RESILIENCE TO SUICIDALITY

A thesis submitted to the University of Manchester for the degree of
Doctor of Philosophy
in the Faculty of Medical and Human Sciences

2010

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ABSTRACT

A thesis submitted to the University of Manchester for the degree of Doctor of Philosophy

Candidate: Judith Johnson

Title: Resilience to Suicidality

July 2010

Recent years have seen a growing interest into the concept of resilience to suicide, which has been described as perceptions or a set of beliefs which buffer individuals from the development of suicidality in the face of risk factors or stressors. This thesis sets out to investigate the concept of resilience to suicidality amongst both non-clinical samples and individuals with schizophrenia-spectrum disorders, and to address limitations of the existing literature.

First, a framework for the investigation of suicide resilience was outlined, and a systematic and comprehensive review was conducted into variables which conferred resilience according to this framework (Chapter 2).

Second, developed on the basis of a theoretical model of suicide, the Schematic Appraisals Model of Suicide (SAMS), it was proposed that positive self-appraisals would confer resilience against suicide risk. Two studies investigated this possibility and found that positive self-appraisals conferred resilience against the impact of stressful life events amongst students (n = 78; Chapter 3) and resilience against the impact of hopelessness amongst individuals with schizophrenia-spectrum disorders (n = 77; Chapter 4).

Third, two studies investigated whether a cognitive-emotional process which may impact appraisals, namely trait reappraisal, moderated the impact of a stressor (Chapter 5). These found that trait reappraisal amplified the impact of a stressful event upon subsequent feelings of defeat, which are known to be linked to suicidality. These results were found amongst both non-clinical (n = 120) and psychosis (n = 77) populations, and suggest that low levels of reappraisal confer resilience.

Fourth, a potentially resilience boosting intervention, the Broad-Minded Affective Coping procedure (BMAC), was investigated amongst individuals with psychosis (n = 50). The BMAC aims to provide a brief increase in mood via the cued recall of a positive autobiographical memory. Positive emotions are thought to support the building of social and personal resources, and when combined with reflection on personal positive memories, may aid the development of positive self-appraisals. This study provided the first empirical evidence that the BMAC was effective for boosting mood amongst individuals with psychosis.

Together, these studies provide a framework for the investigation of resilience to suicidality (2), suggest that positive self-appraisals may confer resilience against suicidality amongst both non-clinical samples (3) and individuals with psychosis (4), demonstrate that low levels of reappraisal buffer the development of suicidogenic perceptions amongst both non-clinical populations and individuals with schizophrenia-spectrum disorders(5) and support the BMAC as a means of developing positive emotions, and potentially resilience, amongst individuals with psychosis (6).
DECLARATION

A portion of the data from Chapter 4 were collected in support of a Philosophical Doctoral degree (PhD) by Peter Taylor and a Clinical Psychology Doctoral degree (ClinPsyD) by Daniel Pratt, both at the University of Manchester. A portion of the data from Chapter 3 were collected and used in support of a Philosophical Doctoral degree (PhD) by Peter Taylor and undergraduate dissertations by Kate Sheehy and Laura Cutts, all at the University of Manchester. A portion of the data from Chapter 5 were used in support of undergraduate dissertations by Catherine Sawyer, Maria Long and Charlotte Stephenson, all at the University of Manchester. The work submitted within this thesis is substantially different from any work that has been submitted for any degree at this or any other institution.
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DEDICATION

To my Nanna and Granddad, Marie and Stanley Boardman,

who have taught me a lot about resilience.
ACKNOWLEDGEMENTS

I am deeply and sincerely grateful to a number of people who have helped me in a whole range of ways in order to enable me to complete this research.

First, I would like to thank my supervisors and co-workers. Thanks to Prof. Nicholas Tarrier, for his constant support, wisdom and honest advice, to Dr. Trish Gooding for encouraging my development as a researcher and independent thinker, and to Dr. Alex Wood for his vision, enthusiasm and insight. Thanks to all those in my research group; in particular to Dr. Daniel Pratt and Peter Taylor for being excellent co-recruiters and team-mates, whose help greatly eased the difficult recruitment process. Thanks also to Tracey Hepburn, for so generously offering her knowledge and assistance to the research process, and to my advisor Warren Mansell for his excellent advice and support.

Second, I would like to thank my friends and family. Thanks to my mum and dad, for years of patience, proof-reading, and overly positive feedback concerning my abilities: You helped me build my own positive self-appraisals. Thanks to my office-mates for helping me to gain perspective on things, for making me laugh, and for making me coffee when I was too grumpy to do it myself. Also, I would like to thank Richard Perry and Claire Senior. I first learned to research and reflect in their classes, which laid the groundwork for my later approach to studying psychology. Their input in my education was extremely important.

Finally, I would like to thank the research funding bodies whose financial support made this thesis possible. These include the Medical Research Council (MRC), the School of Psychological Sciences at the University of Manchester, the National Institute for Health Research (NIHR), the RECOVERY Programme Group and the Mental Health Research Network (MHRN) in the Northwest.
LIST OF COMMON ABBREVIATIONS

APA = American Psychological Association
BDI = Beck Depression Inventory
BHS = Beck Hopelessness Scale
BSS = Beck Scale for Suicidal Ideation
CBT = Cognitive Behavioural Therapy
ERQ = Emotion Regulation Questionnaire
LESS = Life Events for Students Scale
MEPS = Means-End Problem Solving task
PTSD = Post-Traumatic Stress Disorder
RAS = Resilience Appraisals Scale
RCLQ = Recent Life Change Questionnaire
SAMS = Schematic Appraisals Model of Suicide
SBQ-R = Suicidal Behaviours Questionnaire
CHAPTER 1

1. Introduction: Suicidality and Concepts of Resilience

1.1. Prevalence of Suicide and Suicidality

This thesis investigates resilience to suicide, with a particular focus upon individuals with schizophrenia-spectrum disorders. Worldwide, suicide is thought to account for around one million deaths per year (World Health Organisation, 2002) and it is ranked as the 10th leading cause of death (Levi et al., 2003). Completed suicide can be viewed as the end-point of a spectrum of suicidality that also includes behaviours such as suicide attempt, self harm and suicidal thoughts, which have been found to increase risk for later completed suicide (Funahashi et al., 2000; Mann, Waternaux, Haas, & Malone, 1999). When these are considered, the full extent of the problem may be even more pervasive, with suicide attempt rates up to 10 times higher than that of completed suicides (Hawton et al., 1998).

Within clinical populations the risk of suicide is increased, and amongst individuals with schizophrenia-spectrum disorders, the lifetime prevalence of suicide is around 4-10%, (Caldwell & Gottesman, 1990; Palmer, Pankratz, & Bostwick, 2005). These deaths may comprise 7% of all suicides (Heila et al., 1997) and 20% of suicides committed by mental health service users (Hunt et al., 2006). Rates of suicidal ideation are also raised, and in a study of inpatients with acute schizophrenia, Kontaxakis, Havaki-Kontaxaki, and Margariti (2004) found that 20.4% reported having suicidal thoughts in the previous 15 days.

1.2. Resilience

In the past, suicidality and other mental health disorders have tended to be studied from a risk-based approach, which has focused on elucidating those negative factors and maladaptive psychological processes associated with increased rates of disorder. However,
more recently it has been suggested that this approach, based on the correction of psychopathology and disorders, may not provide the most effective pathway towards developing mental health (Seligman & Csikszentmihalyi, 2000; Seligman, Steen, Park, & Peterson, 2005). Instead, it could be necessary to determine and develop those positive psychological factors and emotions which cultivate health and well-being (Seligman, Rashid, & Parks, 2006; Tarrier, 2010). This argument has led some researchers to investigate ‘resilience’. There is currently no widely accepted definition of resilience, but it is generally understood to be a factor or constellation of factors which are associated with reduced rates of disorder or other negative outcomes (e.g., Bonanno, Galea, Buccionelli, & Vlahov, 2007; Osman et al., 2004).

Research into resilience has now been conducted in several research domains of psychology, including personality (Benetti & Kambouropoulos, 2006; Campbell-Sills, Cohan, & Stein, 2006), sports (Golby & Sheard, 2004; Jones, Hanton, & Connaughton, 2002) and emotion (Barreira & Nakamura, 2006; Cohn, Fredrickson, Brown, Mikels, & Conway, 2009) amongst others. There is also a wide diversity in the range of negative outcomes which have been studied. These have included psychopathological disorders (Bradley, Schwartz, & Kaslow, 2005; Gold et al., 2000), substance abuse (Bonanno et al., 2007), behavioural problems (Luthar, 1991) and suicidal behaviours (Osman et al., 2004; Rutter, Freedenthal, & Osman, 2008), or a combination of these (Luster & Small, 1997; Lynskey & Fergusson, 1997; Stronski, Ireland, Michaud, Narring, & Resnick, 2000; Tschann et al., 1996).

Although the current literature has explored resilience to a wide variation of negative outcomes, research into specific outcomes such as suicide remains limited. This could be problematic, as evidence suggests that the construct of resilience may be outcome specific, with individuals resilient to some problem outcomes but not others (Luthar, Cicchetti, & Becker, 2000). For example, one study found that whilst a majority of children with histories of maltreatment demonstrated resilience in the academic domain,
only 21% showed evidence of resilience as suggested by social competence (Kaufman, Cook, Arny, Jones, & Pittinsky, 1994). Thus, it cannot be assumed that factors which confer resilience to one negative outcome will also confer resilience to another. The current research thesis aimed to address this by investigating resilience to a specific outcome, namely suicidality.

1.2.1. Resilience to suicidality in context: Relation to risk and protective factors.

To date, only a small number of studies have investigated resilience to suicide. Rather than building on the wider resilience literature, this research has grown out of the much larger and more established body of research into risk and protective factors. In order to give a perspective on the current research here the background to this literature will briefly be discussed.

1.2.1.1. Risk factors.

There is now an expansive body of research exploring risk factors for suicide. Interest in this area can be traced back to sociological theorists such as Durkheim (1897) but it is in the past 60 years that the systematic and empirical investigation of predisposing factors has shown dramatic growth. Risk has since been studied by researchers from a variety of disciplines and it is now understood to operate at a range of levels including sociocultural, environmental, biological and psychological (e.g., Borowsky, Ireland, & Resnick, 2001; Hawton & van Heeringen, 2009; Liu et al., 2006).

Information from these studies has informed suicide theory and formed the basis of existing models which tend to be focused on maladaptive processes and psychological vulnerabilities. For example, Shneidman (1984) suggests that suicidality is a response to intolerable emotional pain or ‘psychache’ which develops when psychological needs are not met. Similarly, the Cry of Pain model (Williams, 1997; Williams, Crane, Barnhofer, & Duggan, 2005) suggests that suicidal behaviour is a reaction to the experience of stressful
events and resulting perceptions of defeat, entrapment, hopelessness and lack of rescue possibility.

This vulnerability-based approach has identified psychological mechanisms involved in the development of suicidality, but has suffered from a lack of specificity. Consistent with much empirical, epidemiological research, it can only identify large groups of people, the majority of whom will not die by suicide and using risk factors to identify at-risk individuals tends to result in a high number of false positives (Hawton & van Heeringen, 2009). This issue is pronounced amongst clinical groups, for whom general risk factors are particularly prevalent and may cease to hold any predictive value (Bolton, Gooding, Kapur, Barrowclough, & Tarrier, 2007; Harkavy-Friedman, Nelson, Venarde, & Mann, 2004). For example, in a case-controlled examination of completed suicides, Powell, Geddes, Hawton, Deeks and Goldacre (2000) compared individuals who died by suicide whilst residing in a psychiatric inpatient unit to psychiatric inpatients who died from other causes. According to the risk factors they identified, only two of the 97 inpatients who died by suicide were at a risk of greater than 5%.

1.2.1.2. Protective factors.

Recognising that vulnerability factors are not a complete explanation for suicidal behaviour, some research has explored protective factors, which are those associated with a reduced likelihood of suicidality (e.g., Linehan, Goodstein, Nielsen, & Chiles, 1983; Perkins & Jones, 2004). Research in this area has generally taken one of two main approaches. The first has involved the use of particular questionnaires to measure hypothesised psychologically protective variables. The most influential of these has been the Reasons for Living Inventory (Linehan et al., 1983) which measures self-reported reasons for staying alive. Although initially designed for use in a clinical setting, the Reasons for Living Inventory has since been used amongst a range of non-clinical populations such as adolescents (Cole, 1989a, 1989b) and college students (Osman et al.,
Osman, Gregg, Osman, & Jones, 1992), and has been translated into other languages (Chan, 1995; Dobrov & Thorell, 2004; Innamorati et al., 2006; Oquendo et al., 2000). The second approach has come from a more sociopsychological perspective, exploring associations between variables such as social support, school achievement and self-esteem with suicidal thoughts and attempts (e.g., Fergusson, Beautrais, & Horwood, 2003; Perkins & Jones, 2004; Rew, Thomas, Horner, Resnick, & Beuhring, 2001). Most of these studies have been published in the past decade, several have used large, nationally representative datasets and the majority have focused on samples of adolescents (e.g., Flouri & Buchanan, 2002; Rew et al., 2001; Ristkari et al., 2005).

Although these two approaches have developed from somewhat different backgrounds, they have essentially had the same aim: The exploration of factors linked to reduced rates of suicidality. Studies have generally employed cross-sectional designs and examined associations using correlations or regression analyses. This has identified factors which are elevated in individuals with low levels of suicidality but crucially it has failed to distinguish how these protective factors differ from risk. For example, whilst high social support could be considered a protective factor, low social support could be considered to be a risk factor. Similarly, whilst high self-reported reasons for living may have a protective impact, low levels of reasons for living may confer risk. Thus, rather than being a new or separate area of research, these studies have explored the opposite end of the risk spectrum. This risk/protective spectrum can be considered to be a single dimension, where at one end people are considered to be low on protective factors, or at high risk, and at the other they are high on protective factors, and at low risk.

1.2.1.2. Resilience.

In recent years, some of this research into protective factors against suicidality has begun to use the term ‘resilience’ (Heisel & Flett, 2008; Osman et al., 2004; Rutter et al., 2008). These studies have described resilience as a buffer, a perceived ability to regulate
suicidal thoughts (Osman et al., 2004) or an ability to overcome current challenges (Rutter et al., 2008). For example, Osman et al. (2004) hypothesised that positive beliefs concerning emotional stability, social resources and self-image would confer resilience to suicide. They developed the Suicide Resilience Inventory-25 on this basis, and found scores were inversely associated with suicidality amongst a sample of adolescents. Similarly, Heisel and Flett (2008) studied associations between a range of proposed resilience factors and suicidality and found evidence of inverse relationships between variables such as meaning in life and psychological well being and suicidal ideation.

1.2.2. Resilience: The need for a framework.

The current literature into suicide resilience suffers from four main limitations. First, and perhaps most strikingly, is the overall paucity of research specifically aimed at investigating ‘resilience’ to suicide. Initially, only three studies were identified which sought to investigate the impact of a hypothesized resilience variable, where the outcome was suicidality (Heisel & Flett, 2008; Osman et al., 2004; Rutter et al., 2008). Furthermore, none of these was conducted amongst clinical populations, including individuals with psychosis. Chapters 4, 5 and 6 have sought to address this limitation by investigating resilience to suicidality amongst individuals with psychosis.

A second and more fundamentally problematic limitation of the current suicide resilience research is the lack of a framework by which to test whether a variable confers resilience. The descriptions of resilience provided by these studies suggest that it is an internal quality of the individual which buffers the negative impact of stressors or risk factors and would indicate that resilience is a distinct dimension to risk. However, in practice, research methodology has been similar to that used for the exploration of risk/protective factors, and has failed to establish whether the proposed resilience factors under study are in fact separate to the risk/protective spectrum. There is a need to establish a framework for the investigation of suicide resilience, which will distinguish resilience
factors from risk/protective factors and outline the criteria which a variable needs to meet in order to be considered to be resilience.

Chapter 2 addresses these limitations by proposing a framework for suicide resilience, which distinguishes resilience factors from risk and protective factors. Studies which have investigated resilience factors defined by the criteria of the proposed framework are then reviewed. It was found that when these criteria were used to define resilience, 77 studies were identified, which was a much larger number than that initially found when searching for ‘resilience’ to suicide and suicidality. This demonstrated that although only a small amount of research has been conducted under the title of ‘resilience’, there is a much wider research base to draw on when the criteria outlined by the model are applied. Thus, this overcame the first limitation of the literature, which was an apparent paucity of research into resilience.

1.2.3. Resilience: The need for theory.

Third, concepts of suicide resilience defined by the existing literature are not grounded in a theoretical framework of suicidality. This may be due to the apparent discrepancy between traditional models of suicide, which focus on maladaptive processes and pathways into suicide and resilience approaches, which focus on positive factors and processes. Models of suicide and the benefits of using these are discussed in more detail in Chapter 2, but in brief, the current thesis focuses on predictions generated by the Schematic Appraisals Model of Suicide (SAMS; Johnson, Gooding, & Tarrier, 2008a, see Figure 1).

The SAMS builds on the Cry of Pain model of suicide (Williams et al., 2005) which suggests that suicidal thoughts arise from perceptions of defeat, entrapment and no rescue. The SAMS proposes that these perceptions are the result of a biased appraisal system, which itself is impacted by information processing biases and a suicide schema. The appraisal system is viewed as comprising of two subsystems, namely the situation
appraisal sub-system, and the self-appraisal sub-system. The self-appraisal is central to the model, and thought to affect all other relevant constructs. The view that the self-concept is integral to the psychological architecture of suicide has been described by several models, perhaps most notably in Baumeister’s theory that suicide is an escape from the self, and a response to aversive self-awareness (Baumeister, 1990). However, the SAMS highlights the importance of self-appraisals in particular, and advances this previous research by proposing explicit, testable associations between the self-appraisal and other relevant aspects. According to the SAMS, the self-appraisal sub-system combines appraisals of the ability to cope with external problems, emotions and to gain social support. One implication of this central role of the self-appraisal is that positive self-appraisals could be expected to be particularly protective against risk or other maladaptive processes, and may confer resilience. In order to investigate this possibility, Chapters 3 and 4 examined whether positive self-appraisals conferred resilience against the development of suicidality in the face of risk, according to the criteria outlined by the framework proposed in Chapter 2. To see whether positive self-appraisals may be a relevant factor for clinical populations, Chapter 4 investigated this possibility amongst individuals with schizophrenia-spectrum disorders.

