)	22 (55.0)	19 (63.3)	54 (59.3)

7.6.4. Intervention integrity

Although three of the four MIC were found to be performing at a competent level (GS > 4, 70% for OQ $\geq$ 70%, CR $\geq$ 50%, R/Q > 2) (El-Mallakh et al., 2012); overall, the MI intervention was shown to have a global spirit rating of 3.7, indicating a beginner level of competence (see Table 7.4). Notably, the average length of MI was much shorter for MIC3, with the least adherent to MI being MIC2.

7.6.5. Participant satisfaction

Most of the intervention group (n = 23) completed a satisfaction survey following their final call; among whom, the majority reported being satisfied with the intervention (87%, n = 20) and would recommend this type of service to others (96%, n = 22). However, only half (52%, n = 12) stated that the intervention met their needs, with a similar proportion (57%, n = 13) indicating they would come back to this type of service. Perhaps most importantly, all respondents agreed that the intervention did not help them deal with their problems more efficiently, or help them to seek formal help for their problem. No statistically significant differences in satisfaction levels were found between genders. Participants rated their confidence in, and importance of, the MI intervention pre- and post-implementation using a confidence and importance ruler. No statistically significant differences were found (see Table 7.5).

Table 7.4. MI integrity

	MIC1	MIC2	MIC3	MIC4	Overall
Number of calls	22	13	8	14	57
Minutes (total)	850	343	95	285	1573
Minutes (mean)	38.6	26.4	11.9	20.4	27.6
Evocation	3.0	3.3	4.0	4.0	3.3
Collaboration	4.5	2.5	4.0	4.0	3.6
Autonomy	5.0	2.3	4.0	4.3	3.8
Direction	3.8	2.8	4.0	3.0	3.4
Empathy	5	4	4	5	4.5
Global spirit (GS) rating	4.2+	2.7	4.0+	4.1+	3.7*
Complex reflections (CR) (%)	46*	6	20	41*	39
Open questions (OQ) (%)	88+	33	83+	68	69
Reflection: question ratio (R/Q)	1: 1.9*	1: 5.5+	1: 4.2+	1: 1.7*	1: 1.8*
*beginning proficiency; +competent					

Table 7.5. Confidence and importance

Measure		Pre-MI Mean (SD)	Post MI Mean (SD)	Significance *p*
Importance	Male	5.60 (1.76)	7.10 (2.08)	.205
	Female	5.23 (2.27)	5.46 (2.40)	.658
	Overall	5.5 (2.16)	6.17 (2.37)	.178
Confidence	Male	6.40 (2.20)	7.30 (1.70)	.107
	Female	7.40 (2.03)	7.38 (2.43)	.164
	Overall	6.90 (2.14)	7.35 (2.10)	.159

7.6.6. Health-seeking behaviour

Although the trend for the number of formal medical consultations (but not exclusively for mental health purposes) was consistently less for the low distress control group; when compared to the moderate / high distress groups, the differences were not shown to be statistically significant (see Table 7.6). Several participants were diagnosed with mental health problems during the study at one month (one person from the moderate / high distress intervention group); three months (one person from the moderate / high distress control group); and at 12 months (two participants from the moderate / high distress control group). A mixed between-within subjects ANOVA for the control and intervention groups was conducted to evaluate the impact of gender and group allocation (control, and intervention) on formal health-seeking behaviour over time. There was no statistically significant interaction between group and time (p = .165), nor was there a significant interaction for time, group and gender (p = .549). There was no significant interaction effect for time and gender (p = .422); although there was a substantial effect for time on formal health-seeking behaviour (p = .029] with a moderate effect (partial eta squared = .617). Additionally, one-way between groups ANOVAs were conducted to compare differences between all three groups for the number of formal health consultations at each follow-up time point. No statistically significant differences were found between any groups at any time point during this part of the analysis.

Table 7.6. Health seeking behaviours

Health-seeking behaviour	K10 category	Group	Follow-up month			
			One	Three	Six	Twelve
Formal consultations Mean (SD)	Low	IIO: control	1.24 (1.52)	0.90 (1.29)	2.22 (2.05)	4.85 (5.84)
	Moderate / high	IO: control	2.97 (3.70)	2.73 (2.68)	4.63 (3.30)	7.45 (7.85)
	Moderate / high	IX: intervention	2.70 (5.21)	3.57 (3.37)	5.22 (5.33)	5.42 (5.98)
	Total		2.48 (3.92)	2.59 (2.81)	4.39 (4.13)	6.11 (6.76)

7.6.7. Gender differences

A mixed between-within subjects ANOVA was conducted to assess the impact of gender and group allocation (moderate / high distress control and intervention) on formal health-seeking behaviour over time. There was no significant interaction between group and time (p = .084); nor was there a significant interaction for time, group and gender (p = .549). There was no significant interaction effect for time and gender (p = .287); although there was a substantial effect for time on formal health-seeking behaviour [Wilks' Lambda = .402, F (3, 13) = 6.437, p = .007] with a moderate effect (partial eta squared = .598). However, it should be noted that follow-up time intervals were not always equal in length.

7.6.8. Psychological distress

Changes in K10 categories were assessed, and the low distress group as a whole and by gender remained in the low distress category at all follow-up periods (except for low distress females at 6 months which scored 19.5, a moderate / high category score, albeit with a sample size of

only 2 individuals). The moderate / high distress control group as a whole and by gender displayed a trend of decreased mean K10 scores over 12 months but remained in the moderate / high distress category. The moderate / high distress intervention group as a whole remained in the K10 moderate / high distress category over 12 months; however, from three months onwards, males dropped into the low distress category until 12 months; whereas females remained in the moderate/high distress category. Within the low distress group, no statistically significant differences in K10 scores were found from baseline to any follow-up time point. Refer to Table 7.7.

Table 7.7. K10 scores

Time point	K10 mean scores (SD), *n*											
	Overall sample				Male				Female			
	Low distress	Control	Inter-vention	Total	Low distress	Control	Inter-vention	Total	Low distress	Control	Inter-vention	Total
Baseline	12.43 (1.50), 21	21.05 (4.56), 40	20.97 (4.27), 30	19.03 (5.35), 91	12.21 (1.47), 14	21.13 (4.53), 16	20.00 (3.91), 15	17.98 (5.29), 45	12.86 (1.57), 7	21.00 (4.69), 24	21.93 (4.53), 15	20.07 (5.26), 46
One month	14.06 (3.56), 17	20.45 (6.69), 33	18.39~+^ (4.86), 23	18.32 (6.02), 73	14.00 (3.30), 12	21.00 (7.78), 13	16.36~^ (2.73), 11	17.25 (5.95), 36	14.20 (4.55), 5	20.10 (6.06), 20	20.25 (5.72), 12	19.35 (6.00), 37
Three months	13.00 (2.49), 10	19.32 (4.97), 22	16.29~+ (6.79), 14	17.02 (5.69), 46	13.43 (2.76), 7	20.08 (5.79), 12	15.00 (5.42), 8	16.85 (5.73), 27	12.00 (1.73), 3	18.40 (3.86), 10	18.00 (8.53), 6	17.26 (5.79), 19
Six months	14.56 (5.00), 9	16.84~ (4.54), 19	17.39~+^ (5.43), 18	16.61 (5.00), 46	13.14 (2.03), 7	16.75 (4.74), 8	15.60~^ (3.95), 10	15.28~ (3.94), 25	19.50 (10.61), 2	16.91 (4.64), 11	19.63 (6.44), 8	18.19 (5.72), 21
Twelve months	14.15 (3.64), 13	17.55 (6.47), 22	15.63~+^ (3.78), 19	16.06 (5.13), 46	13.38 (2.26), 8	18.13 (7.69), 8	14.25~+^ (3.61), 8	15.25~ (5.29), 24	15.40 (5.27), 5	17.21 (5.96), 14	16.64~^ (3.75), 11	16.70 (5.00), 30

Each cell, mean (SD), n; ~ *t*-test difference K10 from baseline ($p < 0.05$), +*t*-test differences K10 anxiety scores from baseline ($p < 0.05$), ^*t*-test differences K10 depression scores from baseline ($p < 0.05$)

7.6.8.1. Differences between moderate/high distress control and intervention groups

One-way between groups ANOVA revealed no statistically significant differences in K10 scores between the moderate / high distress control and intervention groups at baseline or at any follow-up point. A mixed between-within subjects ANOVA was conducted to analyse differences in K10 scores over time and by gender. There was a statistically significant main effect for time on overall K10 scores [Wilks Lambda = .412, F (4, 12) = 4.290, p = .022] and the effect was moderate (partial eta squared = .588). There was no significant interaction between time and group (p = .193) nor was there a significant interaction effect for time and gender (p = .643); or a significant interaction between time, group and gender (p = .708). Gender differences in K10 score by control and intervention groups were analysed. Males' K10 scores approached significance at one month (p =.074)] and three months (p =.064) but were not significantly different at any other time points. There were no significant differences between the women's K10 scores at any time point.