Positive self-appraisals were measured using a scale developed specifically for the research conducted in Chapters 3 and 4. This comprised on 12 items measuring the three types of appraisals thought to be important in the SAMS model of suicide (Figure 1). These are appraisals of the ability to cope with emotions, the ability to cope with difficult situations and the ability to gain social support. Items were generated by members of the research group which included clinical psychologists, research psychologists and a service user researcher. based on the self-appraisal construct of the SAMS model of suicide. They then underwent a consensual validation process by the research group and were later reviewed and approved by the Service User Research Group (SURG) at the University of Manchester. The scale was then administered to 118 participants recruited from the
University of Manchester, and a confirmatory factor analysis (CFA) was conducted upon the data. The aim of the CFA was to investigate whether the data would fit with the proposed theoretical model. CFA was deemed an appropriate test to conduct instead of exploratory factor analysis, as the aim of the analysis to test the feasibility of the proposed model, rather than to investigate alternative possible underlying factor structures.

Chapter 3 also aimed to investigate whether a range of other potential resilience factors buffered the impact of risk on suicidality. The first of these was emotion reappraisal which describes a process where individuals regulate their emotions via the cognitive reinterpretation of situations (Gross, 1998). This was investigated as it has been found to moderate the impact of stressful situations such as disgust-eliciting films on outcomes such as the experienced emotion of disgust (Gross, 1998), but has not yet been investigated in relation to suicidality. The second of these was broadminded coping, which describes an adaptive approach to problem solving (Fredrickson & Joiner, 2002). This was investigated as it has been found to enhance subsequent positive affect (Fredrickson & Joiner, 2002) but has not been investigated in relation to suicidality. The third potential resilience factor investigated in this study was Reasons for Living (RFL; Linehan et al., 1983). Higher levels of Reasons for Living have consistently been found to be inversely associated with suicidality. However, the RFL was included in the study as it has only been investigated as a moderator of risk in three studies, which together provide conflicting findings regarding whether it acts as a moderator (Bonner & Rich, 1988, 1990; Britton et al., 2008).
A further implication of the SAMS framework is that those cognitive processes which impact appraisals may also have a moderating impact upon suicidality. One such process could be trait reappraisal, which is a tendency to deal with emotions through the use of a thought focused coping strategy. The Emotion Regulation Questionnaire (ERQ; Gross & John, 2003) has been developed to measure trait reappraisal, and includes items such as “When I want to feel more positive emotion (such as joy or amusement), I change what I’m thinking about”, and “When I want to feel less negative emotion, I change the way I’m thinking about the situation”. Chapter 5 includes two studies investigating whether low levels of reappraisal confer resilience to a stressful event, according to the criteria outlined in Chapter 2. In order to assess whether these findings are relevant to clinical populations, the second study in Chapter 5 investigates this possibility amongst individuals with psychosis. As these two studies used a quasi-experimental design where the stressor was an experimental mood induction, suicidality was not expected to change and so was

**Figure 1:** The Schematic Appraisal Model of Suicide (SAMS; from Johnson et al., 2008).
not investigated as the outcome. Instead, these studies focused on lower level thoughts and perceptions associated with suicidality. Particularly, these studies focused on the feeling of defeat which is known to be related to suicidality (Gilbert & Allan, 1998; O’Connor, 2003), but which has been found to be affected by brief experimental mood inductions (Johnson, Tarrier, & Gooding, 2008b).

1.2.4. Resilience: Developing resilience.

Finally, the existing literature into suicide resilience does not offer methods by which to develop resilience. The SAMS model of suicide suggests that positive self-appraisals may be a key factor for resilience research to focus upon, and Chapters 3 and 4 offer suggestions for the development of such appraisals. However, Chapter 6 takes a particular focus on this subject and tests a recently developed positive-mood induction, the Broadminded Affective Coping technique (BMAC; Tarrier, 2010). This technique has been developed on the basis of the broaden-and-build theory of emotions, which suggests that positive emotions can buffer the impact of stressful events (Fredrickson, Mancuso, Branigan, & Tugade, 2000) and support the building of resilience and resources (Fredrickson, 1998, 2001). Indeed, even brief, transitory experiences of positive emotions have been found to increase life satisfaction and resilience measured one month later (Cohn et al., 2009). Interestingly, the BMAC aims to induce positive emotion through the recall of positive autobiographical memories. By combining the experience of positive emotion with positive reflection on past experiences, the BMAC may be a particularly useful method for increasing positive self-appraisals. However, as yet the BMAC has not been empirically tested. In order to address these gaps in the literature, Chapter 6 investigated whether the BMAC was more effective for boosting positive emotions than a control task amongst individuals with psychosis. This was designed to be a preliminary test of the BMAC, to assess whether it may be worthwhile to conduct a longer-term investigation into the potential for the BMAC to also boost positive self-appraisals.
1.3. Overview of Thesis

The overarching aim of this thesis is to investigate resilience to suicidality. A central aim is to address the four limitations of the extant literature listed above. First, in Chapter 2, a framework for the investigation of resilience is proposed, and studies which have investigated factors according to the criteria outlined by the model are reviewed. Second, in Chapters 3 and 4, a concept of resilience developed on the basis of the SAMS model of suicide is tested according to criteria outlined by the proposed framework in Chapter 2. Third, in Chapter 5, two studies assess whether reappraisal, which is thought to be linked to the generation of appraisals, moderates the impact of failure upon subsequent feelings of defeat, which are known to be linked to suicidality. Finally, in Chapter 6, a preliminary study investigating the BMAC procedure for the boosting of positive emotions is reported. The BMAC uses positive autobiographical memories to boost emotions, and may be one method of boosting resilience. In order to address the current paucity of research into suicide resilience amongst individuals with psychosis, Chapters 4, 5 and 6 report studies conducted amongst individuals with psychosis.

1.4. Note on Collaboration and Published Material

The current thesis has been produced in the alternative format option, whereby research chapters are written and presented in a format appropriate for publication in academic peer-reviewed journals. Alternative format was deemed appropriate for this thesis to in order to enable the publication of the research undertaken. Consequently, Chapter 3 (Resilience as positive coping appraisals: Testing the Schematic Appraisals Model of Suicide (SAMS)) has been published by Behaviour Research and Therapy, and Chapter 4 (Resilience to suicidal ideation in psychosis: Positive self-appraisals buffer the impact of hopelessness) has been accepted for publication by Behaviour Research and Therapy. Chapter 2 (Resilience to suicidality) is currently under review by Psychological Bulletin, Chapter 5 (Trait reappraisal amplifies subjective defeat in response to failure) is
under review by Journal of Abnormal Psychology, and Chapter 6 (A Therapeutic Tool for Boosting Mood: The Broad-Minded Affective Coping Procedure (BMAC)) is under review by Behaviour Research and Therapy.

The author completed the research presented in this thesis in collaboration with a number of other individuals. The author’s supervisory team, Professor Nicholas Tarrier, Dr. Alex Wood and Dr. Patricia Gooding provided input on research development, design and write-up, and are therefore recognised as co-authors. Dr. Daniel Pratt and Kim Fair are recognised as authors on Chapters 4 and 6 respectively, where they contributed to the processes of recruitment and write-up. Peter Taylor is recognised as an author on Chapters 2, 4 and 5, where he contributed to recruitment and write-up.

Recruitment was therefore either undertaken solely by the author of this thesis (Chapter 6) or in collaboration with others, with the author of this thesis having an active and equal involvement in the process of recruitment (Chapters 3, 4 and 5). All analyses were undertaken solely by the author of this thesis, with information and advice provided by the author’s supervisory team and Peter Taylor. All write-up was solely the work of the author of this thesis, with the author’s supervisory team and co-authors providing input in terms of feedback on drafts and ideas.
CHAPTER 2

2. Resilience to Suicidality: The Buffering Hypothesis

2.1. Abstract

Recent years have seen a growing interest into the concept of resilience to suicidality, which has been described as a perception or set of beliefs which buffer individuals from the development of suicidality in the face of risk factors or stressors. The current review extends this research by introducing the buffering hypothesis, a framework for the investigation of resilience to suicidality. The key proposal of the buffering hypothesis is that psychological resilience factors should be viewed as existing on a separate dimension to risk which acts to moderate the impact of risk on suicidality. Furthermore, like risk factors, resilience factors are bipolar, with their positive pole conferring resilience and their negative pole acting as amplifiers of suicidality. Seventy-seven studies reported in 71 original research articles were identified which investigated (a) whether psychological moderators of risk exist, and (b) the particular psychological constructs which may act as moderators. The review found strong support for the existence of psychological moderators and indicated a consistent and reliable moderating impact of attributional style, perfectionism, sense of agency and hopelessness. These findings support the buffering hypothesis, and suggest that a wide range of psychological factors may confer resilience to suicidality. Furthermore, these results suggest that the identification of moderating factors may improve estimates of suicide risk, and that the development of buffering factors could be a key focus of suicide interventions.

This article is currently under review by Psychological Bulletin.
2.2. Introduction

Suicidality is a substantial public health concern (World Health Organisation, 2002). Suicidal ideation, plans and attempts are deeply distressing and associated with elevated levels of depression, negative future expectancies and diagnosis of a mental health disorder (Beck, Steer, Beck, & Newman, 1993; Garlow et al., 2008; Liu et al., 2006). Furthermore, suicidal thoughts and behaviours can be viewed as existing on a continuum of suicidality and have been found to increase risk for later completed suicide (Carter, Reith, Whyte, & McPherson, 2005; Funahashi et al., 2000; Mann et al., 1999). Indeed, as the majority of first suicide attempts are unpredictable and have a rapid onset, it has been suggested that suicide prevention efforts should focus on targeting suicidality at the point of ideation and planning (Kessler, Borges, & Walters, 1999). The problem presented by suicidality is particularly pertinent amongst clinical groups, who report elevated levels of suicidal thoughts (Kontaxakis et al., 2004; Nordentoft et al., 2002; Tarrier, Barrowclough, Andrews, & Gregg, 2004; Taylor et al., in press-c; Valtonen et al., 2005) and represent the majority of individuals presenting with suicidal behaviours (Beautrais et al., 1996).

Recently, there has been growing interest into the concept of resilience to suicidality. This has been described as an ability, perception or set of beliefs which buffer individuals from the development of suicidality in the face of risk factors or stressors (Johnson, Gooding, Wood, & Tarrier, 2010; Osman et al., 2004). The current review aims to extend this research by introducing a framework for the exploration of resilience to suicidality. This is the first review of research into psychological resilience to suicidality.

The past two decades have seen an increasing number of studies investigating resilience to suicidality, and a large number of studies have now been published on this topic (e.g., Johnson et al., 2010; Rutter et al., 2008). However, amongst these studies, definitions of resilience to suicidality have diverged. It has been suggested that resilience can be understood as (a) a perceived ability, resources or competence to regulate suicidal thoughts (Osman et al., 2004); (b) an internal factor defending against suicidality (Rutter et
al., 2008); and (c) positive self-appraisals which can buffer against the pernicious impact of stress (Johnson et al., 2010). As research into suicide resilience is currently in its infancy, such conceptual variations might be expected. More concerning however, is the lack of clarity surrounding the criteria which a variable should meet to be understood as conferring resilience. Here, we will introduce the buffering hypothesis for suicide resilience.

2.2.1. The buffering hypothesis.

The buffering hypothesis describes three main aspects of resilience. First, resilience must be understood as a separate dimension to risk, which acts to moderate the impact of risk on an outcome. Second, both risk and resilience can be understood as bipolar dimensions; each risk factor also has an inverse which can be understood as being protective, and each resilience factor has an inverse which can be viewed as having an amplifying effect on risk. Third, resilience factors need to be viewed as internal psychological constructs, consistent with existing definitions (Lundman, Strandberg, Eisemann, Gustafson, & Brulin, 2007; Rutter et al., 2008; Tugade, Fredrickson, & Barrett, 2004).

2.2.1.1. Resilience as a separate dimension to risk.

To investigate resilience, research needs to go beyond the examination of basic bivariate associations and look at interactions between variables. This is because when a proposed resilience factor is found to be directly associated with suicidality, it is not clear whether this factor is separate from risk. For example, high self-esteem has been associated with reduced suicidality (Lieberman, Solomon, & Ginzburg, 2005), but this could simply be because it represents low levels of a risk factor, namely low self-esteem. If this is the case, high self-esteem does not represent resilience as such, but simply reduced risk. Thus instead of being investigated as a direct associate of suicidality, resilience needs to be
understood as a factor which can attenuate or buffer the strength of the association between risk and the outcome, namely, suicidality.

A buffer or resilience factor should be active when individuals are facing high levels of risk, acting to reduce the likelihood of suicidality. By contrast, when levels of risk are low and individuals are not at increased likelihood of suicidality, resilience could be expected to be unnecessary and therefore dormant, not acting to change the strength of the association between risk and suicidality (see Figure 2). This approach to the study of resilience has been described in the wider resilience literature (Jessor, Van Den Bos, Vanderryn, Costa, & Turbin, 1995; Rutter, 1987) but it has often been viewed as one of many possible approaches to resilience as opposed to a necessary criterion (Masten, 2001). Furthermore, although research focused on suicidality has highlighted the importance of resilience, methodologies employed have not permitted interaction effects to be examined.

![Buffering Interaction](image)

**Figure 2.** Hypothetical resilience interaction. For individuals high on resilience, the association between risk and suicidality is diminished.

The buffering hypothesis suggests that resilience can be viewed as representing a separate dimension to risk which interacts with it to reduce its negative impact (see Figure 3). For individuals who are low on risk, there is no impetus for suicidality, so resilience factors may be irrelevant or dormant. However, for individuals experiencing high levels of...
risk, high levels of resilience may act as a barrier, rendering the relationship between risk and suicidality weak or non-existent. Conversely, for those who are facing risk with only a low level of resilience, there may be no barrier reducing the impact of risk and the likelihood of suicidality may be higher. In this way, the two-dimensional view of resilience and risk suggests that people can be viewed as residing in one of four basic quadrants depending on their levels of both risk and resilience (depicted by Figure 3).

This suggests that an assessment of both risk and suicidality is therefore necessary to ascertain resilience; research examining only suicidality without a concomitant measure of risk is inadequate for resilience research purposes.

![Figure 3. Risk and resilience as separate dimensions.](image)

### 2.2.1.2. Risk and resilience as bipolar dimensions.

Most risk factors for suicidality also have an inverse or opposite which can be understood as being protective. For instance, loneliness can be described as a risk factor or social support can be described as a protective factor (e.g., Bonner & Rich, 1990; Jeglic, Pepper, Vanderhoff, & Ryabchenko, 2007; Stravynski & Boyer, 2001). Likewise, reporting low levels of self-esteem can be understood as conferring risk and reporting high levels of self-esteem can be understood as protective (Kidd & Shahar, 2008; Wilburn & Smith, 2005). Subsequently, risk and protective factors can be viewed as opposite ends of a single
bipolar spectrum (see Figure 4). At one end individuals are at high risk, or low on protective factors, and at the other they are low risk, or high on protective factors. Similarly, resilience can also be understood as a bipolar dimension (see Figure 4). For example, whereas high levels of positive self-appraisals have been described as conferring resilience and buffering suicidal thoughts (Johnson et al., 2010), low levels of positive appraisals could be viewed as an amplifying factor, increasing the strength of the association between risk and suicidality. Essentially, whether these dimensions are viewed as positive or negative is arbitrary as both dimensions have positive and negative poles, and what is key to understanding suicidality is investigating how these two dimensions interact.

Although this view of risk and resilience as bipolar dimensions is a necessary aspect of a bi-dimensional approach to the study of resilience, it creates a further query concerning the distinction between risk and resilience variables. As stated above, previous research has often understood resilience as a primarily positive construct which reduces risk of suicidality (Osman et al., 2004; Rutter et al., 2008) and risk factors have been understood as negative factors which increase the risk of suicidality (Borowsky et al., 2001; Caldwell & Gottesman, 1990). By suggesting that both resilience and risk variables have positive and negative poles, it may be unclear which variables in an interaction are resilience and which are risk. Thus, it is important to outline alternative criteria by which to determine whether a factor should be classed as risk or resilience.

2.2.1.3. Resilience as a psychological construct.

The buffering hypothesis suggests that suicide risk factors are broad in their scope. Specifically, any factor, either psychological or external, which is known to directly increase or decrease levels of suicidality can be understood as conferring risk. By contrast, resilience factors are much narrower in scope. First, as discussed above, they are factors which moderate the impact of a risk factor upon suicidality. Furthermore, in order to be
consistent with existing definitions, suicide resilience must be understood as a psychological construct, such as an ability or perceived ability of the individual to overcome difficulties, or a set of positive beliefs or personal resources which can buffer the individual from adversity (Johnson et al., 2010; Osman et al., 2004; Rutter et al., 2008). This definition corresponds to those found in the wider literature which construe resilience as a perception, ability or belief, not definable as a demographic or environmental circumstance (e.g., Connor & Davidson, 2003; Fredrickson, Tugade, Waugh, & Larkin, 2003; Kralik, van Loon, & Visentin, 2006; Masten et al., 1999). External factors such as experiencing victimisation or being exposed to another’s suicide attempt (Borowsky et al., 2001) may denigrate the development of an individual’s level of resilience (Almeida, 2005), but they cannot be understood as comprising resilience in themselves.

![Figure 4](image)

Figure 4. Risk and resilience as separate bipolar dimensions

### 2.2.2. Goals of the current review.

In summary, recent years have seen a growing interest into the application of concepts of resilience to the study of suicidality. This research has described suicide resilience as an ability or set of beliefs or perceptions which buffer individuals against the development of suicidality in the face of risk factors (Johnson et al., 2010; Osman et al., 2004; Rutter et al., 2008). We have suggested that resilience factors can be understood as those which moderate or attenuate the impact of risk and these can be investigated using analyses of interaction effects. The first goal of the current review was to investigate whether there are psychological factors which appear to moderate the impact of risk on
suicidality, supporting the buffering hypothesis. The second goal was to examine and evaluate which factors may have this buffering impact, and therefore be viewed as conferring resilience to suicidality. As the inverse of a resilience factor can be described as an amplifier, accentuating the strength of the association between risk and suicidality, studies that examined moderating factors from this perspective were also included on the basis that their opposite pole can be viewed as conferring resilience.

2.3. Selection of Research

2.3.1. Eligibility criteria of the studies included in the review.

Studies were selected for inclusion in this review if they met the following criteria:

1. They were published by a peer reviewed journal in the English language.
2. They investigated suicidal ideation, behaviour, attempted or completed suicide as an outcome.
3. They studied the interaction between two or more variables using appropriate statistic analyses such as an ANOVA or interaction effects in regression analyses.
4. At least one of the variables included in the interaction analysis was a ‘psychological construct’. This was defined as any thought, belief, perception, cognitive style or attitude. Demographics such as age, gender or location were excluded, as were behaviours (e.g., aggressive behaviours, fearful behaviours), affect (e.g., depressed mood, positive mood) or clinical symptomology (e.g., psychotic symptoms, depressive symptoms). Where studies investigated a psychological construct interacting with a non-psychological risk factor, the psychological construct was viewed as the moderator or resilience variable. Where two psychological constructs were examined in interaction together, each of these has been included in the relevant section of the review as a moderator variable. For example, O’Connor and Forgan (2007) investigated the interaction between a bias in the cognitive process of goal adjustment and a personality variable, namely
perfectionism. Accordingly, this study has been reviewed in both cognitive bias and personality subsections.

5. Studies using a psychological autopsy method of investigation were not included. These studies are conducted following the death of an individual by suicide, and investigate psychological constructs through reports from relatives or friends of the individual concerned. As such, psychological variables measured in this manner are less able to accurately represent an individual’s thoughts, beliefs, perceptions, cognitive style or attitudes.

2.3.2. Search strategy for the identification of relevant articles.

Medline (1950 to October 2009), EMBASE (1980 to October 2009), Psycinfo (1806 to October 2009) and Web of Science (1945 to October 2009) databases were searched for articles containing keywords or textwords of either MODERAT*, MODULAT* or INTERACT* in combination with SUICID*. All article abstracts were read to assess whether the study potentially met inclusion criteria and where there was doubt, the full text was read. Articles identified using this strategy were then read in full in order to establish eligibility for inclusion, and reference lists were reviewed for any studies missed in the original search.

This process identified 71 original research articles containing a total of 77 studies. Thirty-nine of these contained a single resilience variable and so will be reviewed in just one section of the review, whereas 38 investigated more than one potential resilience variable and so will be referred to in more than one section. As outlined in Table 1, potential resilience variables could be split into two overarching categories, (a) those which investigated cognitive abilities and processes as moderators, and (b) those which investigated beliefs and attitudes as moderators. As outlined in Table 1, these two categories formed the basic structure of the review, with further subcategories in each section. In the category of cognitive abilities and processes, five subcategories were
identified, namely (a) attributional style, (b) coping and problem solving, (c) personality, (d) emotional intelligence and (e) cognitive process biases. In the category of beliefs and attitudes, studies were divided into four main subcategories according to whether they investigated (a) self-related beliefs, (b) other-related beliefs, (c) future-related beliefs, or (d) suicide-related beliefs.

Table 1: Moderating variables

<table>
<thead>
<tr>
<th>Overarching category</th>
<th>Category</th>
<th>Subsection (where applicable)</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cognitive ability or tendency</td>
<td>Attributional style</td>
<td>The manner in which an individual explains events</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Coping and problem solving</td>
<td>Problem solving ability measured either using tests of ability or self-report</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Personality</td>
<td>Consistent tendencies and traits which differ between individuals</td>
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<tr>
<td></td>
<td>Emotional Intelligence</td>
<td>Ability to perceive and manage self and other’s emotions</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Cognitive process biases</td>
<td>Particular cognitive biases in processes such as memory and rumination</td>
<td></td>
</tr>
<tr>
<td>Belief or Attitude</td>
<td>Self related</td>
<td>Self-esteem</td>
<td>Positive self-related beliefs</td>
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<tr>
<td></td>
<td></td>
<td>Agency</td>
<td>Sense of self-efficacy and internal locus of control</td>
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<td></td>
<td></td>
<td>Problem-solving confidence</td>
<td>Perceptions of ability to solve problems</td>
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<td></td>
<td></td>
<td>Reasons for living</td>
<td>Self-reported reasons for staying alive</td>
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<td></td>
<td></td>
<td>Life evaluations</td>
<td>Includes satisfaction with life and purpose in life</td>
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<td></td>
<td>Other-related</td>
<td>General</td>
<td>Overall perceived social support</td>
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<td></td>
<td></td>
<td>Family related</td>
<td>Perceived family and parental support</td>
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<td></td>
<td></td>
<td>Significant other</td>
<td>Perceptions of support from a partner</td>
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<tr>
<td></td>
<td>Future-related</td>
<td>Hopelessness</td>
<td>Negative future predictions, or a lack of future predictions</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Dispositional optimism</td>
<td>Positive future beliefs</td>
</tr>
<tr>
<td></td>
<td>Suicide-related</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
2.4. Research Review

2.4.1. Cognitive abilities, processes and tendencies as resilience to suicidality.

2.4.1.1. Attributional style.

Attributional style refers to the ways in which an individual explains the events and occurrences they experience (Cornette, Abramson, & Bardone, 2000). An attributional style which leads the individual to explain negative events in terms of causes that are internal, stable and global has been linked to depressive symptomatology (Luten, Ralph, & Mineka, 1997; Metalsky, Abramson, Seligman, Semmel, & Peterson, 1982), and theorists have suggested it may have a key role in the aetiology of suicidal behaviours (Abramson, Metalsky, & Alloy, 1989; Baumeister, 1990). More recently, it has been suggested that a positive attributional style where negative events are explained by causes that are external, likely to change and specific, may be an aspect of optimism and could act to buffer the negative impact of risk (Hirsch, Wolford, LaLonde, Brunk, & Parker-Morris, 2009). It should be noted here that an optimistic attributional style can be distinguished from ‘dispositional optimism’, and studies relating to this have been reviewed in the section entitled ‘optimism’.

Of the five studies which were identified (see Table 2), there was consistent evidence for a buffering impact of attributional style, or aspects of attributional style. Two of these investigated overall attributional style, and found that in student samples, it conferred resilience against both hopelessness (Hirsch & Conner, 2006) and stressful life events (Hirsch et al., 2009). A third study investigated cognitive interpretations of the world, self and future amongst a sample of children, and found this moderated the impact of depression on suicidality (Chang, Lin, & Lin, 2007). The remaining two studies investigated specific aspects of attributional style. For example, findings from one of these suggested that a tendency to generalise interpersonal events amplified the negative impact of negative interpersonal events (Joiner & Rudd, 1995), and the second found that
negative-stable and positive-internal attributional styles interacted with exam failure to predict suicidality (Priester & Clum, 1992).

Together these studies provide consistent evidence of a buffering effect of attributional style or aspects of this against both internal and external risk factors for suicidality. Furthermore, three of the studies plotted their results and demonstrated evidence of a clear resilience effect, such as that displayed in Figure 1 (Chang et al., 2007; Hirsch & Conner, 2006; Hirsch et al., 2009). Overall, strong evidence supports attributional style as a suicide resilience factor.

2.4.1.2. Coping and problem solving.

Numerous studies have now found evidence supporting a role for deficits in coping and social problem solving in suicidality (Pollock & Williams, 2004; Pollock & Williams, 2001; Schotte & Clum, 1987), and research has begun to suggest it could be an aspect of resilience (e.g., Grover et al., 2009). Problem-solving can be viewed as having two main facets (D'Zurilla, Nezu, & Maydeu-Olivares, 2004). The first of these is the ability to approach problems adaptively, to generate appropriate and effective solutions. The second is the individual’s evaluation of their ability to cope, which can be understood as a sense of confidence or self-efficacy. In the present section the first facet will be evaluated; as the second can be more accurately viewed as a self-related belief, studies addressing this aspect will be reviewed in the section on ‘agency’.

In total, 13 studies were identified which investigated potential interactions between coping strategies or problem solving and risk. These studies have taken two main approaches to assessing problem solving ability. The first of these has been to use scales derived from the Means-End Problem Solving Task (MEPS; Platt & Spivack, 1972), which presents participants with a problem and requires them to generate a number of alternative solutions. More recent derivatives of the MEPS have expanded it to include the participant’s evaluation of their generated solutions, for example in terms of pros and cons.
of the solutions and probability of success of the solutions (Clum et al., 1997; Clum & Febbraro, 1994; Priester & Clum, 1993b). The second approach has been to present participants with a questionnaire listing coping and problem-solving strategies and ask them to evaluate the extent to which they use these in response to difficult situations. Studies using this approach have used a range of questionnaires, including the Social Problem Solving Inventory (D'Zurilla & Goldfried, 1971) and the Social Problem Solving Inventory (Heppner, 1988).

Studies using both these methods of measurement have found evidence to support a buffering role for problem solving ability. Of the four studies using the modified MEPS task, two found evidence that problem solving ability acted as a buffer (Priester & Clum, 1993b; Yang & Clum, 1994). Specifically, these studies found that the tendency to see drawbacks to solutions interacted with risk, and one also found that the ability to generate relevant alternatives was a moderator (Priester & Clum, 1993b). Similarly, of the 11 studies which investigated problem solving using self-report measures, six found evidence that self-reported problem solving had a moderating impact against risk (Blankstein, Lumley, & Crawford, 2007; Chang, 2002a; Clum & Febbraro, 1994; Edwards & Holden, 2001; Grover et al., 2009; Kwok & Shek, 2009).

Together, these studies provide mounting evidence in favour of a buffering impact of problem solving ability. However, there were two studies which failed to find supporting evidence in favour of problem solving ability measured using the MEPS (Clum et al., 1997; Clum & Febbraro, 1994), and five which reported null findings when using a self-report measure (Chang, 2002b; Clum et al., 1997; Kaslow et al., 1998; Kidd & Carroll, 2007; Priester & Clum, 1993a). Furthermore, when results were plotted, one study found evidence of a cross-over effect, rather than a clear resilience interaction effect (Clum & Febbraro, 1994).

These equivocal results could be interpreted as evidence that problem solving may not confer resilience. However, there are two reasons to consider this research more
carefully. First, it could be that problem-solving or coping ability may act as a buffer against certain risk factors but not others. From Table 2, it can be seen that four of the present studies investigated stressful events in a three month or longer time period prior to the study. Interestingly, of these, three found significant interaction effects (Clum & Febbraro, 1994; Grover et al., 2009; Yang & Clum, 1994). Conversely, of the two studies which investigated exam failure as a risk factor (Priester & Clum, 1993a, 1993b), only one reported finding interactions and even then it was only two successful interactions from a total of six which were investigated (Priester & Clum, 1993b). This suggests that potentially, problem solving ability could be a more consistent buffer against certain risk factors compared to others. If this is the case, the present results could suggest that problem solving is not a weak buffer, but rather a specific one that only emerges under certain conditions, such as when specific risk factors are being investigated.

A second reason to consider these results more carefully is the possibility that problem-solving ability may be related, or tap into a construct which is a more effective and consistent buffer against the impact of risk on suicidality. If this is the case, those measures of coping strategies which tap this related construct would be those most likely to yield positive results. This possibility is supported by evidence of a trend towards finding more interactions amongst self-report measures and personal evaluation of problem solving ability. For example, the modified MEPS tasks are scored to generate several subscales, some of which contain a problem solving solution generation element and others which reflect a solution evaluation element. Of the four studies which used versions of the MEPS, only one found that the ability to generate solutions moderated risk (Priester & Clum, 1993b), but two found that evaluation of the drawbacks associated with the solution generated acted as a moderator (Priester & Clum, 1993b; Yang & Clum, 1994). One possibility is that coping ability is related to a sense of agency, self-efficacy or self-confidence, which is a more reliable resilience factor, and that problem solving measures
which are most closely related to this will show the strongest buffering effects (for a
discussion of self-efficacy, see section entitled ‘agency’).

In summary, evidence suggests that problem solving ability is a buffer to
suicidality, but not all studies have found significant interactions. Potentially, these
inconsistencies may be due to an ability of problem solving to buffer some risk factors but
not others, or problem solving ability may be related to another, stronger buffering factor.
These possibilities will need to be investigated by future research.

2.4.1.3. Personality.

Research suggests that a range of personality characteristics are associated with
suicidality, with higher levels of dimensions such as introversion, irritability and
neuroticism associated with elevated rates of suicidality, and higher levels of dimensions
such as conscientiousness and extraversion associated with reduced suicidality (Brezo,
Paris, & Turecki, 2006; Pompili et al., 2009a; Roy, 2003; Velting, 1999). Some studies
have focused on clinical populations, and results suggest that these personality
characteristics may be transdiagnostic, that is, able to predict suicidality in individuals with
a range of psychological disorders (Heisel et al., 2006; Maser et al., 2002; Roy, 2003). The
causal pathways for these associations are not clear, but it has been suggested that they
may have their impact by affecting perceptions of the environment and the self, and
altering adaption to the environment (Brezo et al., 2006).

The current review identified nine studies reported in eight papers which
investigated personality factors as conferring resilience to suicidality (see Table 2). Five of
these focused on perfectionism (Blankstein et al., 2007; Chang, 2002a; Hewitt, Flett, &
Weber, 1994; O’Connor & Forgan, 2007; Rasmussen, O’Connor, & Brodie, 2008), and
found evidence for an amplifying impact of overall perfectionism and its various
dimensions on suicidality. Together they provide particularly persuasive evidence for three
main reasons.
First, each of these used the same scale, namely the Multidimensional Perfectionism Scale (Hewitt & Flett, 1991b), which makes their results directly comparable. Second, these studies have examined perfectionism in relation to a wide range of variables, including memory deficits (Rasmussen et al., 2008), self-esteem (Blankstein et al., 2007) and life stress (Hewitt et al., 1994). Third, four of the studies plotted the interaction and found the predicted pattern of interaction (Chang, 2002a; Hewitt et al., 1994; O’Connor & Forgan, 2007; Rasmussen et al., 2008).

The remaining four studies investigated various personality constructs, namely personal need for structure (Ciarrochi, Said, & Deane, 2005), temperament (Tamas et al., 2007) and impulsivity (Slap, Goodman, & Huang, 2001). These studies suggest that personal need for structure and temperament may confer resilience, but this evidence is somewhat unclear. For example, the significant interaction reported between desire for simple structure and risk did not replicate in a second study (Ciarrochi et al., 2005) and from a large number of potential interactions investigated between temperament, emotion regulation and a variety of suicide-spectrum outcomes, only two interactions were found (Tamas et al., 2007). As conducting multiple analyses increases the likelihood of Type I error, these findings may have been due to chance. However, as such a limited amount of research has been conducted and there is some evidence that these factors act as moderators, future research could focus on developing a more systematic approach in order to provide a clearer evidence base.

Overall, the research into personality variables which has been conducted to date provides strong evidence in favour of perfectionism as an amplifier of risk. Potentially, this could be due to the high standards and rigid thinking which characterises perfectionism (O’Connor & Forgan, 2007). These tendencies may increase the likelihood that individuals will perceive themselves as having failed or fallen short of personal standards (O’Connor & Forgan, 2007), which is thought to be an important factor in the development of suicidality (Baumeister, 1990; Williams, 1997). Less clear evidence has been provided for other
personality variables, but this will need to be investigated by further research before conclusions can be drawn. Interestingly, what is notable from the research which has been conducted is that some of the personality traits most consistently associated with suicidality have not been examined as potential moderators. These traits, which include dimensions such as neuroticism and extraversion (Brezо et al., 2006) may represent an important area for future research into resilience.

2.4.1.4. Emotional intelligence.

Emotional intelligence can be understood as an individual’s ability to perceive, identify, process and manage emotions (Zeidner, Roberts, & Matthews, 2008) and a range of measures have been developed in order to assess it (e.g., Mayer, Salovey, & Caruso, 2002). These fall into two broad categories: Self-report measures which require participants to mark the extent to which they agree with statements such as “I motivate myself by imagining a good outcome to tasks which I take on” (Schutte et al., 1998) and ‘objective’ measures such as the Mayer Salovey Caruso Emotional Intelligence Test (MSCEIT; Mayer, Salovey, & Caruso, 2005), which rate a participant’s performance on aspects such as perception of emotional expressions. It has been suggested that, as many models of suicidality cite reduced ability to regulate emotions as a causal factor, higher levels of emotional intelligence may be protective (Cha & Nock, 2009).

Consistent with other aspects of cognitive abilities and tendencies, only limited research has investigated emotional intelligence as a suicidality resilience factor. The current review identified three studies investigating emotional intelligence as a resilience factor, (Cha & Nock, 2009; Ciarrochi, Dean, & Anderson, 2002; Tamas et al., 2007) each of which found evidence that emotional intelligence interacted with risk to predict suicidality. However, despite these positive findings, it is difficult to draw any firm conclusions, for two main reasons. First, each of the studies used a different questionnaire to measure the construct. Much controversy surrounds the measurement of emotional
intelligence, and it has been suggested that the variations between scales used are so strong that the underlying psychological constructs captured by them may differ entirely (Zeidner et al., 2008). Second, the study results are not entirely consistent. Whilst one found that ‘objective’ emotional intelligence acted as a resilience factor against risk (Cha & Nock, 2009), another found that ‘objective’ emotional intelligence in fact amplified the impact of risk, with only self-reported ability to manage other’s emotions acting as a buffer (Ciarrochi et al., 2002). Potentially, this discrepancy could be explained by a divergence in the ‘objective’ emotional intelligence measures used.

Overall, the present results suggest that emotional intelligence may have a buffering effect, but that future research will need to choose the questionnaire used to measure this carefully. The current studies suggest that ‘objective’ emotional intelligence measured by the MSCEIT (Mayer et al., 2005) may be one of the most promising inventories for future suicide resilience research (Cha & Nock, 2009), although aspects of emotional intelligence measured by self-report could also have a buffering impact against certain risk factors (Ciarrochi et al., 2002).

2.4.1.5. Cognitive biases.

The past two decades have seen considerable growth in research into the cognitive biases linked to suicidal behaviour. This research has suggested that biases in a range of processes such as memory and rumination are associated with suicidality (Morrison & O’Connor, 2008; O’Connor & Noyce, 2008; Williams & Broadbent, 1986). Whether there are cognitive biases which can interact with risk, however, is unclear. Six studies were identified which investigated whether cognitive biases could moderate risk. These studies have tended to focus on whether cognitive deficits amplify the impact of risk, but as described above, such research also suggests that optimal cognitive biases could act as resilience or buffering factors. The studies identified explored a range of cognitive biases. One investigated overgenerality in autobiographical memory (Rasmussen et al., 2008), a
phenomenon whereby individuals are less able to recall specific events from their past (Williams et al., 2007). Two investigated rumination, which can be understood as a repetitive, self-focused thinking style (Selby, Anestis, & Joiner, 2007; Surrence, Miranda, Marroquin, & Chan, 2009) and two investigated rational cognitive processing, which refers to reasoning beliefs held by the individual (Bonner & Rich, 1988, 1990). The remaining studies investigated goal adjustment, which is the ability to alter goals in the face of failure (O’Connor & Forgan, 2007) and insight, the ability of an individual to view their situation accurately (Restifo, Harkavy-Friedman, & Shrout, 2009).