7.6.8.2. Differences in K10 score from baseline

T-tests were used to analyse differences in K10 score between baseline and each follow-up time point. The K10 score in the intervention group was significantly less than baseline score at all follow-up time points [baseline to: one month, t (22) = 2.89, p = .010; three months, t (13) = 2.46, p = .028; six months, t (17) = 4.36, p = .000, twelve months, t (18) = 4.11, p = .001]. In the control group, there was a reduction in K10 score from baseline to six months only [t (18) = 1.94, p = .068]. In the low distress control group, there were no statistically significant differences in K10 scores from baseline to any time point. When K10 scores were analysed by gender, males in the intervention group reported statistically significant reductions in K10

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scores from baseline to: one month [t (10) = 2.78, p = .019]; six months [t (9) = 8.39, p < .001]; and twelve months [t (7) = 2.68, p = .031]; but not at three months (p = 0.123). The female intervention group reported a statistically significant lower K10 score at twelve months only (p = .012) but no statistically significant differences were found for females in the control group at any time point. In the female low distress group, no statistically significant differences were identified between baseline and any follow-up time point.

7.6.8.3. Anxiety

A mixed between-within subjects ANOVA was conducted to assess the impact of group allocation and gender on K10 anxiety scores over time. There was no statistically significant interaction between time and group (p = .174), nor was there a significant interaction effect between time and gender (p = .744), or a significant interaction between time, group and gender (p = .100). There was a significant main effect for time on overall K10 scores [Wilks Lambda = .393, F (4, 13) = 5.017, p = .011] with a moderate effect (partial eta squared = .607). One-way ANOVA at individual time points revealed a significant difference in K10 anxiety score between the control and intervention group at three months [F (1, 34) = 4.499, p = .041] but not at any other time point. When comparing baseline K10 anxiety scores to different follow-up time points, there were significantly lower score in the intervention group at: three months [t (13) = 3.252, p =.006]; six months [t (17) = 2.39, p =.029]; and twelve months [t (19) = .017, p =.017]; although no significant differences were found in the control group for any time point.

There were statistically significant differences between male control and intervention groups' K10 anxiety scores at three months only [F (1, 18) = 14.05, p =.001]; although no statistically

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significant differences in K10 anxiety score were found between the female control and intervention group any time point. K10 anxiety scores were also assessed by gender. For men, there were statistically significantly lower K10 anxiety scores in the intervention group at three months [t (7) = 3.04, p = .019], at six months [six months: t (9) = 3.09, p = .013] and at 12 months for the control group [t (7) = 4.32, p = .003]; but not at any other time point. Men in the low distress group did not report any statistically significant differences at any time point. For females, there were no statistically significant differences in K10 anxiety scores for either the moderate / high intervention or control groups from baseline to any follow-up time point; or within the low distress control group.

7.6.8.4. Depression

A mixed between subjects ANOVA was undertaken to assess differences between moderate / high distress control and intervention groups by gender on K10 depression scores over time. There was no significant interaction between time and group (p = .679); nor was there a significant interaction effect between time and gender (p = .705); nor a significant interaction between time, group and gender (p = .472), or a significant main effect for time on K10 depression scores (p = .324). One-way ANOVA at individual time points revealed no statistically significant differences in K10 depression score between the control and intervention group at any time points. Men's K10 depression scores between the control and intervention group were significantly different at month one only [F (1, 22) = 5.631, p =.027], and no statistically significant differences between female control and intervention group K10 depression scores at any time.

When comparing the K10 depression sub-scores from baseline to follow-up time points, the moderate/high distress intervention group reported statistically significantly lower K10 depression scores at all time points, except at three months [one month: t (22) = 2.297, p =.031; six months: t (17) = 3.574, p =.002; twelve months: t (19) = 4.02, p =.001]. There were no statistically significant differences for the moderate / high distress control group at any time, nor within the low distress control group. Males in the intervention group also reported statistically significant reduction in K10 depression scores at one month [t (10) = 2.76, p = .02), six months (t (9) = 4.72, p = .001), and at twelve months (t (8) = 2.22, p = .057]; but not at three months (p = .587). There were no statistically significant differences in K10 depression scores within the male moderate / high distress control between baseline and any follow-up time point nor within the low distress control group. For females, a statistically significant reduction in K10 depression score was found at twelve months only [t (10) = 3.31, p = .008]. No statistically significant differences were found between baseline and any other time points in either the female moderate / high distress control group or the low distress control group.

7.7. Discussion

In terms of the primary aims of the pilot study, it is reasonable to acknowledge was ultimately unsuccessful. There were a few reasons for this. Firstly, it was difficult to engage potential participants to enter the study, with almost half refusing. Not only was participation difficult to obtain, but there was high attrition at follow-ups; and due to the protocol specification whereby MI interviews were conducted between 2 to 4 days after recruitment, there was also high loss to the intervention arm of the study. Secondly, the aim of motivating participants in the intervention group to seek either formal or informal help for their psychological distress

was generally unsuccessful. Most respondents in the intervention stated that they were satisfied with the MI, and almost all stated they would recommend the service to others. However, only half claimed the MI met their needs, all stated that the MI did not help them deal with their problems, and only half would return to this type of service.

Even so, the main success of this study was in establishing useful psychological (K10) distress scores over time. Men in the intervention group experienced significant reductions in K10 scores, which persisted up to 12 months. Other studies have focussed on using MI on non-treatment-seeking male samples with moderate symptoms of psychological distress (Syzdek et al., 2014, Syzdek et al., 2016). Researchers found that although MI did not have a significant effect on influencing help seeking behaviours from nonprofessional or professional sources (Syzdek et al., 2016), the intervention did have an effect on symptoms of psychological distress. Syzdek et al. (2014), for example, reported that MI affected both anxiety and depressive symptoms and decreased severity from mild to minimal.

It might be suggested that the MI in this study was delivered at 'beginner's proficiency' levels. In our study, MIC 2 was generally non-compliant with MI technique, yet those in this subgroup also reported reduced K10 scores. A study measuring the efficacy of MI delivered by telephone which recruited men from the ED who were non-treatment seeking for risky alcohol use, found that experienced male councillors which used less MI consistent behaviours achieved better outcomes than councillors which used MI techniques more consistently. Researchers concluded that successful counselling was related to inter-individual differences and the councillor length of experience, rather than any specific MI techniques (Gaume et al., 2014). Non-directive counselling approaches are unstructured, without specific psychological techniques other than active listening and offering support (Areán et al., 2010) and relies more on the interpersonal skills of individual therapists (Cuijpers et al., 2012). Non-directive

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counselling approaches appear to have similar effects to other directed forms of counselling, such as cognitive behaviour therapy (King et al., 2014, Ward et al., 2000). Despite the fact that non-directive counselling may be as effective as other counselling styles, and even more effective in the treatment of patients suffering from depression; it is not necessarily the preferred treatment option (Cuijpers et al., 2012).

Despite the fact that self-reporting survey data might be unreliable when asking questions on sensitive topics (Krumpal, 2013); in this instance 'psychological distress', the intervention group in our study appears to have benefitted from the MI intervention, with the effects lasting 12 months. This was particularly so regarding men's psychological distress, where significant reductions in depression and anxiety symptoms were reported. These results are important, as men are known to be a hard to reach group who are less likely than women to commit to health seeking behaviours, and are less likely to seek help from formal sources such as general practitioners (Mojtabai et al., 2002, Oliver et al., 2005); often preferring to seek informal sources of help. Men also have longer delays with initiating treatment and are reluctant to initially seek assistance (Galdas et al., 2005, Wang et al., 2005).

This difference in gender access to treatment is seen with national health expenditure, whereby men aged 20 to 54 have an 8% to 10% lower expenditure on health when compared to women (after maternal expenditure has been removed from the data) (Australian Government Department of Health and Aging, 2011). Expenditure data from Medicare reveals that women also claim more services. In 2014-15, for example, females on average claimed 17.8 services, while men claimed on average 13 services (ABS, 2016b). Australian women also used more mental health services when compared to men; with 40.7% (95%CI = 36.0 – 45.3)

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of women with mental ill-health seeking treatment, compared to only 27.5% (95%CI = 21.0 – 34.0) for Australian men (Slade et al., 2009a).

The need for medical treatment for mental ill-health is not directly related to psychological distress and disability; with some studies finding various socio-demographic and attitudinal factors for complex decisions and evaluations which affect both perceived need for treatment and help seeking behaviours (Mojtabai et al., 2002). Gender-based differences may stem from a variety of sources and issues, and the way they interact with each other, exacerbating biological vulnerabilities (Afifi, 2007, Reyes-Aguilar and Barrios, 2016). One reason for the increased health care utilisation of women might be that they are more likely to recognise and label emotional distress (Kessler et al., 2005c) while men may have negative attitudes to psychological openness (Mackenzie et al., 2006), and often cope with depression by increasing sport activity and alcohol consumption (Angst et al., 2002). It should be noted, that Australian men consistently display more substance use and behavioural disorders than women, at all age groups (ABS, 2016b, Alonso et al., 2004a), which may indicate men's coping styles.