As can be seen in Table 2, only a small number of studies have investigated the moderating impact of biases in cognitive processes on risk, which makes it difficult to draw any firm conclusions. However, from the studies which have been conducted, it appears that both rumination (Selby et al., 2007; Surrence et al., 2009) and rational cognitive processing may moderate the impact of risk (Bonner & Rich, 1990). Similarly, more recent research by O’Connor and colleagues has found preliminary evidence in favour of biases in two cognitive processes, autobiographical memory (Rasmussen et al., 2008) and goal adjustment (O’Connor & Forgan, 2007) acting against the negative impact of socially prescribed perfectionism. Furthermore, each of these studies plotted the interaction and found evidence of a clear buffering effect.

These studies also present an interesting finding with implications for concepts of resilience to suicidality. Specifically, this is that the moderating impact of resilience factors may not be consistent with their main effects. For example, previous research indicates that rumination comprises of two processes, namely reflection and brooding, with brooding thought to have a more deleterious impact on mental health (Nolen-Hoeksema, Wisco, & Lyubomirsky, 2008b; Treynor, Gonzalez, & Nolen-Hoeksema, 2003). However, when they were studied as moderators of past suicide history, it was found that reflection, and not brooding, amplified the impact of risk, namely, a history of suicidality, on current suicidality (Surrence et al., 2009).
<table>
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<th>Participant sample</th>
<th>Cognitive ability or tendency</th>
<th>Risk factor</th>
<th>Measure of Suicidality</th>
<th>Significant interactions</th>
<th>Remarks</th>
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<tr>
<td>Rasmussen, O'Connor, &amp; Brodie, 2008*</td>
<td>Self-harmers, N = 40 (17 M)</td>
<td>Overgenerality in autobiographical memory for both positive and negative events measured using the Autobiographical memory task (Williams &amp; Broadbent, 1986)</td>
<td>Three dimensions of perfectionism (socially-prescribed perfectionism, other-oriented perfectionism and self-oriented perfectionism) measured using the MPS</td>
<td>Suicidal ideation measured using the suicidal ideation subscale of the SPS</td>
<td>Overgeneral memory for positive events amplified the association between socially prescribed perfection and suicidal ideation.</td>
</tr>
<tr>
<td>Surrence, Miranda, Marroquin, &amp; Chan, 2009</td>
<td>Undergraduates, N = 96 (23 M)</td>
<td>Ruminating (reflection and brooding). Measured using the Ruminative Responses Scale (Treynor et al., 2003)</td>
<td>Suicide attempt status</td>
<td>Suicidal ideation measured using the BSS</td>
<td>Reflection interacted with attempt history</td>
</tr>
<tr>
<td>Selby, Anestis, &amp; Joiner, 2007</td>
<td>Undergraduates, N = 83 (18 M)</td>
<td>Ruminating (Thoughts of Revenge, Angry Afterthoughts, Angry Memories and understanding of causes) measured using the Anger Ruminative Scale (Sukhodolsky, Golub, &amp; Cromwell, 2001)</td>
<td>Depression measured using the BDI-II</td>
<td>Suicidal ideation measured using the BSS</td>
<td>Thoughts of revenge amplified the impact of depression</td>
</tr>
<tr>
<td>Bonner &amp; Rich, 1988*</td>
<td>Undergraduates, N = 186 (85 M)</td>
<td>Rational cognitive processes and reasoning measured using the Rational Beliefs Inventory; (Shorkey &amp; Whiteman, 1977)</td>
<td>Two risk variables; Reasons for living and Loneliness.</td>
<td>Suicidal ideation measured using a self-report adaptation of the BSS</td>
<td>None</td>
</tr>
<tr>
<td>Bonner &amp; Rich, 1990</td>
<td>Individuals residing in a detention centre N = 146 (146 M)</td>
<td>Rational cognitive processes and reasoning measured using the Rational Beliefs Inventory; (Shorkey &amp; Whiteman, 1977)</td>
<td>Jail stress scale</td>
<td>Suicidal ideation measured using a self-report adaptation of the BSS</td>
<td>Rational cognitive processes interacted with jail stress</td>
</tr>
<tr>
<td>O'Connor &amp; Forgan, 2009*</td>
<td>Undergraduates, N = 255 (56 M)</td>
<td>Goal adjustment (goal disengagement and goal</td>
<td>Three dimensions of perfectionism (socially-prescribed perfectionism, other-oriented perfectionism and self-oriented perfectionism) measured using 4 items from the GHQ</td>
<td>Suicidal ideation measured using the GHQ</td>
<td>Goal re-engagement attenuated the impact of</td>
</tr>
<tr>
<td>Year</td>
<td>Authors</td>
<td>Description</td>
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<td>Measures</td>
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<tr>
<td>2007&lt;sup&gt;4&lt;/sup&gt;</td>
<td>Wrosch et al.</td>
<td>Reengagement measured using the goal adjustment scale (Wrosch et al., 2003)</td>
<td>Measured using the MPS</td>
<td>Socially prescribed perfectionism, other-oriented perfectionism and self-oriented perfectionism measured using the MPS</td>
<td>None</td>
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<tr>
<td>Restifo et al.</td>
<td>Harkavy-Friedman &amp; Shreot, 2009</td>
<td>Insight measured using a single dichotomous item</td>
<td>Premorbid social and school functioning measured using the Premorbid Adjustment Scale (Cannon-Spoor et al., 1982)</td>
<td>Suicide attempt status classified using a modified version of the Harkavy Asnis Suicide Survey (Harkavy Friedman &amp; Asnis, 1989)</td>
<td>None</td>
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<tr>
<td>Priester &amp; Clum, 1993b</td>
<td>Undergraduates, N = 282</td>
<td>Problem solving ability (number of relevant means, number of irrelevant means, total alternatives, average number of pros and cons for each mean and average probability of success attributed to each identified mean) measured using a modified version of the MEPS</td>
<td>Exam failure</td>
<td>Ability to generate more relevant alternatives to problems and tendency to see drawbacks to solutions interacted with exam failure</td>
<td>Gender and age information not provided. Results not plotted</td>
</tr>
<tr>
<td>Yang &amp; Clum, 1994</td>
<td>International Undergraduates, N = 101 (73 M)</td>
<td>Problem solving ability (number of relevant means, number of irrelevant means, total alternatives, average number of pros and cons for each mean and average probability of success attributed to each identified mean) measured using a modified version of the MEPS</td>
<td>Life stress measured using the LES</td>
<td>Suicidal ideation measured using the MSSI</td>
<td>Tendency to see drawbacks to solutions attenuated the impact of life stress</td>
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<tr>
<td>Clum &amp; Febbraro, 1994</td>
<td>Individuals reporting high levels of suicide ideation N = 59 (25 M)</td>
<td>Problem solving ability (number of relevant means, number of irrelevant means, total alternatives, average number of pros and cons for each mean and average probability of success attributed to each identified mean) measured using a modified version of the MEPS</td>
<td>Life stress measured using the LES</td>
<td>Two outcome measures; Suicidal ideation measured using both the BSS and MSSI</td>
<td>Self-reported approach-avoidance subscale interacted with life stress where the outcome was suicidal ideation measured using the BSS</td>
</tr>
<tr>
<td>Study</td>
<td>Participants</td>
<td>Measure of Problem Solving Ability</td>
<td>Measure of Life Stress</td>
<td>Outcome Measures</td>
<td>Graph Description</td>
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<tr>
<td>Clum, Canfield, Van Arsdel, Yang, Febbraro, Wright, 1997</td>
<td>Individuals with depressive symptoms, $N = 132$ (47 M)</td>
<td>Problem solving ability (number of relevant means, number of irrelevant means, total alternatives, average number of pros and cons for each mean and average probability of success attributed to each identified mean) measured using a modified version of the MEPS; self-reported problem solving ability (self reported approach-avoidance style, personal control and perceived confidence) measured using the PSI</td>
<td>Life stress measured using the LES</td>
<td>Two outcome measures; Suicidal Ideation measured using both the BSS and MSSI</td>
<td>None</td>
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<tr>
<td>Grover, Green, &amp; Pettit et al., 2009</td>
<td>Adolescent psychiatric inpatients, $N = 102$ (32 M)</td>
<td>Self-reported problem solving measured using the PSI</td>
<td>Stressful life events; chronic life stress, both measured using the Chronic Stress and Episodic Life Events Interview for Adolescents (Hammen, 2004)</td>
<td>Suicidal Ideation measured using the MSSI</td>
<td>Self-reported problem solving buffered both stressful life events and chronic life stress. Graph suggests presence of a cross-over effect rather than a buffering impact</td>
</tr>
<tr>
<td>Priester &amp; Clum, 1993a</td>
<td>Undergraduates, $N = 303$</td>
<td>Self-reported problem solving ability (self reported approach-avoidance style, personal control and perceived confidence) measured using the PSI</td>
<td>Exam failure</td>
<td>Suicidal Ideation measured using the MSSI</td>
<td>None</td>
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<tr>
<td>Chang, 2002a</td>
<td>Undergraduates, $N = 371$ (72 M)</td>
<td>Self-reported problem solving ability measured using the SPSI-R-SF</td>
<td>Perfectionism measured using the MPS</td>
<td>Suicidal ideation measured using the SIQ</td>
<td>Problem-solving buffered the impact of perfectionism. Skewness on the outcome measure is not discussed. The total possible score for the outcome was 150 but the mean of the sample was 15.33 (SD = 20.78),</td>
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<tr>
<td>Study</td>
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<tr>
<td>Chang, 2002</td>
<td>Undergraduates, N = 306 (121 M)</td>
<td>Self-reported problem solving ability measured using the SPSI-R-SF</td>
<td>Life stress over the past month measured using the inventory of High-School Students’ Recent Life Experiences (Kohn &amp; Milrose, 1993) Suicidal ideation measured using the SIQ</td>
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<td>Kaslow, Thompson, &amp; Meadows et al., 1998</td>
<td>African-American women, N = 285</td>
<td>Self-reported problem solving ability measured using the Preliminary Strategic Approach to Coping Scale (Hobfoll, Dunahoo, Ben-Porath, &amp; Monnier, 1994)</td>
<td>Physical and non-physical partner abuse measured using the Index of Spouse Abuse (Hudson &amp; McIntosh, 1981) Suicide attempter status</td>
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<tr>
<td>Kidd &amp; Carroll, 2007</td>
<td>Homeless youths, N = 208 (122 M)</td>
<td>Self-reported problem solving ability and coping measured using a range of single items</td>
<td>Gender</td>
<td>Two outcome measures; suicide attempter status and current suicidal ideation as a total score from 4 items derived from a scale commonly used in studies of non-homeless youth (Lewinsohn, Rohde, &amp; Seeley, 1996)</td>
<td></td>
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<tr>
<td>Edwards &amp; Holden, 2001*</td>
<td>Undergraduates, N = 298 (147 M)</td>
<td>Two types of dysfunctional coping measured using The Coping Inventory for Stressful Situations (Endler &amp; Parker, 1990); emotion oriented coping and avoidance distraction coping</td>
<td>Meaning in life measured using the Sense of Coherence scale, (Antonovsky, 1987) and Purpose in Life measured using the Purpose in Life Test (Crumbaugh &amp; Maholick, 1969)</td>
<td>Three outcomes: Suicidal ideation, suicide attempts and likelihood of future suicidality measured using eight items from the Suicidal Manifestations Questionnaire (Johns &amp; Holden, 1997) Emotion oriented coping interacted with meaning in life in both men and women where the outcome was suicidal ideation; Emotion oriented coping interacted with meaning in life where the outcome was suicide attempt or likelihood of suicide in women only; Emotion oriented coping and avoidance distraction coping interacted with In total, 24 regressions were investigated increasing likelihood of Type I error. Results not plotted</td>
<td></td>
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suggesting skewness may have been present
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<td>Kwok and Shek, 2009&lt;sup&gt;a&lt;/sup&gt;</td>
<td>Secondary school students, $N = 5,557$ (2950 M)</td>
<td>Problem solving measured using the Chinese version of the Social Problem Solving Inventory in a short form (Siu &amp; Shek, 2005)</td>
<td>Perceived family functioning measured using the Chinese Family Assessment Instrument (Shek, 2000)</td>
<td>Suicidal ideation assessed using the suicidal ideation subscale of the Suicidal Risk Scale for Hong Kong students (Tse &amp; Bagley, 2002)</td>
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<tr>
<td>Blankstein, Lumley, &amp; Crawford, 2007&lt;sup&gt;a&lt;/sup&gt;</td>
<td>Undergraduates, $N = 205$ (61 M)</td>
<td>Overall perfectionism and the 3 dimensions of perfectionism (socially-prescribed perfectionism, other-oriented perfectionism and self-oriented perfectionism) measured using the MPS</td>
<td>Suicidal ideation measured using a questionnaire developed specifically for the study</td>
<td>Results not plotted. Due to having multiple risk factors, potential buffers and conducting analyses amongst both women and men, this study investigated a large number of interactions, increasing potential Type I error; There were more than twice the number of women than men, so analyses for women will have had better statistical power.</td>
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<sup>a</sup> Results plotted
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<td>Hirsch &amp; Conner, 2006</td>
<td>Undergraduates, N = 284 (99 M)</td>
<td>Attributional style measured using an extended version of the ASQ</td>
<td>Optimism measured using the LOT</td>
<td>Version of the BHS: optimism measured using the LOT</td>
<td>Hopelessness measured using the BHS</td>
<td>Results plotted, indicating a strong resilience effect</td>
</tr>
<tr>
<td>Hirsch, Wolford, LaLonde, Brunk, &amp; Parker-Morris, 2009</td>
<td>Undergraduates, N = 138 (38 M)</td>
<td>Attributional style measured using an extended version of the ASQ</td>
<td>Lifetime incidence of traumatic events measured using the student form of the LITE</td>
<td>Hopelessness measured using the BHS</td>
<td>Suicidal ideation measured using the BSS</td>
<td>Attributional style buffered hopelessness</td>
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<tr>
<td>Joiner &amp; Rudd, 1995</td>
<td>Undergraduates, N = 203 (89 M)</td>
<td>Attributional style (Generality for negative interpersonal events and generality for negative achievement events) measured using an extended version of the ASQ</td>
<td>Stressful interpersonal events and stressful achievement events both measured using the Negative Life Events Questionnaire (Saxe &amp; Abramson, 1987)</td>
<td>Generalized in attributions for interpersonal events amplified the impact of experiencing negative interpersonal events</td>
<td>Suicidal ideation measured using the Suicidality Subscale of the Depressive Symptom Inventory (Metalsky, 1991)</td>
<td>Results not plotted</td>
</tr>
<tr>
<td>Priester &amp; Clum, 1992</td>
<td>Undergraduates, N = 269</td>
<td>Sub-types of attributional style (positive-internal, positive-stable, positive-global, negative-internal, negative-stable, negative-global) measured using the ASQ</td>
<td>Exam failure measured using the MSSI</td>
<td>Overall emotional intelligence and positive-internal attributional styles interacted with exam grade</td>
<td>Suicidal ideation measured using the MSSI</td>
<td>Negative-stable and positive-internal attributional styles interacted with exam grade</td>
</tr>
<tr>
<td>Cha &amp; Nock, 2009</td>
<td>Adolescents, N = 54 (8 M)</td>
<td>Overall ‘objective’ emotional intelligence ability and subscales of strategic and experiential emotional intelligence ability measured using the Mayer-Salovey-Caruso Emotional Intelligence Test: Youth Version, Research Version (Mayer</td>
<td>Childhood trauma measured using a subscale of the Childhood Trauma Questionnaire (Bernstein, Ahluvalia, Pogge, &amp; Handelsman, 1997)</td>
<td>Overall emotional intelligence buffered the impact of childhood trauma on both suicidal ideation and suicide attempt; strategic emotional intelligence buffered the impact of childhood trauma on both suicidal ideation and suicide attempt</td>
<td>Two outcomes, suicidal ideation and suicide attempts over the past year both measured using the Self-Injurious Thoughts and Behaviors Interview (Nock, Holmberg, Photos, &amp; Michel, 1997)</td>
<td>Results plotted, clear resilience effects emerging</td>
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Transformations were applied to skewed variables. Results plotted, clear resilience effects emerging.
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<td>Ciarrochi, Deane, &amp; Anderson, 2002</td>
<td>‘Objective’ emotional perception ability using the Stories Test (Mayer &amp; Geher, 1996); self-reported emotion perception and self-reported ability to manage others’ emotions (Schutte et al., 1998)</td>
<td>Undergraduates, $N = 302$ (70 M)</td>
<td>Daily life stress measured using the HAS; Stressful life experiences using the LES</td>
<td>Suicidal ideation measured using the SIQ Ability to manage others’ emotions subscale buffered daily life stress; ‘objective’ emotion perception amplified daily life stress</td>
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<td>Tamás, Kovacs, Gentzler et al., 2007</td>
<td>Temperament (emotionality, activity, sociability and shyness) measured using the EAS Temperament Questionnaire (Buss &amp; Plomin, 1984)</td>
<td>Children with major depressive disorder, $N = 407$ (218 M)</td>
<td>Emotion regulation style (adaptive and maladaptive) both measured using a subscale of the “Feelings and Me” Child Version Questionnaire (Kovacs, 2000)</td>
<td>Suicidality measured using four items from the depressive disorder section from the Schedule for Children and Adolescents-Diagnostic Version (Sherrill &amp; Kovacs, 2000) Shyness interacted with emotional regulation style; sociability interacted with emotion regulation ability</td>
</tr>
<tr>
<td>Hewitt, Flett, &amp; Weber, 1994</td>
<td>Perfectionism (self-oriented and socially prescribed perfectionism) measured using the MPS</td>
<td>Undergraduates, $N = 160$ (55 M)</td>
<td>Life stress measured using the LEI</td>
<td>Suicidal ideation measured using the BSS Self-oriented perfectionism amplified the impact of life stress; socially prescribed perfectionism amplified the impact of life stress Skewness was observed in the BSS but scores were transformed</td>
</tr>
<tr>
<td>Study</td>
<td>Participants</td>
<td>Measures</td>
<td>Results</td>
<td></td>
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<tr>
<td>Ciarrochi, Said, &amp; Deane, 2005 (study 1)</td>
<td>Undergraduates, (N = 240) (50 M)</td>
<td>Personal need for Structure (Desire for Simple Structure and Intolerance of Uncertainty) measured using the Personal Need for Structure scale (Neuberg &amp; Newsom, 1993)</td>
<td>Life stress measured using the HAS Suicidal ideation measured using the SIQ Desire for Simple Structure amplified the impact of life stress; Intolerance of Uncertainty amplified the impact of life stress Results not plotted</td>
<td></td>
</tr>
<tr>
<td>Ciarrochi, Said, &amp; Deane 2005 (study 2)</td>
<td>Undergraduates, (N = 36) (9 M)</td>
<td>Personal need for Structure (Desire for Simple Structure and Intolerance of Uncertainty)</td>
<td>Life stress measured using the HAS Suicidal ideation measured using the SIQ None Results not plotted</td>
<td></td>
</tr>
<tr>
<td>Slap, Goodman, &amp; Huang, 2001</td>
<td>Adolescents, (N = 6577) (3267 M)</td>
<td>Impulsivity measured using a single dichotomous item Adoptive status</td>
<td>Presence or absence of suicide attempts in the past year None Each variable included was a single dichotomous variable</td>
<td></td>
</tr>
</tbody>
</table>


* The resilience and risk factor for this study can be regarded as interchangeable, as both are internal psychological constructs.
2.4.2. Beliefs and attitudes as resilience to suicidality.