Mental health problems are often in conflict with perceived gender roles, whereby men must conform to being tough, competitive and not emotionally expressive; which ultimately has effects on their mental health and health seeking behaviours (Seidler et al., 2016). Help seeking is more than just a process, rather; it also involves experience of the actual consultation and what happens afterwards (Seidler et al., 2016). It has been suggested that psychological services must consider the services they are providing, who accesses these, and whether their services are appropriate for underserviced populations (particularly males), to ensure that services are more universally accessible (Nam et al., 2010). As such, it is important

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to advance male centred health care and gender relevant models of care in future (Seidler et al., 2016). In this study, most male participants were satisfied with the intervention, and almost all said they would recommend the intervention to others; suggesting a general acceptability of a telephone intervention for this group. Syzdek et al. (2014) developed a model of care specifically targeting males, as a way to encourage treatment-seeking behaviours for their mental ill-health and to improve men's ability to recognise their emotional problems in order to make positive changes to their lives.

Telephone interventions have also been shown to reduce depression and anxiety symptoms (Nam et al., 2010), probably because technology-based interventions are seen to be less stigmatising than traditional models of care (Eisenberg et al., 2009, Griffiths and Christensen, 2007). Considering that the male participants in this study reported reduced anxiety and depression; capturing this group by systematic screening in the ED (or any other opportunistic health presentation) and offering a telephone intervention, would appear to be a feasible solution for this currently underserved group.

Telephone counselling may, at times, be the only therapy a person with mental illness receives. Certainly, telephone counselling is low cost, anonymous, and easy to access (Leach and Christensen, 2006). In contemporary society, where most individuals have mobile phones, telephone counselling affords an opportunity to support those with a mental illness by helping to overcoming barriers such as hard to reach clinic locations, whilst also providing access to services with confidentiality and discretion. Telephone counselling can reduce the intensity of interventions by reducing the number of face-to-face clinic contacts, whilst also enabling clinicians to provide 'booster' sessions between scheduled appointments if the individual also

has face-to-face counselling. Furthermore, it enables patients to be more 'in control' of the experience (Depp et al., 2010) as the service is not hindered by time constraints due to working hours and other life stressors.

Even though our intervention in the current study did not necessarily encourage treatment-seeking from formal health service providers and did not increase participant's usage of non-formal counselling or mental health care; the telephone contact was sufficient to lower levels of psychological distress. This intervention therefore offers a novel means of offering psychosocial support. More research will be needed, however, to enable health systems to capitalise on the benefits of mobile phones in the provision of mental health treatment, and to utilise samples which attend opportunistic health settings.

7.7.1. Limitations

Potential limitations in the current study include the certain difficulties in recruitment, and loss to follow-up, both of which may affect the validity of results due to the potential differences between those lost and those successfully followed up. Attributes in this sample may not have been measured, and therefore, the results may not be generalised to other similar populations (Friedman et al., 2015). Furthermore, the self-reporting nature of the follow-up surveys may also incorporate bias as respondents may deliver answers which do not reflect the true nature of the psychological distress the individual is experiencing due to stigma issues (Kessler et al., 2005a), and social desirability bias (Button et al., 2013). Nor may the true number of health service visits at the follow-up time periods be reflected, given that health service appointments could not be verrified with the participants' official medical records. Furthermore, the sample size was potentially sub-optimal, meaning that the effect sizes may be exaggerated or not significant (Button et al., 2013). Randomised controlled trials require

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adequate retention of participants for valid study results and methods to keep participants engaged in the study, specifically where longitudinal follow-up is required.

Some studies have used financial incentives to keep participants involved in research, although this may raise ethical concerns due to it being a form of coercion (Treweek et al., 2013); and may therefore not be suitable for this vulnerable group. Other methods of retention must be considered for future research, such as email and the use of text messaging to remind participants of research participation, with the option of opting out if necessary (Treweek et al., 2013). The current study also excluded participants with 'very high' levels of psychological distress, a cohort which may have allowed interesting comparisons given that some studies have found that individuals with severe levels of distress also experience a higher need for treatment. It may have been beneficial to compare the two levels of distress and the impact it may have had on treatment-seeking behaviour. Some studies, for example, have shown that attitudinal barriers restrict service access for individuals with mild and moderate levels of psychological distress; while structural and access barriers restrict access to services for those with severe levels of psychological distress (Andrade et al., 2014). Furthermore, in the current study we did not offer the participants any interventions in particular; but rather, we attempted to motivate participants to seek their own further treatments. This was not without precedent however, as a study by Syzdek et al. (2014), for example, also did not offer any form of treatment,; while their study also found that their MI interventions had no effect on treatment seeking behaviours.

It may have been useful to compare the efficacy of the MI intervention to another style of intervention. Considering that perceived need is linked to levels of psychological distress and

that mental health services are generally underutilized, it may have been beneficial to also offer some form of specific psychotherapy intervention. Typically, individuals whom present for treatment at their general practitioner (GP) are usually managed with pharmacotherapy alone, despite the efficacy of psychotherapies, and the fact that many patients are unwilling to take medications for anxiety and depression (Collins et al., 2004). The stigma associated with seeking help and taking medication may offer another barrier in seeking help from a GP (Sirey et al., 2010); with some studies revealing a trend of increasing prescription rates of psychiatric drugs among individuals without a mental health diagnosis (Mojtabai and Olfson, 2011, Ilyas and Moncrieff, 2012, Olfson et al., 2014).

Another potential limitation may be the possibility of 'situational' stress experienced by an ED presentation confounding the 'trait' stress reported on the K10 survey. Anxiety is known to be common among patients whom enter the ED (Boudreaux et al., 2004) and can be influenced by a number of factors. Firstly, interpersonal factors such as communication can increase patient stress (Trout et al., 2000), for example, triage nurses and new patients (Ekwall, 2013) where there may be differences of opinion between them regarding the severity or perceived urgency of the patients' condition. Indeed, patients are known to become distressed when they perceived staff communication as being without compassion and empathy (Kihlgren et al., 2004). Lack of information provided to the patient regarding waiting times and treatments may also heighten the perceptions of time spent waiting, a factor which is also known to increases stress (Thompson et al., 1996). Other factors which invoke stress responses among patients include noise (Ulrich et al., 2008), actual waiting times (Yoon and Sonneveld, 2010, Bergstrom et al., 2013) and poor pain management (Bhakta and Marco, 2014). Although communication and pain may be a subjective experience, waiting times still represent an

important factor regarding situational stress experienced by ED patients, and may confound the reporting of stress within the previous 30 days.

7.7.2. Future research

The type of intervention used in this study has been shown to be feasible and acceptable to participants in an Australian setting. To determine if the intervention effects are valid, larger studies focussing on males whom attend EDs or other opportunistic health service presentations must now be undertaken. Furthermore, such studies must include patients with severe levels of psychological distress, as this group traditionally faces many barriers when accessing appropriate services. A telephone intervention can serve as an intervention, given that non-directive counselling approaches are as effective as other more directed forms of therapy. Future investigations should also incorporate interventions and practices which help reduce loss to follow-up to ensure the validity of the results. A randomised controlled trial in this manner may provide further evidence for the effectiveness of telephone based interventions for men and can be useful when developing an acceptable, feasible alternative method of mental health care for common mental health problems in the community that might otherwise go unrecognised.

7.8. Conclusion

Telephone interventions for males offer a promising method for delivering interventions for hard to reach subpopulations and appear to help reduce the progression of mental health issue in the community setting. Screening and delivering early interventions offer a cost-effective method to reduce risk of the progression of psychological distress symptoms, and

also develop psychological resources for EDs of the future. Telephone interventions can reach large populations and have the potential to improve social interactions, combined with great flexibility, including convenient scheduling for the patient. Traditional methods of face-to-face counselling are not viable for all individuals, as well as being expensive. Psychological interventions delivered by telephone are convenient for both the participant and the health care provider; and simultaneously helps to reduce barriers to treatment. Furthermore, telephone interventions may be easily integrated into the existing models of health care and offer another method for monitoring, and conducting appropriate follow-ups for these underserved community groups.

Chapter 8. Overall discussion and conclusion

8.1. Discussion

Mental illness represents a widespread and costly issue for society, with depressive disorders for example, now being the fourth leading cause of global disease (Murray and Lopez, 1997). Mental health issues incur high levels of morbidity and mortality and high societal costs, with the estimated world-wide financial burden from 2011 to 2030, being at least US$16.3 million, million (WHO, 2013). Mental illness represents 13% of the total disease burden in Australia (Begg et al., 2007) (AIHW, 2014c) costs the community approximately $20 billion dollars per year (ABS, 2011, COAG, 2006). The Australian National Survey of Mental Health and Wellbeing (NMHWB) 2007 revealed that almost half of the adult population aged 16 to 85 years (7.3 million) had experienced at least one episode of mental illness in their lifetime (ABS, 2007b). Conditions such as anxiety and depression are highly prevalent, with 20% of Australian adults experiencing a mental illness in the previous year (AIHW, 2015b), and 10% having experienced these symptoms in the previous 30 days (Slade et al., 2009a).

Many individuals with sub-threshold mental health issues remain unrecognised and untreated in contemporary society. These sub-threshold levels of mental illness incur significant impact when compared to individuals with low levels of psychological distress (Karsten et al., 2013) and studies have demonstrated that moderate levels of psychological distress have a high possibility of progressing to more serious psychological symptoms of mental illness (Cuijpers and Smit, 2004). However, despite the impact that mental illness has on individuals and society, only a small proportion of people with these conditions will actively seek treatment (Ratnasingham et al., 2013), meaning that many individuals do not seek any help for their condition. Studies have shown that the perceived need for treatment is a barrier for seeking

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help, where individuals with lower levels of distress have a lower perceived need (Andrade et al., 2014). Other barriers include the individuals personal beliefs and values regarding mental illness (Corrigan et al., 2006, Corrigan, 2014).

The most common access point for mental health treatment is general practice, although individuals still need to actively seek this engagement (Burgess et al., 2009). Furthermore, Australian population surveys have revealed relatively consistent and unimproved levels of treatment seeking behaviours in mental health. This may occur because individuals who do not reach diagnostic criteria for mental illness may display symptoms of distress which are insufficient to be recognised in more orthodox primary care or community settings (Rucci et al., 2003). As such, the current study hypothesised that Emergency Departments (ED) represent an ideal access point to mental health care and may serve as a gateway to mental health services, particularly for individuals whom are not seeking treatment for mental health issues. However, this can only occur if populations with sub threshold symptoms of mental illness are routinely screened during opportunistic presentations, so that interventions can be offered to reduce the burden within this previously neglected group.

The ED is an environment that incurs a high number of attendees with underlying symptoms of mental illness. One European study, for example, found that 38% of attendees had serious mental illness conditions, most commonly depression (42%) and anxiety (18%) (Saliou et al., 2005). Research from the United States suggests that almost half of all of ED attendees have a positive psychiatric history or a current serious mental illness symptoms, with the most common being depression (47%) (Richmond et al., 2007) and anxiety (9%) (Downey et al., 2012). EDs on the other hand, clearly represent an opportunistic (and underutilised) hospital

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presentation for screening and referral for treatment and may also represent a moment where patients are more amenable to intervention (Woodruff et al., 2013, Le Foll et al., 2014). However, due to the hectic nature of the ED environment, it is not feasible to use lengthy mental health surveys, or those which require a trained mental health professional to interpret the results. A more convenient and practical screening tool is therefore needed.

The Kessler 10 (K10) is a convenient and freely available tool that has been used extensively and does not require an in-depth interview or specialised training to administer (Kessler et al., 2002). It was considered appropriate for the current study as it is a simple 10-item self-reporting questionnaire, which measures symptoms of depression and anxiety over the previous 30 days and only takes around 2 minutes to complete. Although it was originally designed for use with large population surveys (Kessler et al., 2002), it has since found use in the screening for serious mental illness (Kessler et al., 2002, Kessler et al., 2003a). Perhaps most importantly for the ED environment, the K10 is a quick and easy tool to use to identify non-treatment seeking individuals whom suffer from common mental health problems, such as anxiety and depression. The K10 does not require lengthy interviews and can be interpreted very quickly (Kessler et al., 2002).

Around half the participants in the current study, 50% of reported some measure of psychological distress (26% moderate, 14% high, and 10% very high), which is higher than levels reported in the community (21% moderate, 9% high and 4% very high) (ABS, 2009). The K10 was shown to have good discriminating abilities to distinguish between cases and non-cases of anxiety disorders and particularly mood disorders, with very high scores often correlating with mental illness (Andrews and Slade, 2001). Official statistics suggest that

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mental health presentations comprise 1.8% to 5.4% of all ED presentations (Dunn and Fernando, 1989, Fry and Brunero, 2004, Johansen et al., 2009, Kalucy et al., 2005, Knott et al., 2007, Tankel et al., 2011, Shafiei et al., 2011, Larkin et al., 2005), and only 3% of our prevalence (Phase One) sample presented with mental health problems, the high levels of 'very high' psychological distress suggesting that many individuals presenting to the ED whom are not assessed for mental health problems, but who are nevertheless significantly impacted by their symptoms.

Phase Two of the current study evaluated whether a Motivational Interviewing (MI) delivered by telephone, could be used with ED attendees with moderate to high levels of physiological distress, as a way to motivate them to seek formal help for their distress. MI is a style of counselling where its primary principle is that change is not imposed on an individual but rather evoked from the individual / client (Rollnick and Allison, 2004). MI explores the dissonance the client may be experiencing regarding certain behaviours and it creates an environment, or space, where there is exploration of the costs and benefits of certain behaviours, and prepares the individual to become more receptive to behaviour change (Miller and Rollnick, 2002b, Rubak et al., 2005b, Leffingwell et al., 2006). The rationale behind MI is that it raises an individual's ambivalence, taking into account their stage of change, to move that individual to the next stage by enhancing their perceived need for change, and increasing their motivation to change (Prochaska et al., 1992b). Those not seeking treatment may be at the pre-contemplation or contemplation stage, and MI can assist them to increase their motivation to change by exploring ambivalence.

Overall, the findings of the pilot phase were mixed, with the intervention appearing to have greater effects on psychological distress rather than an overall increase in help seeking. The

results suggest that participants in the MI intervention experienced a reduction of symptoms of distress, particularly depression symptoms, rather than increasing help seeking behaviours. As distress is a primary motivator for treatment – the higher the distress the higher perception for the need for treatment, it is possible that the intervention helped to reduce distress, which would therefore decrease the perceived need for treatment. This study demonstrated that the ED offers an optimal clinical setting to screen for these types of sub threshold mental health patients, particularly those whom are not presenting for mental health treatment (Lawrence et al., 2017). is a viable option for screening for individuals with mental health problems, which is consistent with previous international research studies have also reported that there is a large underlying prevalence of mental health issues in ED attendees, and the phase one of this study also demonstrated higher than community levels of psychological distress.

It is well-known that an individual's perceived need is the strongest predictor of the use of mental health services (Mills et al., 2012) and the more severe the mental illness, the higher the perceived need (Andrade et al., 2014). Individual attitude is also an important barrier to initiating and engaging in treatment, where attitudinal barriers are highly prevalent in mild and moderate cases of mental illness (Andrade et al., 2014). Due to the burden of mental health problems, particularly the increased risk of morbidity and early death, screening for mental health issues in patients which are not seeking mental health treatment provides clinicians the opportunity to direct individuals to appropriate mental health care. Communication techniques such as MI, therefore, can provide clinicians with the tools to be able to provide a therapeutic intervention at opportunistic health presentations, or at times where it may seem the patient is amenable to an intervention. Health promotion using communication techniques like MI, regardless of the type of clinical setting, is an effective

method to motivate non-treatment seeking patients to seek further support or get them thinking about what they should do next, as MI takes into consideration where the individual is in regard to their 'stage of change' (Prochaska et al., 1992a). While patients may not act immediately following MI, the intervention itself could conceivably 'plant the seed' for later change.

Other interventions which may be feasible for individuals with mental health issues include counselling delivered by telephone. The current study demonstrated that this type of intervention is acceptable for men, which is a high-risk group for mental health and behaviour problems. Telephone interventions represent a feasible approach for this group as this method does not carry the stigma as face-to-face counselling does (Eisenberg et al., 2009), and generally, models of care have centred on the needs of women and children (Nam et al., 2010).

Men generally have a decreased life expectancy when compared to women (ABS, 2017), they tend to engage in risky health behaviours, have higher prevalence of alcohol and substance use across all age groups (ABS, 2016b), and have higher suicide rates (ABS, 2016a). Men have limited social networks when compared to women and are reluctant to seek treatment or to attend formal counselling sessions to talk about their problems (Wang et al., 2005). The current study revealed no statistically significant, within-sample differences based on the number of calls received during MI; although individuals whom received four calls were found to have had more ED presentations. A counselling intervention delivered by telephone targeted to men therefore offers a viable option to treat their mental health problems. Our intervention did not encourage / motivate men (or women) to attend formal health consultations, but the results demonstrated that there were psychological impacts for men

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which were reported up to 12 months follow - up. The decrease in psychological distress has also been demonstrated in other studies which have focused on male models of care (Syzdek et al., 2016, Syzdek et al., 2014). These studies also used the communication style of MI, but other therapeutic interaction styles have also demonstrated their efficacy (King et al., 2014, Ward et al., 2000).

Non-directive counselling styles offer another feasible option in this type of interaction as it does not require the high level of skill which is necessary for MI. Reflective listening is a skill which could be more easily accessible to most health clinicians. Studies have reported that when counsellors are more adherent to the MI counselling style, it actually does not demonstrate better results when compared to others counsellors which may not be as 'true' to that style of counselling (Gaume et al., 2014). It may be that there are other factors at play which make counselling a success, factors which are related to the therapist and patient interaction which is more complex than adhering to a manual, or a protocol. Interpersonal relationships are also important and skills such as reflective listening are a skill which all health clinicians should be trained to enhance. Every interaction with a patient is a moment where communication can have a health promotion agenda, or an opportunity to discover more about the patient in terms of their physical or mental health problems. Despite the study failing to encourage participants to seek further help, the results demonstrate that a telephone call for as little as 20 minutes over a 2-week time period, with follow up for 12 months, is enough to decrease psychological distress. These forms of interventions must be explored further with the ultimate aim of becoming part of routine care.