2.4.2.1. Self-related beliefs.

2.4.2.1.1. Self-esteem. Self esteem can be understood as an individual’s view of how important and valuable they are within the groups and relationships of which they are a part (Leary & Baumeister, 2000). A wide literature now reports a consistent and reliable negative association between high self-esteem and suicidality, with findings replicating in a range of countries as diverse as Turkey (Eskin, Ertekin, Dereboy, & Demirkiran, 2007), Korea (Park, Schepp, Jang, & Koo, 2006) and South Africa (Peltzer, Kleintjes, Van Wyk, Thompson, & Mashego, 2008). Studies with clinical populations have also produced reliable results, reporting associations between self-esteem and suicidality amongst individuals with disorders such as schizophrenia and depression (Tarrier, Haddock, Lewis, Drake, & Gregg, 2006; Wetzel & Reich, 1989).

Numerous scales have been developed to measure self-esteem, ranging from single item measures to extended inventories assessing self-esteem as a multi-dimensional construct, and interviews designed for specific clinical populations (Barrowclough et al., 2003; Norem-Hebeisen, 1976; Robins, Hendin, & Trzesniewski, 2001). One of the most commonly used measures is the Rosenberg self-esteem scale (Rosenberg, 1965). This ten-item self-report scale aims to capture the extent to which an individual has a positive self-image and includes items such as “On the whole I am satisfied with myself” and “I feel that I have a number of good qualities”. Responses are rated on a four-point likert scale ranging from “strongly agree” to “strongly disagree”, although subsequent research has often made slight adaptations to both the number of items and the response scale (e.g., Kidd & Shahar, 2008). Altogether, 20 studies reported in 17 papers were identified which examined self-esteem as a moderator.
From the studies which have investigated self-esteem as a resilience factor using the Rosenberg Self Esteem Scale (Rosenberg, 1965), there is now reason to surmise that it may have a buffering impact. Of the seven studies which were identified by the review, four reported positive findings (Blankstein et al., 2007; De Man & Gutierrez, 2002; Lieberman et al., 2005; Wilke, 2004) and one of these also found evidence for a buffering impact of the stability of self-esteem (De Man & Gutierrez, 2002). However, the evidence base is not entirely clear, and it should be noted that three studies reported null findings (Hershberger & D'Augelli, 1995; Kidd & Shahar, 2008; Wilburn & Smith, 2005).

Some evidence has also been found to suggest that broader concepts of self-esteem may confer resilience against suicidality, including perceived attractiveness (Brown et al., 2009), self-criticism (Wedig & Nock, 2007) and positive beliefs regarding the ethnicity to which the individual belongs (Walker, Wingate, Obasi, & Joiner, 2008). Of the seven studies identified, which were reported in six papers, (Brown et al., 2009; Nugent & Williams, 2001; Slap et al., 2001; Waelde, Silvern, & Hodges, 1994; Walker et al., 2008; Wedig & Nock, 2007), four reported positive results (Brown et al., 2009; Nugent & Williams, 2001; Walker et al., 2008; Wedig & Nock, 2007). However, the particular concepts of self-esteem investigated by these studies vary widely, preventing direct comparison between studies. Furthermore, as the concepts are quite broad, it is difficult to identify the particular psychological components which are responsible for the buffering effect.

By contrast, the most positive and clear findings have emerged from eight studies reported in five papers investigating socially oriented concepts of self-esteem (Brown et al., 2009; Goodwin & Marusic, 2003; Joiner et al., 2009; Van Orden, Witte, Gordon, Bender, & Joiner, 2008). Rather than measuring the individual’s perceived self-value in isolation, these focus on the individual’s value relative to others. One such concept is burdensomeness, which can be understood as an individual’s sense that they are an integral and valued member of the social group to which they belong (Joiner, 2005). In six studies
reported in three papers, burdensomeness was found to interact with various risk factors, including romantic satisfaction, health (Brown et al., 2009) and perceived social support (Joiner et al., 2009; Van Orden et al., 2008) to predict suicidality.

Overall, there appears to be a considerable body of research indicating some evidence of a buffering impact of self-esteem. For general self-esteem this is somewhat unclear, but research into socially oriented concepts of self-esteem is far more positive. Future research may benefit from focusing on this aspect of self-esteem and investigating it in a wider range of populations.

2.4.2.1.2. Agency. Agency can be understood as an individual’s sense that they are in control, the initiator of their own actions (Gallagher, 2000; Synofzik, Vosgerau, & Newen, 2008). Five studies reported in four papers investigated the moderating impact of agency or related constructs and have presented some promising findings.

As can be seen in Table 3, the most positive findings in favour of agency as a resilience factor have emerged from three studies which have measured agency using social desirability inventories (Holden, Mendonca, & Serin, 1989; Ivanoff & Jang, 1991). Scores on these are thought to reflect a genuine positive self-bias which can be understood as a general sense of capability (Holden & Fekken, 1989; Paulhus, 2002). Each of these examined agency in relation to hopelessness, and found interactions amongst samples of psychiatric patients (Holden et al., 1989) and male prison inmates (Holden et al., 1989; Ivanoff & Jang, 1991). Furthermore, each of these studies examined the interaction in relation to multiple suicide outcomes (e.g., suicide attempter status and suicidal intent; Holden et al., 1989) and found the interaction significantly predicted all of these.

Further support for a buffering impact of agency was found from two studies using a version of the Personal Attributes Questionnaire (Spence & Helmreich, 1978). This scale requires participants to rate themselves on a range of characteristics, including how easily they can make decisions, how calm they are in a crisis, and how self-confident they are. In particular, findings from these studies suggest that agency may be a buffer amongst men
but not women (Hobbs & McLaren, 2009; Waelde et al., 1994). Interestingly, this does not necessarily contradict the three above studies which found interactions amongst the total sample, as two of these used all-male samples (Holden et al., 1989; Waelde et al., 1994) and the third comprised of more males than females (Holden et al., 1989). Reasons for this effect however, are unclear, and future research would be beneficial to both confirm this effect and investigate the underlying mechanisms involved.
<table>
<thead>
<tr>
<th>Participant sample</th>
<th>Self-related moderator variable</th>
<th>Risk factor</th>
<th>Measure of Suicidality</th>
<th>Significant interactions</th>
<th>Remarks</th>
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</thead>
<tbody>
<tr>
<td>Lieberman, Solomon, &amp; Ginzburg, 2005</td>
<td>Israeli male soldiers, $N = 230$</td>
<td>Self-esteem measured using the RSES</td>
<td>General health (namely mental distress, perceived functioning, and perceived health) measured using a Hebrew version of the GHQ</td>
<td>Suicide ideation as measured by the GHQ which measures symptoms over the past month.</td>
<td>Self-esteem attenuated the impact of mental distress</td>
</tr>
<tr>
<td>Blankstein, Lumley, &amp; Crawford, 2007</td>
<td>Undergraduates $N = 205$ (61 M)</td>
<td>Total self-esteem, social self-esteem and academic self-esteem measured using an extended version of the RSES</td>
<td>Overall perfectionism and three subscales (other-oriented, self-oriented and socially prescribed) measured using the MPS</td>
<td>Suicidal ideation measured using a questionnaire developed specifically for the study</td>
<td>Overall self-esteem interacted with perfectionism in women; Overall self-esteem interacted with socially prescribed perfectionism in men</td>
</tr>
<tr>
<td>Wilke, 2004</td>
<td>Individuals entering drug and alcohol treatment programmes, $N = 2513$ (1850 M)</td>
<td>Self-esteem measured using the RSES</td>
<td>Presence or absence of substance use</td>
<td>Presence or absence of suicide ideation in the previous 12 months</td>
<td>Self-esteem interacted with substance use</td>
</tr>
<tr>
<td>Kidd &amp; Shahar, 2008</td>
<td>Homeless young adults, $N = 208$ (122 M)</td>
<td>Self-esteem measured using the RSES</td>
<td>Physical abuse measured using the Conflict Tactics Scale (Straus &amp; Gelles, 1990); parent neglect measured using a single item; dysfunctional attachment style measured using the Relationship Questionnaire (Bartholomew &amp; Horowitz, 1991)</td>
<td>Two outcome measures; suicide attempter status and current suicidal ideation as a total score from 4 items derived from a scale commonly used in studies of non-homeless youth (Lewinsohn et al., 1996)</td>
<td>None</td>
</tr>
<tr>
<td>Hershberger &amp; D’Augelli, 1995</td>
<td>Gay or bisexual youths, $N = 165$ (123 M)</td>
<td>Self-esteem (composite score including the RSES and a self-acceptance variable)</td>
<td>Victimization measured using three variables investigating experiences of verbal abuse, property</td>
<td>Two outcome measures; present suicidal ideation measured on a single scale</td>
<td>None</td>
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<tr>
<td>Study</td>
<td>Sample Description</td>
<td>Outcome Measures</td>
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<tr>
<td>Wilburn &amp; Smith, 2005</td>
<td>Undergraduates, $N = 88$ (9 M)</td>
<td>Life stress measured using the LES</td>
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<td>Suicidal ideation measured using the SIQ</td>
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<td>None</td>
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<tr>
<td>de Man &amp; Gutierrez, 2002</td>
<td>Undergraduates, $N = 131$ (23 M)</td>
<td>Stability of self-esteem</td>
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<td></td>
<td></td>
<td>Self-esteem measured using the RSES</td>
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<td></td>
<td>Suicidal ideation measured using the Scale for Suicidal Ideation (De Man &amp; Leduc, 1994)</td>
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<td>Stability of self-esteem buffered the impact of low self-esteem</td>
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<td></td>
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<td>Results not plotted</td>
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<tr>
<td>Nugent &amp; Williams, 2001</td>
<td>Individuals seeking help from family service organisations, $N = 394$</td>
<td>MPSI Self-esteem</td>
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<tr>
<td></td>
<td></td>
<td>MPSI Depression</td>
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<tr>
<td></td>
<td></td>
<td>Self-esteem interacted with depression</td>
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<td></td>
<td></td>
<td>Gender breakdown unclear for the subsample which responded to the suicidality subscale</td>
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<tr>
<td>Slap, Goodman, &amp; Huang, 2001</td>
<td>Adolescents, $N = 6577$ (3267 M)</td>
<td>Self-image was measured using a combination of items chosen for the study</td>
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<td>Adoptive status</td>
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<td>Past year suicide attempts recorded as a dichotomous variable</td>
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<td>None</td>
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<td>Depression measured using the BDI</td>
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<td></td>
<td>Suicidal ideation measured using the BSS</td>
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<td></td>
<td></td>
<td>Ethnic identity attenuated the impact of depression for African-Americans, but not for European Americans</td>
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<td></td>
<td></td>
<td>Results not plotted</td>
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<tr>
<td>Wedig &amp; Nock, 2007</td>
<td>Adolescents, $N = 36$ (9 M)</td>
<td>Adolescent self-criticism was measured using an item from the Self-Rating Scale (Hooley, Ho, Slater, &amp; Lockshin, 2002)</td>
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<td></td>
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<td>Parental criticism measured using a subscale of a parental expressed emotion measure (Magana et al., 1986)</td>
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<td></td>
<td>Suicidality measured using the Self-Injurious Thought and Behaviors Interview (Nock et al., 2007)</td>
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<tr>
<td></td>
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<td>Self criticism amplified the impact of parental criticism</td>
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<td></td>
<td></td>
<td>Results plotted, indicate clear buffering impact</td>
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<tr>
<td>Brown, Brown &amp; Johnson et al., 2009</td>
<td>Undergraduates, $N = 170$ (42 M)</td>
<td>Perceived attractiveness measured using a single item with a 4 point likert scale response</td>
<td></td>
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<tr>
<td>(study 1)</td>
<td></td>
<td>Feelings of burdensomeness measured using a 2-item financial and time burden composite with a 5 point likert scale response</td>
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<tr>
<td></td>
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<td>Two outcome measures: Current suicidal ideation measured using a single item and suicide attempt status</td>
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<tr>
<td></td>
<td></td>
<td>Perceived attractiveness interacted with feelings of being a financial and time burden when the outcome was suicidal ideation but not when it was suicide attempt</td>
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<td></td>
<td></td>
<td>This result not plotted</td>
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</tbody>
</table>
Brown, Brown & Johnson, et al., 2009, (study 2)\textsuperscript{a}

- **Participants:** Undergraduates, $N = 181$ (66 M)
- **Measures:**
  - Perceived attractiveness measured using a single item with a 4 point likert scale response
  - Feelings of burdensomeness measured using a 2-item financial and time burden composite with a 5 point likert scale response
  - Two outcome measures: Current suicidal ideation measured using a single item and suicide attempter status
- **Findings:** None

Waelde, Silvern, & Hodges, 1994

- **Participants:** Undergraduates, $N = 537$ (237 M)
- **Measures:**
  - Perceived social ability and sense of agency both measured using the PAQ
  - Stressful interpersonal life events and stressful achievement related events both measured using the Recent Life Events-College Scale (Hodges, 1978)
  - Suicidality measured using the single suicidality item from the BDI
- **Findings:** Agency moderated the negative impact of stressful achievement-related events amongst men but not women

Van Orden, Witte, Gordon, Bender, & Joiner, 2008 (study 1)\textsuperscript{a}

- **Participants:** Undergraduates, $N = 309$ (82 M)
- **Measures:**
  - Burdensomeness measured using the INQ
  - Belongingness measured using the INQ
  - Suicidal ideation measured using the BSS
- **Findings:** Burdensomeness amplified feelings of low belongingness

Van Orden, Witte, Gordon, Bender, & Joiner, 2008 (study 2)

- **Participants:** Clients from a psychology clinic, $N = 153$ (70 M)
- **Measures:**
  - Burdensomeness measured using the INQ
  - Acquired capability for suicide (measured using a scale from an unpublished manuscript)
  - Clinician ratings of suicide risk
- **Findings:** Burdensomeness amplified acquired capability for suicide

Joiner, Van Orden, & Witte et al., 2009 (study 1)\textsuperscript{a}

- **Participants:** Individuals reporting symptoms of sadness and anhedonia, $N =$
- **Measures:**
  - Burdensomeness measured using Rosenberg’s General Mattering Scale (DeForge & Barclay, 1997)
  - Family support measured using a shortened version of the Provision of Social Relations Scale (Turner, Frankel, & Levin, 1983)
  - Suicide ideation in the past month measured using the sum of three dichotomously
- **Findings:** Family support attenuated the impact of burdensomeness

Joiner, Van Orden, & Witte et al., 2009 (study 1)\textsuperscript{a}

- **Participants:**
- **Measures:**
  - Burdensomeness measured using Rosenberg’s General Mattering Scale (DeForge & Barclay, 1997)
  - Family support measured using a shortened version of the Provision of Social Relations Scale (Turner, Frankel, & Levin, 1983)
  - Suicide ideation in the past month measured using the sum of three dichotomously
- **Findings:** Family support attenuated the impact of burdensomeness

Overall suicidality in the sample appears to be extremely low. The overall possible score on the suicidal item is 3, but the mean for the sample was 0.17 ($SD=0.37$). Results not plotted.

The measure developed for the purposes of the study was not factor analysed. Skewness was found in the data but not transformed. Results plotted, demonstrating clear resilience effect.