8.2. Future studies

In this study, non-treatment seeking men in the intervention group benefited most from the interactions and considering males in general are a high-risk group for increased morbidity and mortality, it offers a promising method for the optimum delivery of mental health care. In meeting this newly identified need, the ED clearly affords an opportunistic health presentation where men not seeking treatment for mental health problems can be targeted and screened for psychological distress. The K10 has been shown to be an appropriate screening tool as it is quick to use and can be interpreted by any clinician, and not only clinicians which are specially trained in mental health. Future studies might do well to compare MI interventions to other forms of communication styles, to determine whether MI is most efficient in either encouraging health seeking behaviours, or with the aim to decrease psychological distress.

Mental health screening instruments such as the K10 should now become part of the initial triage conversation, particularly for ED patients whom are not specifically presenting for mental health conditions. Telephone interventions for males offer a promising method for delivering interventions for hard to reach subpopulations and appear to help reduce the progression of mental health issue in the community setting. Screening and delivering early interventions offer a cost-effective method to reduce risk of the progression of psychological distress symptoms, and also develop psychological resources for EDs of the future.

New models of care will also need to be considered for EDs of the future, with the provision of mental health nurse practitioners for example, representing a feasible solution for streamlining mental health support services. Other researchers have already expressed similar

sentiments (Wand et al., 2011a, Wand et al., 2011b, Wand et al., 2015, Reed et al., 2008). The journey may not be easy. Some studies, for example, have found that ED clinicians express insecurity regarding treating ED attendees with mental health and behaviour problems (Clarke et al., 2014). ED clinicians are confident in dealing with the physical nature of presentations, but report they lack confidence and knowledge of how to effectively manage individuals with mental health issues. There may be a need for expert mental health nurse practitioners to provide important clinical support. Having a clinician in the ED full time to screen patients for these issues may be feasible as it may assist with patient flow, as studies have reported that these patients usually get lower triage scores, have diagnostic overshadowing due to stigma expressed by clinicians, and generally have a negative experience from the ED experience. Mental health nurse practitioners in the ED have the potential to increase patient satisfaction, and studies have demonstrated that increased patient satisfaction leads to increased compliance with treatment (Haskard Zolnierek and DiMatteo, 2009), which in turn, has the potential to reduce mental health related admissions.

Other studies may also focus on models of care which specifically focus on men's issues and develop this type of intervention to focus on other health conditions which may be highly prevalent in male populations, such as cardiovascular diseases, and substance abuse, or other issues such as sexual health. Screening in the ED targeting these conditions may enable clinicians to intervene earlier and reduce the risk of morbidity and mortality for men in general. Opportunistic presentations to the ED represent an opportunity for screening for targeted health conditions with a trial of an intervention.

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8.3. Limitations

Although this study may have incurred certain limitations, perhaps the most important aspect was the self-reporting nature of the data collection. Psychological distress may not have been accurately reported, nor the health seeking behaviours; which may have potentially introduced some bias. The limited sample size of the intervention phase of the study may have also skewed the true effect of the intervention. Future studies would benefit from a larger sample sizes, however, they will also need to consider complimentary methods for retaining participants. As previously described., the current study was ultimately difficult to 'sell', with a very high refusal rate to participate followed by a high attrition rate at follow up. Such issues will need to be addressed in future research.

8.4. Conclusion

Overall, the results from this study demonstrated that telephone interventions offer an acceptable form of health counselling for previously underserved mental health populations. Telephone interventions focussed on men are a promising novel method of reaching this hard to reach group. Although men do not generally, access health services at the same rates as women, the telephone intervention used in the current study was found to be was acceptable by men. Regarding mental health interventions, telephone interventions incur less stigma than face-to-face counselling methods and require further investigation. The emergency department also represents an opportunity to screen for a variety of health conditions which have a high prevalence in the male population. Male models of care represent an important aspect of health care which requires further exploration as men have higher rates of morbidity and mortality when compared to women. Opportunistic health presentations, therapeutic forms of communication, and novel methods of health delivery is worth exploring in this

population. Certainly, the current study has shown that screening and delivering early interventions offer a cost-effective method to reduce risk of the progression of psychological distress symptoms and develop psychological resources for EDs of the future.

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Chapter 10. Research portfolio appendix

10.1 Scholarship APA from Australia Catholic University

ACU
AUSTRALIAN CATHOLIC UNIVERSITY

23 November 2012

PetraLawrence-Baxter
35 Kiriwina St
FigTree Pocket, Qld 4069

Dear Petra

Congratulations!

On behalf of the ACU University Research Training Standing Committee (RTSC), I write to advise that your application for an Australian Postgraduate Award (APA) has been successful.

Enclosed are the APA scholarship conditions and postgraduate scholarship accept/decline, banking details and working conditions agreement forms. Please read all the documentation carefully. If you have any queries, do not hesitate to contact me.

Your APA is for a period of three years. **If you are already partway through your candidature, the length of time already consumed will be deducted from the total three years of the scholarship.** Scholarship recipients are required to enrol and begin fulltime candidature between 1 January and 31 March 2013.

Please note you must change your course load from part time to full time before payments can begin to be made.

Please inform us of your deci   by co   pleting and returning the accept/decline form to the Melbourne Research Office by close of b   s   the 7 December 2012.

Once again, congratulation   ess and we look forward to welcoming you to ACU's research community in the near future.

Yours sincerely,

Prof. Patrick Heaven
Dean of Research

10.2. Unsuccessful grants

Title of the Project	Name of Grant Investigator(s)	Partnering organisations	Date/Funding Body/ Amount
The emergency department: setting for a multi-site randomised controlled intervention trial targeting low level mental disorders and risky alcohol use	Fulbrook, P, Somerset, S, Chapman, R, Watt, K, Haji, A, Yerkovich, S, Kinnear, F, Schlesinger, C, Boyle, C.	The Prince Charles Hospital, Australian Catholic University, The University of Adelaide, James Cook University, Southern Health Victoria	June 2013 ARC linkage grant $278,000
A randomised controlled trial of a psychosocial brief intervention for emergency department attendees with low-level mental health disorder with and without risky alcohol use co-morbidity	Kinnear F, Fulbrook P, Somerset S, Watt K, Fischer J, **Lawrence P**, Myers C, Yerkovich S, Hyde S	The Prince Charles Hospital, Biala, James Cook University	June 2012 Queensland Emergency Medicine Research Foundation $273,286
A psychosocial brief intervention with young emergency department attendees with low-level mental health disorder and alcohol risk comorbidity: a randomised controlled trial	Fulbrook, P., Watt, K., Fischer, J., Hyde, S., Kinnear, F., **Lawrence, P.**	The Prince Charles Hospital, Drug & Alcohol Services, Queensland Health, University of Queensland	August 2011 Rotary Health Australia $125,355.18
PFACU1008201120: A randomised controlled trial of a psychosocial brief intervention for emergency department attendees with low-level mental health	Fulbrook, P., Watt, K., Fischer, J., Hyde, S., Kinnear, F., **Lawrence, P.**	The Prince Charles Hospital, Drug & Alcohol Services, Queensland Health, University of Queensland	August 2011 HCF Foundation EOI $150,000

and alcohol risk comorbidity			
A randomised controlled trial of a psychosocial brief intervention with emergency department attendees with low level comorbidity	Fulbrook, P., Fischer, J., Hyde, S., Hayllar, J.	The Prince Charles Hospital	ARC Linkage Project. $138,944 2010

10.3. Phase 1: TPCH ethics

Queensland Government

Prof Paul Fulbrook
Research and Practice Development
The Prince Charles Hospital

Human Research Ethics Committee Queensland Health
The Prince Charles Hospital
Metro North Health Service District
Rode Road,
Chermside QLD 4032

Executive Officer Research & Ethics Ph:	(07) 3139 4500
Office Ph:	(07) 3139 4691
Fax::	(07) 3139 6907
Our Ref:	PL/JH/ Low Risk Approval

Date: 21 December 2010

Dear Prof Fulbrook ,

Re: **HREC/10/QPCH/190: Levels of stress, anxiety and alcohol consumption of emergency department (ED) attendees. P. Fulbrook; S. Hyde; P. Lawrence; K. Watt.**

I am pleased to advise that The Prince Charles Hospital Human Research Ethics Committee reviewed your submission and upon recommendation, the Chair has granted final approval for your low risk project.

Approval of this project is subject to the same confidentiality and privacy requirements as apply to other research projects and research subjects are not recognisable in publications or oral presentations.

Please complete the Commencement Form before starting your study and return to the office of the Human Research Ethics Committee.
http://www.health.qld.gov.au/northside/documents/form_notification.dot

If you intend to publish the results of your work, it is advisable to ascertain from prospective journal editor/s the actual requirements for publication e.g. some journals may require full ethical review of all studies. When results are published, appropriate acknowledgment of the hospital should be included in the article. Please forward copies of all publications resulting from the study for inclusion in the Internet website list.

On behalf of the Human Research Ethics Committee, I would like to wish you every success with your research endeavour.

Yours truly,

Dr Russell Denman
Chair
HUMAN RESEARCH ETHICS COMMITTEE
METRO NORTH HEALTH SERVICE DISTRICT

Office	Postal	Phone	Fax
The Prince Charles Hospital	Rode Road Chermside Q 4032	(07) 3139 4500/3139 4691	(07) 3139 6907

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10.4. Phase 1: Patient information and consent

Patient Information Sheet

Project title: Evaluation of short term support for emergency department attendees who present with moderate or high levels of stress

Researchers: Professor Paul Fulbrook
Ms Petra Lawrence (PhD student)
Associate Professor Shawn Somerset
Associate Professor Paula Schulz
Ms Cathy Boyle
Dr Fran Kinnear

Invitation

You are invited to participate in a study because you have presented to the emergency department (ED) at The Prince Charles Hospital, and it is unlikely that you will be admitted to hospital.

Participation is voluntary and if you decide not to participate it will not affect your care or treatment in any way. If you agree to participate, you will be asked to sign a consent form and all of your personal details will be de-identified in order to protect your privacy.

Study purpose

The aim of the study is to identify ED patients' emotional well being, and to provide short term follow up support (over 2 weeks) to those with moderate or high levels of stress, and to evaluate its benefit.

What will happen if I decide to participate?

If you agree to participate in this study, firstly you will be asked to read and sign a consent form. Then you will be asked to complete a short demographic survey, a series of questions about your emotional well being, your health care usage, your quality of life and a 10 question survey about your emotional well being during the last 30 days. This will take approximately 20 - 30 minutes for you to complete. Depending upon your score, you will be allocated to one of three groups. Only one of these groups will receive the follow up support (selected randomly). But all groups will be contacted by telephone at 1, 3, 6, and 12 months. At this time, you will be asked a series of questions about your emotional well being, your health care usage and your quality of life. This should take no more than 10 minutes to complete.

Short term follow up group

If you are selected for the short term follow up group, you will receive up to 4 telephone calls within a 2 week period after discharge from the ED. The first call will be 2 to 4 days after you have been discharged. A highly experienced health professional will phone you to discuss your emotional well being and how you are managing.

Other information

Some other information about you will also be recorded such as your age, gender and reason for coming to the ED. Personal information such as your name and address will not be recorded.

Possible benefits

There are no specific benefits for participants who take part in this study, except the possibility of reduced levels of stress for some participants.

Possible risks

There are no foreseeable risks to participants involved in this study.

Participation is voluntary

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Participation is entirely voluntary and you can decide to withdraw from the study at any time. If you choose not to take part it will not in any way affect the care and treatment provided to you by The Prince Charles Hospital or Queensland Health.

Privacy, confidentiality and disclosure of information

All information you give will be treated confidentially. Any information you provide will be identified by a number only and no personally identifiable information will be recorded. All data will be collected and stored securely at The Prince Charles Hospital and will be destroyed fifteen (15) years from the completion of the data collection.

Results of project

It is planned to publish the results of this work in academic journals and present it at medical conferences. Because no personal information will be collected about you, any publications or presentations that arise from this study will contain only summarised information. This will ensure that any information collected from you or about you is de-identified.

Ethical guidelines

This project will be carried out according to guidelines produced by the National Health and Medical Research Council (NHMRC) Australia. It has also been reviewed and approved by TPCH Human Research Ethics Committee.

Should you wish to discuss the study with someone not directly involved, in particular in relation to matters concerning policies, information about the conduct of the study or your rights as a participant, or should you wish to make an independent complaint, you can contact the Executive Officer, TPCH Research and Ethics on 07 3139 4500, who will forward your concerns to the Chair of the Human Research Ethics Committee.

Further information or any problems

If you require any information about this project, please direct enquiries and any questions you may have about this project to:

1. Petra Lawrence
    Research Assistant, PhD student
    Nursing Research and Practice Development Centre
    Level 5/ Clinical Sciences Building
    The Prince Charles Hospital, Rode Road, Chermside Qld 4032
    07 3139 4984
    Petra_Lawrence@health.qld.gov.au

2. Professor Paul Fulbrook
    Nursing Research and Practice Development Centre
    Level 5/ Clinical Sciences Building
    The Prince Charles Hospital, Rode Road, Chermside Qld 4032
    07 3139 4087
    Paul_Fulbrook@health.qld.gov.au

The Prince Charles Hospital
Metro-North Hospital and Health Service
Australian Catholic University
Patient Consent Form

Project: Evaluation of short term support for emergency department attendees who present with moderate to high levels of stress

I, ...(the participant)

have read and understood the information provided in the *Patient Information Sheet*, outlining the nature, purpose, benefits and risks of the project and the extent of my involvement, and these details have also been explained to me. I have been given a copy of the *Patient Information Sheet* and *Patient Consent Form* to keep.

I am aware that The Prince Charles Hospital Human Research and Ethics Committee has given approval for this project to proceed.

I freely agree to participate in this project according to the conditions in the *Participant Information Sheet*.

I understand that the researcher will treat all information confidentially and will not reveal my identity and personal details when information about this project is published or presented in any public form.

I am aware that, although the project is directed to the expansion of knowledge in relating to the provision of care to a patient with moderate or high stress, this project may not result in any direct benefit to me.

I have been informed that I may withdraw from the project at my request at any time and that this decision will not affect in any way the care and treatment provided by The Prince Charles Hospital or Queensland Health.

I hereby consent voluntarily to:

- Participate in a questionnaire survey

- Participate with telephone support and/or follow up

- The collection of de-identified information from my medical records

- I would like to receive a summary of the research findings at the   conclusion of the study

Signature:..date:.......................................

_____

Name of Researcher:..
(block letters)

Signature...date:...............................

Version 2 (11/6/2014)

10.5. Phase 2: Patient information and consent

The Prince Charles Hospital
Metro-North Health Service District
Australian Catholic University

Patient Information Sheet

Project title:	Evaluation of short term support for emergency department attendees who present with moderate or high levels of stress
Ethics approval	HREC/13/QPCH/244
Researchers:	Professor Paul Fulbrook
	Ms Petra Lawrence (PhD student)
	Associate Professor Shawn Somerset
	Associate Professor Paula Schulz
	Ms Cathy Boyle
	Dr Fran Kinnear

Invitation

You are invited to participate in a study because you have presented to the emergency department (ED) at The Prince Charles Hospital, and it is unlikely that you will be admitted to hospital.

Participation is voluntary and if you decide not to participate it will not affect your care or treatment in any way. If you agree to participate, you will be asked to sign a consent form.

If you agree to participate, all of your personal details will be de-identified in order to protect your privacy.

Study purpose

The aim of the study is to identify ED patients' stress levels, and to provide short term follow up support (over 2 weeks) to those with moderate or high levels of stress, and to evaluate its benefit.

What will happen if I decide to participate?

If you agree to participate in this study, firstly you will be asked to read and sign a consent form. Then you will be asked to complete a short 10 question survey about your stress levels during the last 30 days. This will take approximately five minutes for you to complete. Depending upon your score, you will be allocated to one of three groups. Only one of these groups will receive the follow up support (selected randomly). But all groups will be contacted by telephone at 1, 3, 6, and 12 months. At this time, you will be asked a series of questions about your stress levels, your health care usage and your quality of life. This should take no more than 30 minutes to complete.

Short term follow up group

If you are selected for the short term follow up group, you will receive 4 telephone calls within a 2 week period after discharge from the ED. The first call will be 2 to 4 days after you have been discharged. A highly experienced nurse will phone you to discuss your stress level and how you are managing.

Other information

Some other information about you will also be recorded such as your age, gender and reason for coming to the ED. Personal information such as your name and address will not be recorded.

Possible benefits

There are no specific benefits for participants who take part in this study, except the possibility of reduced levels of stress for some participants.

Possible risks

There are no foreseeable risks to participants involved in this study.

Participation is voluntary

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Participation is entirely voluntary and you can decide to withdraw from the study at any time. If you choose not to take part it will not in any way affect the care and treatment provided to you by The Prince Charles Hospital or Queensland Health.

Privacy, confidentiality and disclosure of information

All information you give will be treated confidentially. Any information you provide will be identified by a number only and no personally identifiable information will be recorded. All data will be collected and stored securely at The Prince Charles Hospital and will be destroyed fifteen (15) years from the completion of the data collection.

Results of project

It is planned to publish the results of this work in academic journals and present it at medical conferences. Because no personal information will be collected about you, any publications or presentations that arise from this study will contain only summarised information. This will ensure that any information collected from you or about you is de-identified.

Ethical guidelines

This project will be carried out according to guidelines produced by the National Health and Medical Research Council (NHMRC) Australia. It has also been reviewed and approved by TPCH Human Research Ethics Committee.

Should you wish to discuss the study with someone not directly involved, in particular in relation to matters concerning policies, information about the conduct of the study or your rights as a participant, or should you wish to make an independent complaint, you can contact the Executive Officer, TPCH Research and Ethics on 07 3139 4500, who will forward your concerns to the Chair of the Human Research Ethics Committee.

Further information or any problems

If you require any information about this project, please direct enquiries and any questions you may have about this project to:

1. Petra Lawrence
   Research Assistant, PhD student
   Nursing Research and Practice Development Centre
   Level 5/ Clinical Sciences Building
   The Prince Charles Hospital, Rode Road, Chermside Qld 4032
   07 3139 4984
   Petra_Lawrence@health.qld.gov.au

2. Professor Paul Fulbrook
   Nursing Research and Practice Development Centre
   Level 5/ Clinical Sciences Building
   The Prince Charles Hospital, Rode Road, Chermside Qld 4032
   07 3139 4087
   Paul_Fulbrook@health.qld.gov.au

The Prince Charles Hospital
Metro-North Health Service District
Australian Catholic University

Patient Consent Form

Project: Evaluation of short term support for emergency department attendees who present with moderate to high levels of stress

I, ...(the participant)

have read and understood the information provided in the *Patient Information Sheet*, outlining the nature, purpose, benefits and risks of the project and the extent of my involvement, and these details have also been explained to me. I have been given a copy of the *Patient Information Sheet* and *Patient Consent Form* to keep.