Results plotted, demonstrating clear resilience effect

Results plotted, reveal a strong moderating impact of family support
<table>
<thead>
<tr>
<th>Study</th>
<th>Sample Description</th>
<th>Burdensomeness</th>
<th>Social support</th>
<th>Whether or not the participants’ recent suicidal crisis had involved a suicide attempt</th>
<th>Feelings of inferiority interacted with diagnoses of panic attack, social phobia and agoraphobia</th>
<th>The rationale for classing those reporting feeling ‘somewhat’ inferior as a control group is unclear, as based on this response it appears that these participants may also be suffering from low self-esteem. Results not plotted. Gender breakdown unclear</th>
</tr>
</thead>
<tbody>
<tr>
<td>Joiner, Van Orden, &amp; Witte et al., 2009 (study 2)</td>
<td>Individuals experiencing suicidality, $N = 313$ (257 M)</td>
<td>Burdensomeness measured using items from the SPS</td>
<td>Social support measured using items from the SPS</td>
<td>scored items</td>
<td>none</td>
<td>none</td>
</tr>
<tr>
<td>Goodwin &amp; Marusic, 2003</td>
<td>Adolescents aged 15-19. Data from the National Comorbidity Survey in the United States, $N = 1,456$</td>
<td>Social inferiority measured as a single item</td>
<td>Psychiatrist diagnoses: Major depression, Panic attack, Generalized anxiety, disorder, Agoraphobia, Specific phobia, Social phobia, Alcohol dependence, Substance dependence, Bipolar disorder, Conduct disorder. Diagnoses were generated from a modified version of the World Health Organization Composite International Diagnostic Interview</td>
<td>Two outcomes: Suicidal ideation and suicide attempter status, both measured using the World Health Organization Composite International Diagnostic Interview</td>
<td>Feelings of inferiority interacted with diagnoses of panic attack, social phobia and agoraphobia</td>
<td>The rationale for classing those reporting feeling ‘somewhat’ inferior as a control group is unclear, as based on this response it appears that these participants may also be suffering from low self-esteem. Results not plotted. Gender breakdown unclear</td>
</tr>
<tr>
<td>Hobbs &amp; McLaren, 2009</td>
<td>Older adults, $N = 159$ (69 M)</td>
<td>Agency measured using the agency subscale from an extended version of the PAQ</td>
<td>Depression measured using the CES-D depression scale (Radloff, 1977)</td>
<td>Suicidal ideation assessed using the 7-item suicide subscale of the GHQ</td>
<td>Agency interacted with depression amongst men but not women</td>
<td>The interaction was plotted, but the nature of interaction reflected a cross-over effect rather than a buffering impact of agency. Results not plotted.</td>
</tr>
<tr>
<td>Holden, Mendonca, &amp; Serin, 1989 (study 1)</td>
<td>Psychiatric patients, $N = 97$ (51 M)</td>
<td>Agency measured using the Desirability scale from the Personality Research Form (Jackson, 1984)</td>
<td>Hopelessness measured using the BHS</td>
<td>Three outcomes each measured using the BSS; suicide desire, suicide preparation and overall suicidal ideation.</td>
<td>Agency interacted with hopelessness to predict each of the three suicide outcomes.</td>
<td>Agency interacted with hopelessness to predict each of the three suicide outcomes. Results not plotted.</td>
</tr>
<tr>
<td>Holden, Mendonca, 1989 (study 1)</td>
<td>Males residing in a correction</td>
<td>Agency measured using the Desirability scale from the Personality Research Form (Jackson, 1984)</td>
<td>Hopelessness measured using the BHS</td>
<td>Two outcome measures: Suicide</td>
<td>Agency interacted with hopelessness to predict both suicide attempts</td>
<td>Agency interacted with hopelessness to predict both suicide attempts. Results not plotted. Only 26 participants</td>
</tr>
<tr>
<td>Reference</td>
<td>Sample Description</td>
<td>Measurements</td>
<td>Findings</td>
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<tr>
<td>&amp; Serin, 1989 (study 2)</td>
<td>Males residing in a correction facility, N = 203</td>
<td>Personality Research Form (Jackson, 1984)</td>
<td>Attempter status and suicidal intent demonstrated in a past suicide attempt measured using a single item 5-point likert scale.</td>
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<tr>
<td>Clum &amp; Febbraro, 1994</td>
<td>Individuals experiencing some degree of suicidal ideation, N = 141 (25 M)</td>
<td>Problem solving confidence measured using the perceived confidence subscale of the PSI</td>
<td>Problem-solving confidence attenuated the impact of life stress according to the BSS but not the MSSI.</td>
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<tr>
<td>Clum, Canfield, &amp; Van Arsdel et al., 1997</td>
<td>Individuals reporting symptoms of depression, N = 132 (47 M)</td>
<td>Problem solving confidence measured using the Problem Solving Confidence subscale of the PSI</td>
<td>Results not plotted.</td>
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</tr>
<tr>
<td>Priester &amp; Clum, 1993a</td>
<td>Undergraduates, N = 303</td>
<td>Problem solving confidence measured using the Problem Solving Confidence subscale of the PSI</td>
<td>None.</td>
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</table>

& Serin, 1989 (study 2) ^

Ivanoff & Jang, 1991a
<table>
<thead>
<tr>
<th>Study</th>
<th>Sample Description</th>
<th>Measured Reasons for Living</th>
<th>Risk Variables</th>
<th>Measured Past Year Ideation</th>
<th>Reason for Attenuation of Impact of Life Stress</th>
<th>Specific Gender Information</th>
<th>Results Plotted</th>
</tr>
</thead>
<tbody>
<tr>
<td>Liu, Chen, &amp; Chan et al., 2006</td>
<td>Community sample, $N = 2015$</td>
<td>Measured using a brief version of the RFL</td>
<td>Two risk variables: Average rating of the levels of distress concerning 16 aspects of life and breaking up of a stable relationship in the past 12 months</td>
<td>Past year ideation measured using a single item dichotomous measure.</td>
<td>Reasons for living attenuated the impact of life stress</td>
<td>None</td>
<td>Results not plotted</td>
</tr>
<tr>
<td>Bonner &amp; Rich, 1988</td>
<td>Undergraduates, $N = 186$ (85 M)</td>
<td>Measured using the RFL</td>
<td>Two risk variables: Loneliness (UCLA Loneliness Scale; Russell, Peplau, &amp; Cutrona, 1980) and Cognitive distortions (Rational Beliefs Inventory; Shorkey &amp; Whiteman, 1977)</td>
<td>Suicidal ideation measured using a self-report adaptation of the BSS</td>
<td>None</td>
<td>Results not plotted</td>
<td></td>
</tr>
<tr>
<td>Bonner &amp; Rich, 1990</td>
<td>Individuals residing in a detention centre, $N = 146$ (146 M)</td>
<td>Measured using the RFL</td>
<td>Jail stress designed for use in the study</td>
<td>Self-report adaptation of the BSS</td>
<td>None</td>
<td>Results not plotted</td>
<td></td>
</tr>
<tr>
<td>Britton, Duberstein, &amp; Conner et al., 2008</td>
<td>Older adults using psychiatric services, $N = 125$ (58 M)</td>
<td>Responsibility to Family Subscale of the RFL</td>
<td>Hopelessness measured using the BHS</td>
<td>Suicidal ideation measured using the BSS</td>
<td>Reasons for living amplified the impact of hopelessness</td>
<td>Graph indicates presence of a cross-over effect</td>
<td></td>
</tr>
<tr>
<td>Edwards &amp; Holden, 2001</td>
<td>Undergraduates, $N = 298$ (147 M)</td>
<td>Meaning in life measured using the Sense of Coherence scale. (Antonovsky, 1987) and Purpose in Life measured using the Purpose in Life Test (Crumbaugh &amp; Maholick, 1969)</td>
<td>Emotion oriented coping and avoidance distraction coping both measured using The Coping Inventory for Stressful Situations (Endler &amp; Parker, 1990)</td>
<td>Three outcomes: Suicidal ideation, suicide attempts and likelihood of future suicidality measured using eight items from the Suicidal Manifestations Questionnaire (Johns &amp; Holden, 1997)</td>
<td>Meaning in life interacted with emotion oriented coping in both men and women where the outcome was suicidal ideation; meaning in life interacted with emotion oriented coping and avoidance distraction coping where the outcome was suicidal ideation in women only; purpose in life interacted with emotion oriented coping and avoidance distraction coping where the outcome was suicidal ideation in women only; purpose in life moderated emotion oriented coping where the outcome was</td>
<td>In total, 24 regressions were investigated increasing likelihood of Type I error.</td>
<td>Results not plotted</td>
</tr>
</tbody>
</table>
was likelihood of suicide in women only

Heisel & Flett, 2004

Psychiatric patients, \(N = 49\) (15 M)

Two potential resilience variables: Satisfaction with life measured using the Satisfaction with Life Scale (Diener, Emmons, Larsen, & Griffin, 1985), and purpose in life measured using the purpose in life subscale of a shortened version of Ryff’s multidimensional measure of Psychological Well-Being (Ryff, 1989)

Depression measured using the BDI

Suicide ideation was measured using the suicide ideation subscale of the SPS

Purpose in life interacted with depression

Results were plotted, suggests the presence of a crossover effect


a The resilience and risk factor for this study can be regarded as interchangeable, as both are internal psychological constructs.

b At least one of the risk factors for this study can be regarded also to be a resilience factor, as it is an internal psychological constructs.
2.4.2.1.3. **Problem-solving confidence.** Problem solving confidence has often been incorporated into more general concepts of problem solving ability and the questionnaires designed to measure these (e.g., Heppner & Petersen, 1982). However, problem solving confidence is thought to comprise a separate construct to ability, whereby the former reflects an individual’s beliefs, appraisals and feelings, and the latter reflects cognitive and behavioural activities concerning problem solving (see D’Zurilla et al., 2004, for a review). Accordingly, some scales and subscales of problem solving measures have been designed to measure problem-solving confidence in isolation (e.g., D’Zurilla & Nezu, 1990). In total, four studies were identified by the review, each of which examined problem solving confidence using the problem solving confidence subscale of the Problem Solving Inventory (Heppner & Petersen, 1982). This includes items such as “Given enough time and effort, I believe I can solve most problems that confront me” and “I am usually able to think up creative and effective alternatives to solve a problem”.

Problem solving confidence has often been found to have an inverse association with suicidality and some evidence suggests it may have value as a buffer against risk. Specifically, of the four studies identified (Clum et al., 1997; Clum & Febbraro, 1994; Esposito & Clum, 2002; Priester & Clum, 1993a), two reported significant findings (Clum & Febbraro, 1994; Esposito & Clum, 2002). These unclear findings may appear counterintuitive, as problem solving confidence could be expected to have conceptual overlap with agency and self-efficacy, for which more positive results were found (Hobbs & McLaren, 2009; Waelde et al., 1994). Potentially, this could indicate that the active aspect of self-efficacy is one which does not tend to overlap with other similar constructs such as problem solving confidence. Overall, although the current results do not provide firm evidence either for or against a moderating impact of problem solving confidence it may be too soon to disregard this variable as a potential suicide resilience factor.
2.4.2.1.4. Reasons for living. The Reasons for Living Inventory (Linehan et al., 1983) was developed in response to a dearth of research in the contemporary literature investigating positive psychological factors related to suicidality. Items for the inventory were generated by 65 non-clinical participants who suggested reasons that they would have for staying alive if the thought of suicide occurred to them. A factor analysis indicated the presence of five subscales, namely Survival and Coping beliefs, Responsibility to Family, Child-Related Concerns, Fear of Suicide, Fear of Social Disapproval, and Moral Objections. The overall scale or subscales have since been investigated amongst a range of clinical and non-populations, with findings suggesting a consistent inverse association between the number of reasons for living endorsed and level of suicidality (Galfalvy et al., 2006; Innamorati et al., 2006; Lizardi, 2007). However, despite this reliable inverse association with suicidality, amongst the studies which have investigated reasons for living as a moderator, findings have not strongly supported a potential buffering effect.

Of the four studies which investigated reasons for living as a moderator, just one found evidence that it had a buffering impact against risk (Liu et al., 2006). This did not use the full Reasons for Living Inventory, but rather a twelve item version of the scale (Ivanoff, Jang, Smyth, & Linehan, 1994). Moreover, suicidality was measured using a single dichotomous item. Dichotomisation without clear justification, as in this instance, can increase the likelihood of Type I error (McClelland & Judd, 1993). When the overall subscale has been used, no interactions have been found amongst either student or inmate samples (Bonner & Rich, 1988, 1990). Furthermore, conflicting results have emerged from one study which found an interaction with the family responsibilities subscale of the reasons for living in the opposite direction, suggesting that higher reasons for living may act as an amplifier, accentuating the impact of risk on suicidality (Britton et al., 2008).

2.4.2.1.5. Life evaluations. Two studies have investigated the moderating impact of life evaluations such as meaning in life, purpose in life and satisfaction with life on suicidality (Edwards & Holden, 2001; Heisel & Flett, 2004). The concepts investigated in
both of these studies have overlapped, and found some evidence of an interaction between these factors and risk. Specifically, in a sample of students, it was found that meaning in life interacted with dysfunctional coping amongst both men and women and purpose in life interacted with dysfunctional coping amongst women only (Edwards & Holden, 2001). Similarly, in a sample of psychiatric patients, it was found that purpose in life interacted with depression, but satisfaction did not (Heisel & Flett, 2004). As each of these studies used different questionnaires to measure these constructs it is difficult to draw conclusions on the basis of these findings, but it appears that there is some evidence to suggest that these types of evaluations may confer resilience to suicidality.

2.4.2.2. Other-related beliefs.

Social support is one of the most widely investigated variables in relation to suicidality, with results generally supporting a negative association between the two (Bolton et al., 2007; King & Merchant, 2008). However, the term ‘social support’ is broad, encompassing a wide range of social resources, such as perceived emotional support, fiscal support and the number of individuals providing support (Chen et al., 2008; Kidd & Shahar, 2008; Stansfeld, 2006). Accordingly, numerous inventories have been designed to measure a range of different aspects of social support (Cohen, Underwood, & Gottlieb, 2000). For the purposes of the review, the studies which were identified investigating social support as a moderator were divided according to those which looked at general perceptions of overall social support, social support from family, social support from a partner and those that investigated attachment to caregivers. These studies are outlined in Table 4.

2.4.2.2.1. General social support. Of the studies identified, 18 investigated varying aspects of general social support. These provide some indication of which aspects of general social support may be protective, as whilst no evidence was found for a buffering impact of either number of individuals providing support (Esposito & Clum, 2002; Kidd &
Shahar, 2008) or social well-being (Herba et al., 2008), more positive results were reported in favour of perceived social support. Specifically, of the 16 studies which investigated perceived social support, ten reported significant interactions (Banyard & Cross, 2008; Blankstein et al., 2007; Bonner & Rich, 1990; Chen et al., 2008; Clum & Febbraro, 1994; Esposito & Clum, 2002, 2003; Kaslow et al., 1998; Van Orden et al., 2008; Yang & Clum, 1994) and six reported only null findings (Bonner & Rich, 1988; Clum et al., 1997; Joiner et al., 2009; Kidd et al., 2006; Lieberman et al., 2005; Schutt, Meschede, & Rierdan, 1994). One of these studies also investigated whether perceived social support acted as a buffer when scores were combined with measures of cognitive distortions, but found no significant effect (Bonner & Rich, 1988).

Although the evidence in favour of social support was not consistent, null findings may be due to studies lacking the large samples and effect sizes necessary to detect moderations (McClelland & Judd, 1993). Furthermore, it is possible to speculate that the discrepancies between findings may be explained by an ability of perceived social support to only buffer against certain risk factors. In particular, it appears that social support may be a more reliable buffer when the risk factors include current and ongoing life stress or abuse. For example, of the four studies which used measures of current stress as a risk factor (Bonner & Rich, 1990; Clum et al., 1997; Clum & Febbraro, 1994; Yang & Clum, 1994), three reported significant interactions (Bonner & Rich, 1990; Clum & Febbraro, 1994; Yang & Clum, 1994). Similarly, each of the three studies which investigated perceived social support as resilience against long-term abuse reported significant interactions, particularly when the form of abuse was sexual (Banyard & Cross, 2008; Esposito & Clum, 2002; Kaslow et al., 1998). Conversely, of the three studies which investigated aspects of mental health as a risk factor (Esposito & Clum, 2003; Kidd et al., 2006; Lieberman et al., 2005), only one reported any significant interactions, and this was only when the mental health risk factor was diagnosis of a comorbid disorder (Esposito & Clum, 2003).
Table 4: Studies reviewing other-related beliefs and attitudes as potential resilience variables where the outcome was suicidality

<table>
<thead>
<tr>
<th>Participant sample</th>
<th>other-related moderator variable</th>
<th>Risk factor</th>
<th>Measure of Suicidality</th>
<th>Significant interactions</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Esposito &amp; Clum, 2002</td>
<td>Young adults in a juvenile correction facility, N = 200 (141 M)</td>
<td>Number of social supports and perceived social support both measured using the Social Support Questionnaire (Sarason, Sarason, Shearin, &amp; Pierce, 1987)</td>
<td>Childhood physical abuse and childhood sexual abuse both measured using a scale modelled on the Child Maltreatment Survey (Yang &amp; Clum, 2000)</td>
<td>Two outcome measures; suicidal ideation measured using the MSSI and suicidality measured using the SSB</td>
<td>Perceived social support interacted with sexual abuse where the outcome was either suicidal ideation or suicidal behaviours</td>
</tr>
<tr>
<td>Kidd &amp; Shahar 2008</td>
<td>Homeless young adults, N = 208 (122 M)</td>
<td>Number of social supports measured using a single item and attachment style (dismissing or fearful) measured using the Relationship Questionnaire (Bartholomew &amp; Horowitz, 1991)</td>
<td>Physical abuse measured using the Conflict Tactics Scale (Straus &amp; Gelles, 1990); parent neglect measured using a single item and attachment style measured using the Relationship Questionnaire (Bartholomew &amp; Horowitz, 1991)</td>
<td>Two outcome measures; suicide attempter status and current suicidal ideation as a total score from 4 items derived from a scale commonly used in studies of non-homeless youth (Lewinsohn et al., 1996)</td>
<td>None</td>
</tr>
<tr>
<td>Herba, Ferdinand, &amp; Stijnen et al., 2008</td>
<td>Children, N = 926 (384 M)</td>
<td>Perceived social well-being measured using two scales based on the Social Production Function Theory (Nieboer, Lindenberg, Boomsma, &amp; Van Bruggen, 2005) and perceived family environment measured using the EMBU-C (Markus, Lindhout, Boer, Hoogendijk, &amp; Arrindell, 2003)</td>
<td>Bullying measured using two items chosen for the study</td>
<td>Suicide ideation measured using two items from the Youth Self-Report questionnaire (Achenbach, 1991)</td>
<td>Perceived family environment interacted with bullying, but not when the bullied children were also bullies themselves</td>
</tr>
<tr>
<td>Yang &amp; Clum, 1994</td>
<td>International students, N = 101 (73 M)</td>
<td>Perceived social support measured using the UCLA</td>
<td>Life stress measured using the LES</td>
<td>Suicidal ideation measured using the MSSI</td>
<td>Social support attenuated the impact of life stress</td>
</tr>
<tr>
<td>Bonner &amp; Rich, 1990</td>
<td>Males residing in a detention</td>
<td>Perceived social support measured using the UCLA</td>
<td>Jail stress measured using a scale designed for the study</td>
<td>Self-report adaptation of the BSS</td>
<td>Social support attenuated the impact of life stress</td>
</tr>
</tbody>
</table>

Results not plotted
<table>
<thead>
<tr>
<th>Study</th>
<th>Sample Description</th>
<th>Measures</th>
<th>Results Not Plotted</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chen, Yang, &amp; Yang et al., 2008</td>
<td>Older Taiwanese women, $N = 146$</td>
<td>Perceived emotional social support measured using a single dichotomous item</td>
<td></td>
</tr>
<tr>
<td>Bonner &amp; Rich, 1988</td>
<td>Undergraduates, $N = 186$ (85 M)</td>
<td>Perceived social support measured using the UCLA and ‘vulnerability’, a combination of factors including feelings of social and emotional alienation</td>
<td></td>
</tr>
<tr>
<td>Blankstein, Lumley, &amp; Crawford, 2007*</td>
<td>Undergraduates, $N = 205$ (61 M)</td>
<td>Perceived social support (overall support; friends support; significant other support; family support) all measured using Multidimensional Scale of Perceived Social Support (MSPSS; Zimet et al., 1988)</td>
<td></td>
</tr>
<tr>
<td>Clum &amp; Febbraro,</td>
<td>Individuals reporting high</td>
<td>Life stress measured using the LES</td>
<td></td>
</tr>
</tbody>
</table>

Marital discord measured using a single dichotomous item
Two risk variables Cognitive distortions (Rational Beliefs Inventory; Shorkey & Whiteman, 1977) and Reasons for living measured using the RFL
Physical and non-physical partner abuse measured using the Index of Spouse Abuse (ISA; Hudson & McIntosh, 1981)
Diagnosis of a comorbid disorder and diagnosis of internalizing disorder
Overall perfectionism and three subscales (other-oriented, self-oriented and socially prescribed)
Overall social support interacted with overall perfectionism in both women and men; significant other support interacted with self-oriented perfectionism in both women and men; family support interacted with other oriented perfectionism amongst women but not men