I am aware that The Prince Charles Hospital Human Research and Ethics Committee has given approval for this project to proceed.

I freely agree to participate in this project according to the conditions in the *Participant Information Sheet*.

I understand that the researcher will treat all information confidentially and will not reveal my identity and personal details when information about this project is published or presented in any public form.

I am aware that, although the project is directed to the expansion of knowledge in relating to the provision of care to a patient with moderate or high stress, this project may not result in any direct benefit to me.

I have been informed that I may withdraw from the project at my request at any time and that this decision will not affect in any way the care and treatment provided by The Prince Charles Hospital or Queensland Health.

I hereby consent voluntarily to:

- Participate in a questionnaire survey

- Participate with telephone support and/or follow up

- The collection of de-identified information from my medical records

- I would like to receive a summary of the research findings at the conclusion of the study

Signature:...date:.......................................

_____

Name of Researcher:...
                                                            (block letters)

Signature...date:.......................................

Version 1 (06/08/2013)

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10.6. Phase 2: TPCH ethics

Enquiries to:	R&ETPCH@health.qld.gov.au
Office Ph:	(07) 3139 4198
	(07) 3139 4500
Our Ref:	HREC Final Approval

Queensland Government

17 October 2013

Human Research Ethics Committee
Metro North Hospital and Health Service
The Prince Charles Hospital
Administration Building, Lower Ground
Rode Road, Chermside QLD 4032

Associate Professor Paul Fulbrook
C/- Petra Lawrence

The Prince Charles Hospital

Dear Associate Professor Paul Fulbrook

RE: HREC/13/QPCH/244: Efficacy of a brief intervention for emergency department attendees with moderate to high psychological distress

Thank you for submitting the requested documents for the above project for further review which was received on 20 September 2013. This project was considered by Metro North Hospital and Health Service - The Prince Charles Hospital Human Research Ethics Committee (HREC).

This HREC is constituted and operates in accordance with the National Health and Medical Research Council's (NHMRC) *National Statement on Ethical Conduct in Human Research (2007), NHMRC and Universities Australia Australian Code for the Responsible Conduct of Research (2007)* and the *CPMP/ICH Note for Guidance on Good Clinical Practice*.

I am pleased to advise that the Human Research Ethics Committee has granted final approval of this research project. The documents reviewed and approved for the above mentioned project include:

Document	Version	Date
Application (AU/1/3E1415)		
Patient Information Sheet/Consent Form	V1	20 September 2013
Questionnaire: Kessler psychological distress scales	V1	06 August 2013
Questionnaire: Depression, anxiety and stress scales	V1	06 August 2013
Questionnaire: Demographic questions	V1	06 August 2013
Questionnaire: satisfaction with life scale	V1	06 August 2013
Questionnaire: BREF	V1	06 August 2013
Questionnaire: EQ - 5D	V1	06 August 2013
Questionnaire: Readiness to change ruler	V1	06 August 2013
Questionnaire: Health related actions	V1	06 August 2013
Questionnaire: Health care utilisation	V1	06 August 2013
Questionnaire: Client satisfaction survey	V1	06 August 2013
Protocol: Research protocol	V1	06 August 2013

This information will be tabled at the next meeting on 7 November 2013 for noting.

Office	Postal	Phone
Research, Ethics & Governance Office	Administration Building, Lower Ground	(07) 3139 4500
The Prince Charles Hospital	Rode Road, Chermside Q 4032	(07) 3139 4198

(handwritten annotations in left margin): This is a true copy of the original letter. Stephanie 10th March 2014. Amended letter in the original document. 0422 470 6 23

Please note the following conditions of approval:

1. The Principal Investigator will immediately report anything which might warrant review of ethical approval of the project in the specified format, including:

   a. Unforeseen events that might affect continued ethical acceptability of the project.

   b. Serious Adverse Events that materially impact on the continued ethical acceptability of the project. In addition the Investigator must provide, at least six monthly, a summary of serious adverse events, in the specified format, including a comment as to suspected causality.

2. Amendments to the research project which may affect the ongoing ethical acceptability of a project must be submitted to the HREC for review. Major amendments should be reflected in a cover letter from the principal investigator, providing a description of the changes, the rationale for the changes, and their implications for the ongoing conduct of the study. Hard copies of the revised amendments, the cover letter and all relevant updated documents with tracked changes must also be submitted to the HREC coordinator as per standard HREC SOP. Further advice on submitting amendments is available from http://www.health.qld.gov.au/ohmr/html/regu/regu_home.asp

3. Amendments to the research project which only affect the ongoing site acceptability of the project are not required to be submitted to the HREC for review. These amendment requests should be submitted directly to the Research Governance Office/r (by-passing the HREC).

4. Proposed amendments to the research project which may affect both the ethical acceptability and site suitability of the project must be submitted firstly the HREC for review and, once HREC approval has been granted, submitted to the RGO.

5. Amendments which do not affect either the ethical acceptability or site acceptability of the project (e.g. typographical errors) should be submitted in hard copy to the HREC coordinator. These should include a cover letter from the principal investigator providing a brief description of the changes and the rationale for the changes, and accompanied by all relevant updated documents with tracked changes.

6. The HREC will be notified, giving reasons, if the project is discontinued at a site before the expected date of completion.

7. The Principal Investigator will provide an annual report to the HREC and at completion of the study in the specified format.

8. The Hospital & Health Service Administration and the Human Research Ethics Committee may inquire into the conduct of any research or purported research, whether approved or not and regardless of the source of funding, being conducted on hospital premises or claiming any association with the Hospital; or which the Committee has approved if conducted outside The Prince Charles Hospital & Health Services.

HREC approval is valid for **3 years** from the date of this letter.

Should you have any queries about the HREC's consideration of your project please contact Philip Lee on the above phone numbers or email addresses. The HREC terms of Reference, Standard

Operating Procedures, membership and standard forms are available from
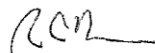http://www.health.qld.gov.au/ohmr/html/regu/regu_home.asp

You are reminded that this letter constitutes ethical approval only. **You must not commence this research project at a site until separate authorisation from the Hospital & Health Services CEO or Delegate of that site has been obtained.**

A copy of this approval must be submitted to the relevant Hospital & Health Services Research Governance Officer/s or Delegated Personnel with a completed Site Specific Assessment (SSA) Form for authorisation from the CEO or Delegate to conduct this research at the site/s.

Once authorisation to conduct the research has been granted, please complete the Commencement Form http://www.health.qld.gov.au/tpch/documents/form_notification.dot and return to the office of the Human Research Ethics Committee.

The HREC wishes you every success in your research.

Yours faithfully

Dr Russell Denman
Chair
HUMAN RESEARCH ETHICS COMMITTEE
METRO NORTH HOSPITAL AND HEALTH SERVICE

The members present at the Metro North Hospital & Health Services, Human Research and Ethics Committee meeting on the 12 September 2013 when the approval was granted for .... is listed in the table below.

Attendees	Present	Apology
(Chair) Medical Representative Cardiology (a/f) [M]	x	
(Deputy Chair) Medical Representative – Transplant (f) [M]	x	
Layman (b) [M]	x	
Research Scientist (c) [F]	x	
Director of Pharmacy [M]	x	
Medical Representative Psychiatry (f) [M]		x
Laywoman (b) [F]	x	
Community Health (c) [F]	x	
Executive Director, Medical Services [M]		x
Senior Researcher (f) [M]	x	
Executive Officer – Research and Ethics [M]	x	
Legal Representative (e) [F]		x
Nursing Representative (c) [M]	x	
Religious Representative (d) [M]		x
Medical Representative – Emergency Medicine (f) [F]		x
Medical Representative – Geriatrics (f) [F]	x	

This is also to certify that TPCHMNHHSHREC is a NHMRC accredited Ethics Committee. Our Registered Number is EC00168.

Our accredited Ethics Committee is organised, complies and operates within the GCP and ICH Guidelines.

Note: The composition of the HREC is constituted in accordance with the NHMRC National Statement on Ethical Conduct in Human Research (March 2007).

Please be advised that in the instance of an investigator being a member of the HREC, they are absented from the decision making process relating to that study.

For further information please contact the Research, Ethics & Governance Office on (07) 3139 4198.

10.7. Phase 2: Data custodian approval

Vanessa Williams - Data custodian for access to confidential information

From:	Petra Lawrence
To:	Stephen Ayre
Date:	28/10/2013 2:50 PM
Subject:	Data custodian for access to confidential information
Attachments:	ethics approval.pdf; Microsoft Word - research protocol 6 8 13 V1.pdf

Hi Stephen

I am writing regarding permission to gain access to confidential patient information which will be necessary for a research project to be conducted in the Emergency Department of The Prince Charles Hospital, hopefully to begin in November. I require access to EDIS to obtain patient ICD codes for primary diagnosis, and also require access to other information regarding demographic data.