Suicidal ideation measured using a single item, responses to which were dichotomised
Suicidal ideation measured using a self-report adaptation of the BSS
Suicidal ideation measured using the MSSI
Suicidal ideation measured using a questionnaire developed specifically for the study

Emotional social support interacted with marital discord
Results not plotted

Results not plotted
Results not plotted
Results not plotted
Results not plotted
<table>
<thead>
<tr>
<th>Year</th>
<th>Study</th>
<th>Sample Characteristics</th>
<th>Measures</th>
<th>Findings</th>
</tr>
</thead>
<tbody>
<tr>
<td>1994</td>
<td></td>
<td>levels of suicide using both the BSS and MSSI where the outcome was the</td>
<td>Perceived social support measured using the UCLA MSSI but not when it was the BSS</td>
<td>Results not plotted</td>
</tr>
<tr>
<td></td>
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<td>ideation N = 59 (25 M)</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Banyard &amp; Cross, 2008</td>
<td>Young adults, N = 2,101 (1025 M)</td>
<td>Perceived neighbourhood support and family support each assessed using three items chosen for the study</td>
<td>Sexual abuse and physical abuse each measured using a single item</td>
</tr>
<tr>
<td></td>
<td>Van Orden, Witte, Gordon, Bender, &amp; Joiner, 2008 (study 1)</td>
<td>Undergraduates, N = 309 (82 M)</td>
<td>Belongingness measured using the INQ</td>
<td>Burdensomeness measured using the INQ</td>
</tr>
<tr>
<td></td>
<td>Lieberman, Solomon, &amp; Ginzburg, 2005</td>
<td>Israeli male soldiers, N = 230</td>
<td>Perceived social support (Avizur, 1987)</td>
<td>Three subscales of general health (namely mental distress, perceived functioning, and perceived health) measured using a Hebrew version of the GHQ</td>
</tr>
<tr>
<td></td>
<td>Clum,</td>
<td>Individuals with</td>
<td>Perceived social support</td>
<td>Life stress measured using</td>
</tr>
<tr>
<td>Study</td>
<td>Sample Description</td>
<td>Measures</td>
<td>Outcome Measures</td>
<td>Notes</td>
</tr>
<tr>
<td>-------------------------------------------</td>
<td>--------------------</td>
<td>------------------------------------------</td>
<td>--------------------------------------------</td>
<td>----------------------------------------------------------------------</td>
</tr>
<tr>
<td>Canfield, Van Arsdel, Yang, Febraro &amp; Wright, 1997</td>
<td>Depressive symptoms, N=132 (47 M)</td>
<td>Measured using the UCLA Depression measured using the LES Suicidal ideation measured using both the BSS and MSSI</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Kidd, Henrich &amp; Brookmeyer et al., 2006</td>
<td>Young adults, N = 9,142 (4400 M)</td>
<td>Perceived school support, perceived peer support and perceived parental support all measured using items from the Add Health study Depression measured using items from the Centre of Epidemiology Studies-Depression Scale (Radloff, 1977) and gender Childtrauma, legal problems and experiences of being robbed or assaulted, each measured using a single item Presence of absence of suicide attempt in the past year</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Schutt, Meschede, &amp; Rierdan, 1994</td>
<td>Homeless adults, N = 218 (174 M)</td>
<td>Perceived social support measured using the Interpersonal Support Evaluation Checklist (Cohen &amp; Syme, 1985) Sexual abuse measured with a single item Suicidal thoughts in the past month measured using a single item with a 6-point likert scale response</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Luster &amp; Small, 1997</td>
<td>Young adults, N = 42, 568</td>
<td>Parental monitoring and parental support each measured using a single item for which scores were dichotomised Sexual abuse measured with a single item Suicidal thoughts in the past month measured using a single item with a 5-point likert scale response Both parental monitoring and parental support interacted with sexual abuse Specific gender information not provided (breakdown not given by exact percentage or number). Results not plotted</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hershberger &amp; D'Augelli, 1995</td>
<td>Gay or bisexual youths, N = 165 (123 M)</td>
<td>Family acceptance and family support each measured using a single item with a 4-point likert scale response Victimization measured using three variables investigating experiences of verbal abuse, property damage and physical abuse Two outcome measures: Present suicidal ideation measured on a single item 4-point likert scale and suicide attempter status</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Slap, Goodman, &amp; Huang, 2001</td>
<td>Adolescents, N = 6577 (3267 M)</td>
<td>Family support measured using 13 items from the Add Health Study Adoptive status Presence or absence of suicide attempts in the past year</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Demi, Bakeman, Sowell, Moneyham, &amp; Seals, 1998</td>
<td>Women with HIV, N = 214</td>
<td>Family cohesion HIV-related symptoms measured using a checklist; stigma measured using the HIV Stigma Scale (Demi, 1995) and depressive mood and emotional distress both Family cohesion interacted with HIV-related symptoms Results plotted, but as suicidal thoughts are plotted as the moderator interpretation is difficult</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Study</td>
<td>Sample</td>
<td>Outcome</td>
<td>Measures</td>
<td>Results</td>
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<tr>
<td>-------</td>
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<tr>
<td>Kwok &amp; Shek 2009&lt;sup&gt;2&lt;/sup&gt;</td>
<td>Secondary school students, $N = 5,557$ (2950 M)</td>
<td>Perceived family functioning</td>
<td>measured using the Brief Symptom Inventory (Derogatis, 1993)</td>
<td>Suicidal ideation assessed using the suicidal ideation subscale of the Suicidal Risk Scale for Hong Kong students (Tse &amp; Bagley, 2002)</td>
</tr>
<tr>
<td>Joiner, Van Orden, &amp; Witte et al., 2009 (study 1)&lt;sup&gt;3&lt;/sup&gt;</td>
<td>Individuals reporting symptoms of sadness and anhedonia, $N = 815$ (377 M)</td>
<td>Family support</td>
<td>measured using a shortened version of the Provision of Social Relations Scale (Turner et al., 1983)</td>
<td>Family support attenuated the impact of burdensomeness</td>
</tr>
<tr>
<td>Joiner, Van Orden, &amp; Witte et al., 2009 (study 2)&lt;sup&gt;3&lt;/sup&gt;</td>
<td>Individuals experiencing suicidality, $N = 313$ (257 M)</td>
<td>Social support</td>
<td>measured using items from the SPS</td>
<td>Results plotted, reveal a strong moderating impact of family support</td>
</tr>
<tr>
<td>Brown, Brown, &amp; Johnson, et al., 2009 (study 1)&lt;sup&gt;3&lt;/sup&gt;</td>
<td>Undergraduates, $N = 170$ (42 M)</td>
<td>Romantic relationship satisfaction</td>
<td>measured using a single item with a 4 point likert scale response</td>
<td>Romantic relationship satisfaction attenuated the impact of feelings of burdensomeness when the outcome was suicidal ideation but not when it was suicide attempter status</td>
</tr>
<tr>
<td>Brown, Brown, &amp; Johnson, et al., 2009 (study 2)&lt;sup&gt;3&lt;/sup&gt;</td>
<td>Undergraduates, $N = 181$ (66 M)</td>
<td>Romantic relationship satisfaction</td>
<td>measured using a single item with a 4 point likert scale response</td>
<td>Results not plotted</td>
</tr>
<tr>
<td>Rodell, Benda, &amp; Rodell, 2003</td>
<td>Homeless veterans, $N = 188$ (178 M)</td>
<td>Attachment to male caregivers and attachment to female caregivers each measured using</td>
<td>Length of drug use, intensity of drug use, length of alcohol use and Suicidal ideation measured using the MPSI</td>
<td>Results not plotted</td>
</tr>
</tbody>
</table>

<sup>1</sup> Study conducted on a different sample.

<sup>2</sup> Study conducted on a different outcome.

<sup>3</sup> Study conducted on a different measure.
<table>
<thead>
<tr>
<th>Study</th>
<th>Sample Description</th>
<th>Methodological Measures</th>
<th>Length and Intensity of Alcohol Use and Drug Use</th>
<th>Results</th>
</tr>
</thead>
<tbody>
<tr>
<td>Salzinger, Rosario, Feldman, &amp; Ng-Mak, 2007</td>
<td>Physically abused and non-abused children, $N = 200$ (130 M)</td>
<td>Attachment to parents measured using the Inventory of Parent and Peer Attachment (Armsden &amp; Greenberg, 1987), Presence or absence of physical abuse measured as a single item</td>
<td>Two outcome measures: Suicidal ideation in the past twelve months and lifetime and recent presence of suicide attempt, each measured using the Youth Risk Behavior Survey (Garrison, McKeown, Valois, &amp; Vincent, 1993)</td>
<td>None</td>
</tr>
<tr>
<td>Greening &amp; Stoppelbein, 2002</td>
<td>Young adults, $N = 1,098$ (520 M)</td>
<td>Religious beliefs measured using the Doctrinal Orthodoxy Scale (Batson, Schoenrade, &amp; Ven-Durant, 1993), Depression measured using the Children’s Depression Inventory (Kovacs, 2000), Perceived suicide risk measured using the Perceived suicide risk scale (Greening &amp; Dollinger, 1993)</td>
<td>Religious beliefs interacted with depression</td>
<td>Results not plotted</td>
</tr>
</tbody>
</table>


a The resilience and risk factor for this study can be regarded as interchangeable, as both are internal psychological constructs.

b At least one of the risk factors for this study can be regarded also to be a resilience factor, as it is an internal psychological constructs.
In summary, it appears that perceived social support may represent a potential buffer against suicidality. At present, the evidence base is strong enough to warrant further investigation into this area and future research would benefit from examining the particular risk variables which social support can confer resilience against.

2.4.2.2. Family social support. Similar to studies into general social support, the majority of studies into family support have found some evidence for an interactive effect. From a total of 11, seven reported significant interactions (Banyard & Cross, 2008; Blankstein et al., 2007; Demi, Bakeman, Sowell, Moneyham, & Seals, 1998; Herba et al., 2008; Joiner et al., 2009; Kwok & Shek, 2009; Luster & Small, 1997) and four reported only null findings (Hershberger & D'Augelli, 1995; Kaslow et al., 1998; Kidd et al., 2006; Slap et al., 2001). From those studies which found significant interactions, it appears that family support may buffer a range of risk factors including HIV symptoms (Demi et al., 1998), feelings of burdensomeness (Joiner et al., 2009) and perfectionism (Blankstein et al., 2007).

Thus, it appears that the majority of studies support a buffering effect of family support. Furthermore, it may be possible to explain the occurrence of null findings. One potential explanation is that family support can confer resilience against certain risk factors but not others. Interestingly, similar to general social support it appears to be particularly protective against experiences of sexual abuse. (Banyard & Cross, 2008; Luster & Small, 1997). Conversely, unlike general support, family support may be less protective against physical abuse (Banyard & Cross, 2008; Hershberger & D'Augelli, 1995; Kaslow et al., 1998).

2.4.2.2. Social support from a partner. Three studies reported in two papers have investigated the role of perceived partner support in protecting against suicidality in the face of risk (Blankstein et al., 2007; Brown et al., 2009). The first of these found some evidence for a role of partner support in buffering against aspects of perfectionism (Blankstein et al., 2007), and the second two found some support for a role of romantic
relationship satisfaction in buffering against feelings of burdensomeness (Brown et al., 2009). Overall then, all three studies provide some indication of a moderating impact, and where findings have been plotted, the interaction reflects a resilience effect (Brown et al., 2009).

2.4.2.2.3. Attachment. Three studies investigated the impact of perceived attachment, which can be understood as the strength of the relationship between an individual and their key caregivers (Marvin, 2003). One study has reported firm evidence in favour of a buffering impact of attachment to parents against both intensity and length of drug use and length and intensity of alcohol use (Rodell, Benda, & Rodell, 2003). However, these findings were not plotted so it is unclear whether they reflect a resilience interaction. Furthermore, these significant results have not been replicated by later studies (Kidd & Shahar, 2008; Salzinger, Rosario, Feldman, & Ng-Mak, 2007).

Drawing conclusions on the basis of these three studies is difficult, as each used a different measure of attachment. In particular, whilst two focused on level of attachment (Rodell et al., 2003; Salzinger et al., 2007), the third investigated attachment style (Kidd & Shahar, 2008). For future research in this area, it may be most beneficial to use the instrument employed by Rodell et al. (2003), the Multi-Problem Screening Inventory (Hudson, 1990), or alternatively to focus on more general constructs of social support for which there is more evidence supporting a buffering role.

2.4.2.2.4. Religious beliefs. One study investigated the buffering impact of religious beliefs using the Christian Orthodoxy Scale (Batson et al., 1993) which measures beliefs in traditional Christian teachings (Greening & Stoppelbein, 2002). Amongst a sample of adolescents, it was found that religious beliefs interacted with depression to predict self-reported suicide risk. This suggests that religious beliefs may be an aspect of suicide resilience, but further research would be required to draw any conclusions.
Table 5: Studies reviewing future-related beliefs and attitudes as potential resilience variables where the outcome was suicidality

<table>
<thead>
<tr>
<th>Study</th>
<th>Participant sample</th>
<th>Future-related moderator variable</th>
<th>Risk factor</th>
<th>Measure of Suicidality</th>
<th>Significant interactions</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mendonca &amp; Holden, 1998</td>
<td>Clinical outpatient sample with suicidal ideation, (N = 97) (51 men)</td>
<td>Hopelessness measured using the BHS</td>
<td>Unusual thinking measured using a subscale from the SCL-90</td>
<td>Two outcomes: Suicide desire and suicide preparation, each measured using the BSS.</td>
<td>Hopelessness and unusual thinking interacted to predict both suicide desire and suicide preparation</td>
<td>Results not plotted</td>
</tr>
<tr>
<td>Uncapher, Gallagher-Thompson, Osgood, &amp; Bongar, 1998</td>
<td>Older institutionalized males, residing either in a psychiatric facility, (N = 30), or a nursing home, (N = 30).</td>
<td>Hopelessness measured using the Geriatric Hopelessness Scale (Fry, 1984)</td>
<td>Depression measured using the Geriatric Depression Scale (Abraham, 1991)</td>
<td>Suicidal ideation measured using the BSS</td>
<td>Hopelessness interacted with depression</td>
<td>Results plotted, but as depression is plotted as the moderator this is difficult to interpret</td>
</tr>
<tr>
<td>Young, Fogg, Scheftner, &amp; Fawcett, 1994</td>
<td>Individuals with mania and depression, (N = 955) (M = 345)</td>
<td>Hopelessness at study intake as measured using a single item scored dichotomously</td>
<td>Lifetime prevalence of substance misuse</td>
<td>Completed suicide over the 10 years the study was taking place</td>
<td>Hopelessness interacted with substance misuse</td>
<td>Results not plotted</td>
</tr>
<tr>
<td>Durant, Mercy, Kresnow, Simon, Potter, &amp; Hammond, 2006</td>
<td>Suicide attempters and controls, (N = 500) (M = 229)</td>
<td>Hopelessness measured using the BHS</td>
<td>Race (black or white)</td>
<td>Suicide attempter status</td>
<td>None</td>
<td>The interaction approached significance, (p = .059)</td>
</tr>
<tr>
<td>Mills &amp; Kroner, 2008 (study 1)*</td>
<td>Males residing in a medium security prison ((N = 422))</td>
<td>Hopelessness measured using items from the DHS</td>
<td>Past suicide behaviour and suicidogenic beliefs, both measured using items from the DHS</td>
<td>Suicide ideation measured using items from the DHS</td>
<td>Hopelessness interacted with past suicide behaviour; hopelessness interacted with suicidogenic cognitions</td>
<td>Results not plotted</td>
</tr>
<tr>
<td>Mills &amp; Kroner, 2008 (study 2)*</td>
<td>Males residing in a medium security prison</td>
<td>Hopelessness measured using items from the DHS</td>
<td>Past suicide behaviour; and suicidogenic beliefs, both measured using items from the DHS</td>
<td>Suicide ideation measured using items from the DHS</td>
<td>Hopelessness interacted with past suicide behaviour; hopelessness interacted with</td>
<td>Results not plotted</td>
</tr>
<tr>
<td>Study</td>
<td>Sample</td>
<td>Hopelessness Measure</td>
<td>Suicidal Ideation Measure</td>
<td>Suicide Risk Factor Interaction</td>
<td></td>
<td></td>
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<tr>
<td>Locke, 1976</td>
<td>N = 138 Psychiatric outpatients, N = 1784 (769 M)</td>
<td>Hopelessness measured using the BHS</td>
<td>Suicidal ideation measured using the BSS</td>
<td>Suicidogenic cognitions interacted with depressive symptoms</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Blankstein, Lumley &amp; Crawford, 2007</td>
<td>Undergraduates, N = 205 (61 M)</td>
<td>Achievement hopelessness, interpersonal hopelessness, and overall hopelessness measured using an extended version of the BHS; Optimism measured using the LOT</td>
<td>Suicidal ideation measured using a questionnaire developed specifically for the study</td>
<td>Overall hopelessness interacted with overall perfectionism amongst men only; interpersonal hopelessness interacted with other-oriented perfectionism amongst men only; optimism interacted with socially prescribed perfectionism amongst men only; optimism interacted with overall perfectionism in men only</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hirsch, Duberstein, &amp; Conner et al., 2007</td>
<td>Depressed older adults, N = 136 (57 M)</td>
<td>Hopelessness measured using two scales: Future orientation Scale, 6 items from the Reasons for Living Older Adults Version (Edelstein, McKee, &amp; Martin, 2000); and the BHS</td>
<td>Suicidal ideation measured using the BSS</td>
<td>Future orientation buffered functional impairment</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Liu, Chen, &amp; Chan, et al., 2006</td>
<td>Community sample, N = 2015</td>
<td>Hopelessness measured using the BHS</td>
<td>Suicidal ideation measured using a single item dichotomous measure</td>
<td>None</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Holden, Mendonca, &amp; Serin, 1989 (study 1)</td>
<td>Psychiatric patients, N = 97 (51 M)</td>
<td>Hopelessness measured using the BHS</td>
<td>Three outcomes each measured using the BSS; suicide desire, suicide preparation and overall suicidal</td>
<td>Results not plotted.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Note: A square root transformation was applied to the BSS. Results not plotted.

A large number of moderations were investigated, increasing likelihood of Type I error. Results not plotted.

Results plotted, revealing a resilience effect of future orientation.