The ethics approval number is HREC/13/QPCH/244 (title: Efficacy of a brief intervention for emergency department attendees with moderate to high psychological distress.

I have attached a scanned copy of the ethics approval, plus a copy of the research protocol.
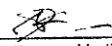
Hope to hear from you soon

All the best

Petra

Petra Lawrence

Registered Nurse / Research Assistant
Nursing Research and Practice Development Centre
The Prince Charles Hospital / Australian Catholic University
Rode Rd, Chermside, Qld 4032
Tel: 07 3139 4984
Queensland Representative
Drug and Alcohol Nurses of Australasia
PhD Candidate
Australian Catholic University

Executive Director Medical Services
The Prince Charles Hospital

Approved / Not Approved
Date: 7/11/13

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10.8. Phase 2: ACU ethics

2013 294Q Registration of External Ethics Approval
Kylie Pashley on behalf of Res Ethics
Sent: Monday, 11 November 2013 13:43
To: Paul Fulbrook

Dear Paul,

Principal Investigator: Prof Paul Fulbrook
Ethics Register Number: 2013 294Q
Project Title: Efficacy of a brief intervention for emergency department
attendees with moderate to high psychological distress
Risk Level: Multi Site
Date Approved: 11/11/2013
Ethics Clearance End Date: 31/12/2015

The ACU HREC has considered your application for ethics approval 2013 294Q
Efficacy of a brief intervention for emergency department attendees with moderate
to high psychological distress.

As this application already has ethics approval from The Prince Charles Hospital
HREC (HREC/13/QPCH/244), ACU HREC accepts the approval with no additional
requirements, save that ACU HREC is informed of any modifications of the research
proposal and that copies of all progress reports and any other documents be
forwarded to it. Any complaints involving ACU staff must also be notified to ACU
HREC (National Statement 5.3.3)

We wish you well in this research project.

Regards,

Kylie Pashley
On behalf of the Chair of ACU Ethics, Professor John Ozolins
Ethics Officer | Research Services
Office of the Deputy Vice Chancellor (Research)
res.ethics@acu.edu.au

10.9. Phase 2: MITI permission

Petra Lawrence - RE: Revised global scales: MITI 3.1.1

From:	Theresa Moyers <tmoyers@unm.edu>
To:	Petra Lawrence <Petra_Lawrence@health.qld.gov.au>
Date:	8/9/2013 9:39 AM
Subject:	RE: Revised global scales: MITI 3.1.1

Please feel free to use the MITI as you have indicated. Good look with your project!

From: Petra Lawrence [Petra_Lawrence@health.qld.gov.au]
Sent: Thursday, August 08, 2013 5:33 PM
To: Theresa Moyers
Cc: Paul Fulbrook; Paula.Schulz@acu.edu.au; Shawn.Somerset@acu.edu.au
Subject: Revised global scales: MITI 3.1.1

Hi Theresa

My name is Petra Lawrence and I am beginning my PhD. My focus is on a brief intervention of motivational interviewing with ED attendees with moderate and high levels of psychological distress. I need a tool where we can measure the MI integrity and fidelity and I was wondering if you would give me permission to use The Motivational Interviewing Treatment Integrity (MITI) Code. I'm aware that it is a work in progress and I am more than happy to provide feedback

Hope to hear from you soon

10.10. Phase 2: Systematic review and meta-analysis: publication

Motivational interviewing to enhance treatment attendance in mental health settings: A systematic review and meta-analysis

P. Lawrence RN, BN (Hons) PhD (c)[1,2] | P. Fulbrook RN, PhD, MSc, BSc (Hons) PGDipEd[1,2] | S. Somerset BSc (Hons), PhD, GradDipNutritionDietetics[3] | P. Schulz BA, BSc (Hons), MPsych, DPsych (Health)[2]

[1]Nursing Research and Practice Development Centre, The Prince Charles Hospital, Brisbane, Australia

[2]School of Nursing, Midwifery and Paramedicine, Australian Catholic University, Brisbane, Australia

[3]School of Allied and Public Health, Australian Catholic University, Brisbane, Australia

Correspondence
Petra Lawrence, Nursing Research and Practice Development Centre, The Prince Charles Hospital, Brisbane, Australia.
petralawrence75@gmail.com

Accessible summary

What is known on the subject?:

- Despite differences between samples, some literature reviews have suggested that MI is effective in enhancing treatment attendance for individuals with mental health issues.
- Little is known regarding the effects of MI as a pre-treatment on individuals who are not seeking treatment for mental health issues.

What this paper adds to existing knowledge?:

- This systematic review of the literature and meta-analysis demonstrates that MI is most beneficial for individuals who are *not* seeking mental health treatment.
- MI represents an opportunity for health promotion when patients are unmotivated but may otherwise be amenable to an intervention.
- MI is effective as a pre-treatment intervention to motivate individuals to attend further post-MI treatment and counselling.

What are the implications for practice?:

- MI is a process and a useful tool for clinicians in all therapeutic interactions, to motivate their patients to seek further assistance for mental heath issues.
- Health promotion and encouragement to attend further treatment sessions can be facilitated through telephone contact.

Abstract

Introduction: The stages of change model suggests that individuals seeking treatment are in the "preparation" or the "action" stage of change, which is the desired outcome of successful *Motivational Interviewing* (MI) interventions. MI is known to enhance treatment attendance among individuals with mental health problems.

Aim: This study examined the published research on MI as a pre-treatment to enhance attendance among individuals treatment-seeking and non-treatment-seeking for mental health issues.

Methods: Fourteen randomized controlled trials were identified, and MI efficacy was examined dichotomously: attendance or non-attendance for post-MI therapy. Subgroup analysis investigated treatment-seeking and non-treatment-seeking groups.

10.11: Phase 2. Journal submission: results paper

Confirmation of your submission to BMC Nursing - NURS-D-17-00118
1 message

BMC Nursing Editorial Office <em@editorialmanager.com>   Wed, Jun 21, 2017 at 8:24 PM
Reply-To: BMC Nursing Editorial Office <jerome.sisperez@biomedcentral.com>
To: Petra Lawrence <petralawrence75@gmail.com>

NURS-D-17-00118
Motivating health seeking behaviour among emergency department attendees with psychological distress.
Petra Lawrence, BN(Hons); Paul Fulbrook, PhD, BSc (Hons) PGDipEd.
BMC Nursing

Dear Ms Lawrence,

Thank you for submitting your manuscript 'Motivating health seeking behaviour among emergency department attendees with psychological distress.' to BMC Nursing.

The submission id is: NURS-D-17-00118
Please refer to this number in any future correspondence.

During the review process, you can keep track of the status of your manuscript by accessing the following website:

http://nurs.edmgr.com/

If you have forgotten your username or password please use the "Send Login Details" link to get your login information. For security reasons, your password will be reset.

Best wishes,

Editorial Office
BMC Nursing
https://bmcnurs.biomedcentral.com/

https://bmcnurs.biomedcentral.com/

10.12. Phase 2: Protocol publication

PILOT AND FEASIBILITY STUDIES

STUDY PROTOCOL

Open Access

Protocol for a pragmatic randomised controlled trial to evaluate effects of a brief intervention for emergency department attendees who present with moderate or high levels of non-specific psychological distress: a pilot study

Petra Lawrence[1] and Paul Fulbrook[1,2]*

Abstract

Background: Screening and brief intervention in the emergency department (ED) has almost exclusively focused on individuals with alcohol-use problems. The early detection of mental health problems before problems become severe will enable early intervention and support which may improve health and prevent further deterioration. The main aim of this pilot study is to provide evidence of the acceptance of a telephone intervention aimed at ED attendees with moderate or high psychological distress. This will be determined by recruitment rates, retention rates and participant satisfaction with the intervention. Secondary outcomes include whether socio-demographic variables have an impact on retention rates, and whether the intervention had any impact on psychological distress.

Methods/Design: This study will be a single-site pragmatic randomised controlled pilot study. Consenting ED attendees will be screened with the Kessler Psychological Distress Scales (K10). There will be three arms to the study: a moderate/high psychological distress group with or without intervention, and a low psychological distress group. Those with severe psychological distress will be excluded. All included participants will be followed-up at 1, 3, 6 and 12 months post-recruitment. Retention rates will be determined by successful completion of surveys at the follow-up time-points. Psychological distress will be measured by the K10 at all follow-up time-points.

Discussion: This study will provide information regarding the potential for screening and recruitment at an opportunistic hospital presentation. It will provide data for a future larger study with regard to participants accepting to be included in this study. Participant acceptability will be measured in terms of recruitment rates and retention rates measured by successful follow-ups over the following 12 months post-recruitment.

Trial registration: Australian and New Zealand Clinical Trials Registry ACTRN12614000031662. Registered 10/01/2014.

Keywords: Psychological distress, Emergency department, Screening, Motivational interview, Telephone

* Correspondence: paul.fulbrook@acu.edu.au
[1]Nursing Research and Practice Development Centre, The Prince Charles
Hospital and Australian Catholic University, Brisbane, Australia
[2]School of Nursing, Midwifery and Paramedicine, Australian Catholic
University, Brisbane, Australia

BioMed Central