Gender breakdown unclear.
<table>
<thead>
<tr>
<th>Study</th>
<th>Population</th>
<th>Hopelessness measured</th>
<th>Agency measured using</th>
<th>Outcome measures</th>
<th>Results</th>
</tr>
</thead>
<tbody>
<tr>
<td>Holden, Mendonca, &amp; Serin, 1989 (study 2)³</td>
<td>Males residing in a correction facility, N = 203</td>
<td>Hopelessness measured using the BHS</td>
<td>Agency measured using the Desirability scale from the PRF</td>
<td>Hopelessness interacted with agency to predict both suicide intent and suicide attempter status</td>
<td>Results not plotted. Only 26 participants form an overall sample of 203 scored above zero on the measure of suicide</td>
</tr>
<tr>
<td>Hirsch &amp; Conner, 2006⁴</td>
<td>Undergraduates, N = 284 (99 M)</td>
<td>Hopelessness measured using the BHS</td>
<td>Optimism measured using a revised version of the LOT; Explanatory style measured using the ASQ</td>
<td>Suicidal ideation measured using the BSS</td>
<td>Results plotted</td>
</tr>
<tr>
<td>Ivanoff &amp; Jang, 1991⁴</td>
<td>Males residing in a correction facility, N = 130</td>
<td>Hopelessness measured using the BHS</td>
<td>Agency measured using Edwards Social Desirability Scale (Edwards, 1970)</td>
<td>Three suicidality outcomes, each measured using an interviewer rated version of the SBQ: Current Suicide Ideation, Future Possibility of Suicide, and Past Parasuicidal Behaviour</td>
<td>Results not plotted</td>
</tr>
<tr>
<td>Britton, Duberstein, &amp; Conner, et al., 2008⁴</td>
<td>Older adults using psychiatric services, N = 125 (58 M)</td>
<td>Hopelessness measured using the BHS</td>
<td>Responsibility to Family Subscale of the RFL</td>
<td>Suicidal ideation measured using the BSS</td>
<td>Graph indicates presence of a cross-over effect</td>
</tr>
<tr>
<td>Gibb, Andover, &amp; Beach, 2006</td>
<td>Undergraduates, N = 230 (163 F)</td>
<td>Hopelessness measured using the BHS</td>
<td>Right to Die subscale of the SOQ</td>
<td>Suicidal ideation measured using the SOQ</td>
<td>Results plotted</td>
</tr>
</tbody>
</table>
Undergraduates, $N = 138$ (38 M) Optimism measured using a revised version of the LOT Trauma measured using the Lifetime Incidence of Traumatic Events (Greenwald & Rubin, 1999) Suicidal ideation measured using the BSS Optimism amplified the impact of trauma A square root transformation was applied to BSS scores. Results were plotted, suggesting the presence of a cross-over effect whereby individuals high on optimism are at highest levels of suicide risk at high levels of trauma.


The resilience and risk factor for this study can be regarded as interchangeable, as both are internal psychological constructs. At least one of the risk factors for this study can be regarded also to be a resilience factor, as it is an internal psychological constructs.
2.4.2.3. Future-related beliefs.

A range of future-related beliefs have been investigated in relation to suicidality, including hopelessness (Beck et al., 1993), expectations of positive future events (MacLeod, Rose, & Williams, 1993) and optimism (Hirsch & Conner, 2006). This research suggests that future-oriented beliefs are one of the strongest predictors of suicidality, increasing risk more severely than other recognised factors such as depression and other psychiatric symptomatology (Ahrens & Linden, 1996; Beck et al., 1993; Ran et al., 2005). Two forms of future-related beliefs have been investigated as potential suicide resilience factors, namely, hopelessness and dispositional optimism.

2.4.2.3.1. Hopelessness. Hopelessness is one of the most widely investigated future-related beliefs in suicidality research, and in total, 16 studies described in 10 papers were identified which investigated whether it could confer resilience to suicidality. The large majority of these, specifically 14, found at least one significant interaction between hopelessness and a risk variable. This proportion of positive results is notable and provides strong evidence for a moderating role of hopelessness. Furthermore, due to three of the features of these studies, the evidence provided by these is particularly interesting.

First, the majority of studies (see Table 5) have used the same questionnaire to measure hopelessness, namely the Beck Hopelessness Scale (Beck et al., 1974), which includes items such as “I might as well give up because there is nothing I can do about making things better for myself” and “My future seems dark to me”. This repeated use of the same measure across studies is in contrast to other moderators that have been investigated, which have used slightly varying concepts and measures. By allowing for a more systematic comparison between studies, this replication in the use of the Beck Hopelessness Scale enables more reliable conclusions to be drawn regarding the nature of hopelessness as a moderating factor.
Second, the studies have sampled a wide range of populations. Some of this research has been amongst clinical samples and suggests that hopelessness may be an amplifier for high risk groups such as psychiatric outpatients (Beck et al., 1993; Britton et al., 2008; Mendonca & Holden, 1998; Young, Fogg, Scheftner, & Fawcett, 1994), psychiatric inpatients (Hirsch et al., 2007a; Uncapher, Gallagher-Thompson, Osgood, & Bongar, 1998) and prison inmates (Holden & Fekken, 1989; Ivanoff & Jang, 1991; Mills & Kroner, 2008). It may also be a buffer for non-clinical samples (Blankstein et al., 2007; Gibb, Andover, & Beach, 2006) although one study failed to find this effect (Liu, 2006). This replication of findings amongst a wide range of populations again distinguishes hopelessness from a range of the other moderators reviewed, which have mainly been researched amongst general population samples and students. Furthermore, it suggests that hopelessness may be a relevant moderator to focus on amongst those groups who are at highest risk of suicidality.

Related to this is the third point, which is that hopelessness has not only been found to act as an amplifier amongst individuals using mental health services, but more specifically, it could also be a moderator of the symptoms of mental health disorder themselves. Indeed, in each of the studies which investigated symptoms of mental disorder, interactions were found (Beck et al., 1993; Mendonca & Holden, 1998; Uncapher et al., 1998). Likewise, it appears to moderate one key suicide risk factor, namely past suicide attempt (Mills & Kroner, 2008). Speculatively, this may support the reduction of hopelessness as a target for suicide interventions, as this could have a direct impact on the association between pernicious psychiatric symptoms and suicidality.

It is also important to explore reasons which may explain the discrepancy between studies which did report interaction effects and those which did not. One potential explanation may lie in a lack of statistical power amongst the studies which did not find interactions, as both of these measured at least one risk factor and suicidality or suicide attempt using only a single item (Durant et al., 2006; Liu et al., 2006). However, this may
not be a complete explanation, as some null results were also reported by studies using validated inventories to measure each variable (e.g., Hirsch et al., 2007a). Potentially, an alternative explanation may lie in the risk factor examined, as whilst hopelessness appears to be a reliable moderator for cognitive or psychological risk factor such as perfectionism (Blankstein et al., 2007) or depression (Beck et al., 1993; Uncapher et al., 1998), less evidence has been found for external risk factors, such as physical impairment (Hirsch et al., 2007a) or race (Durant et al., 2006).

Overall, these studies suggest that hopelessness may represent a moderator of some of the most deleterious risk factors amongst a range of populations, including those known to be at high risk of suicide. Future research could expand this area by ascertaining the range of risk factors which hopelessness can act as a buffer and adapting this research to advise clinical interventions.

2.4.2.3.2. Dispositional optimism. A smaller number of studies have investigated an alternative future-related belief, namely, optimism. This can be understood as dispositional positive future expectancies and each of the three studies identified measured it using the Life Orientation Test or a derivative (Scheier & Carver, 1985; Scheier, Carver, & Bridges, 1994). This includes items such as “In uncertain times, I usually expect the best” and “I’m always optimistic about my future”.

By contrast to the research into hopelessness, results from research into optimism have provided much weaker evidence. One found some evidence in favour of a buffering effect (Blankstein et al., 2007), one reported a null finding (Hirsch & Conner, 2006) and the remaining study found evidence of a moderation in the opposite direction, or an amplifying effect (Hirsch, Wolford, LaLonde, Brunk, & Morris, 2007b). These variations might be explained by the divergence in risk factors between the studies, which include perfectionism (Blankstein et al., 2007), hopelessness (Hirsch & Conner, 2006) and experienced trauma (Hirsch et al., 2007b). Indeed, the null finding regarding optimism as a moderator of hopelessness could potentially be explained by a conceptual convergence.
between the two (Hirsch & Conner, 2006). Overall, however, they provide a weak evidence base and indicate a potential complexity in the buffering impact of optimism.

2.4.2.3. Suicide-related beliefs.

Three studies reported in two papers have investigated the moderating impact of suicide related attitudes or opinions, such as the belief that suicide is an acceptable behaviour (Gibb et al., 2006; Mills & Kroner, 2008). These studies are outlined in Table 6. Despite this small number, each of these has found evidence for a significant interaction between suicide-related beliefs and risk factors such as hopelessness (Gibb et al., 2006; Mills & Kroner, 2008), and depression (Gibb et al., 2006). Interestingly, it appears that these may be more important for males, as whilst one study found that they were a moderator for males but not females (Gibb et al., 2006), the second used an all-male sample and so cannot disconfirm this possibility (Mills & Kroner, 2008). Future research in this area could investigate the potential divergence between males and females which is indicated in the current studies, and explore the factors which may account for this.
Table 6: Studies reviewing suicide-related beliefs and attitudes as potential resilience variables where the outcome was suicidality

<table>
<thead>
<tr>
<th>Participant sample</th>
<th>Suicide belief moderator variable</th>
<th>Risk factor</th>
<th>Measure of Suicidality</th>
<th>Significant interactions</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gibb, Andover, &amp; Beach, 2006&lt;sup&gt;b&lt;/sup&gt;</td>
<td>Undergraduates, ( N = 230 ) (163 F)</td>
<td>Right to Die subscale of the SOQ</td>
<td>Gender, depression measured using the CES-D and hopelessness measured using the BHS</td>
<td>Suicide related beliefs interacted with gender; Suicide related beliefs interacted with depression and hopelessness amongst men only</td>
<td>Results plotted</td>
</tr>
<tr>
<td>Mills &amp; Kroner, 2008&lt;sup&gt;a&lt;/sup&gt; (study 1)</td>
<td>Males residing in a medium security prison, ( N = 422 )</td>
<td>Suicidogenic beliefs measured using two items from the DHS</td>
<td>Hopelessness measured using items from the DHS and past suicide behaviour</td>
<td>Suicidogenic beliefs interacted with hopelessness</td>
<td>Results not plotted</td>
</tr>
<tr>
<td>Mills &amp; Kroner, 2008&lt;sup&gt;a&lt;/sup&gt; (study 2)</td>
<td>Males residing in a medium security prison, ( N = 138 )</td>
<td>Suicidogenic beliefs measured using items from the DHS</td>
<td>Hopelessness measured using items from the DHS and past suicide behaviour</td>
<td>Suicidogenic beliefs interacted with hopelessness</td>
<td>Results not plotted</td>
</tr>
</tbody>
</table>


<sup>a</sup> The resilience and risk factor for this study can be regarded as interchangeable, as both are internal psychological constructs.<br><sup>b</sup> At least one of the risk factors for this study can be regarded also to be a resilience factor, as it is an internal psychological constructs.
2.5. Discussion

The first goal of the current review was to investigate whether there are psychological constructs which can buffer the association between risk and suicidality. The second goal was to identify factors which may have this buffering impact, and therefore be considered as conferring resilience. Specifically, the review aimed to summarise and evaluate research from studies which had investigated potential suicide resilience factors according to the buffering hypothesis (outlined in the introduction). This suggests that to be viewed as conferring resilience, a variable needs to demonstrate three main characteristics, (a) it needs to comprise a separate dimension to risk and moderate the association between risk and outcome; (b) like risk, the resilience variable needs to be viewed as existing on a bipolar continuum, with its inverse amplifying the association between risk and outcome; and (c) the variable must be a psychological construct. Consistent with this, studies which had investigated an interaction between two factors, where at least one was an internal construct and the outcome was a measure of suicidality, were reviewed.

2.5.1. Summary of findings.

The review found overwhelming evidence for the existence of psychological factors which can moderate the impact of risk on suicidality, providing strong support for the buffering hypothesis of resilience to suicidality. The next issue then, is assessing which constructs can be viewed as conferring resilience. The findings from the review suggested that several factors act as moderators, with the most consistent evidence supporting a buffering or attenuating role for positive attributional style and higher levels of agency and an amplifying impact for higher levels of perfectionism and hopelessness. Several other variables had a slightly weaker evidence base, but overall, may also moderate the impact of risk on suicidality. These include problem solving ability, self-esteem, problem-solving confidence, general social support, family support, significant other support, attachment
and suicide-related beliefs. Less support was found for a role of life evaluations, and reasons for living and dispositional optimism did not appear to be moderators. Only one study has investigated religious beliefs, but reports positive results.

2.5.2. Implications for concepts of suicide resilience.

These results have three main implications for concepts of suicide resilience. First, it is notable that a wide range of psychological constructs appear to moderate the impact of risk. Of the factors which were supported by the strongest evidence, namely attributional style, agency, perfectionism and hopelessness, there is no clear single relevant construct or ability. This may suggest that resilience is a composite of several psychological constructs and that any concept of resilience should account for a wide range of abilities and beliefs. Alternatively, it may be that resilience is multifaceted, and that particular psychological constructs may confer resilience to specific risk factors. This possibility is supported by evidence from the review that some factors were more effective buffers against particular risk factors than others. For example, general social support appeared to consistently buffer abuse (Banyard & Cross, 2008; Kaslow et al., 1998), family social support appeared to buffer sexual abuse (Banyard & Cross, 2008; Luster & Small, 1997) and problem-solving ability appeared to consistently buffer long-term life stressors (Clum & Febbraro, 1994; Yang & Clum, 1994). However, each of these factors was less effective when the risk factor was changed.

Second, the current results suggest that factors which are negatively associated with suicidality will not necessarily have a buffering impact on risk. For example, optimism has been found to be negatively correlated with suicidal ideation (Hirsch et al., 2007b), but it did not appear to be a resilience factor (Blankstein et al., 2007; Hirsch & Conner, 2006; Hirsch et al., 2007b). This was a particularly interesting result, as conceptually it might have been assumed that it was the opposite of hopelessness, which was a strong amplifier of suicidality (Mendonca & Holden, 1998; Uncapher et al., 1998; Young et al., 1994).
Furthermore, factors which have no linear association with suicidality may moderate the impact of risk. For example, despite having no linear association with suicidal ideation, the Family Responsibilities subscale of the Reasons for Living Inventory, generally thought to be protective (e.g., Cole, 1989b) was found to amplify the impact of hopelessness amongst a clinical sample (Britton et al., 2008). These findings reinforce the view that suicide resilience must be understood and investigated as a moderating variable, and cannot be informed by investigations of linear associations.

Third, from the review it is apparent that many of the current concepts of suicide resilience are not theoretically driven, or founded on a theoretical model of suicidality. This is understandable, as models of suicidality tend to focus on the maladaptive processes which lead to suicidal thoughts and behaviours, rather than the factors which buffer these effects (e.g., Schotte & Clum, 1987; Williams, 1997) and so may not be conducive to resilience research. However, a number of theories either describe interactions between factors as a core aspect of the proposed aetiology of suicidality, or refer to these implicitly.

For example, the Cry of Pain model of suicide (Williams, 1997) suggests that stressful life events can lead to perceptions of defeat. However, it is when defeating events are then also perceived as entrapping, and this situation is projected in to the future, that likelihood of suicidality increases. The model suggests that this process is exacerbated by cognitive biases such as overgeneral autobiographical memory and problem solving difficulties. This implies that such biases should interact with risk, which was supported by the current review (e.g., Priester & Clum, 1993b; Rasmussen et al., 2008). Interaction effects are more explicitly predicted in the interpersonal-psychological theory of suicidality (Joiner, 2005). This suggests that high feelings of burdensomeness interact with feelings of low belongingness to drive suicidality, which has received support from several studies (e.g., Joiner et al., 2009; Van Orden et al., 2008). The recently proposed Schematic Appraisals Model of Suicide (SAMS; Johnson et al., 2008a) also proposes the existence of a range of interacting factors in the development of suicidality. In particular, the SAMS
emphasises the importance of the individual’s appraisal system, and suggests that this system interacts with cognitive biases and a suicide schema to lead to suicidal thinking. This has led to the proposal that positive self-appraisals may confer resilience to suicidality, which has been supported by findings from two studies which have suggested that positive self-appraisals buffer the impact of risk factors on the development of suicidality (Johnson et al., 2010; Johnson et al., in press). Potentially, positive self-appraisals may be an interesting avenue for future resilience research.

Using theory has two main benefits. First, it may allow for the efficient and effective prediction of which psychological variables may confer resilience. Consistent with this, recent research has supported predictions concerning the nature of resilience which have been generated by the SAMS (Johnson et al., 2010; Johnson et al., in press). However, in comparison to this focused, theoretically-driven approach to resilience, studies have often taken an overly inclusive approach and explored a wide range of potentially moderating factors (e.g., Blankstein et al., 2007). To date, with the limited available evidence to inform predictions and theory, this has been an understandable strategy. However, to continue with this approach could be inefficient. At a practical level, it may result in participant fatigue, with participants completing large batteries of unnecessary questionnaires. At a data analytical level, it may inflate Type I error by increasing the likelihood of spurious results. A small number of studies have controlled for this by using adjustments to the criteria for significance such as the Bonferroni correction (e.g., Nugent & Williams, 2001). However, as moderations are difficult to find, this could then result in an overly conservative criteria and increase the presence of Type II error (Perneger, 1998). Instead, a preferable alternative is to use a theory-driven approach, and refine this through subsequent research and analysis. A second benefit of using theory-driven resilience factors is that it will link research findings to other psychological mechanisms implicated in suicidality, and will generate suggestions for treatments and interventions (e.g., Tarrier & Gooding, 2007a).
2.5.3. Implications for research into resilience to suicidality.

2.5.3.1. Developing a systematic approach.

2.5.3.1.1. Systematising the investigation of the resilience factor. Many of the resilience factors reviewed have been investigated by several studies which have used the same, or similar psychometric measures (e.g., hopelessness). This has enabled comparison between the populations and risk variables examined by each study, and has enabled conclusions to be drawn concerning (a) which populations the resilience factor may be relevant for, and (b) which risk variables the resilience factor may buffer against. This information could be of key importance to both risk prediction and intervention development. However, several of the variables reviewed have had a less systematic approach taken, with a wider variation in either the specific resilience factor concept or the questionnaire used to measure this, which has limited cross-study comparison. For example, it appears that equivocal results from studies using social support may be explained by the ability of social support to more effectively buffer abuse (Banyard & Cross, 2008; Demi et al., 1998; Lieberman et al., 2005). However, until a more systematic approach regarding the concept of the particular moderator variable is taken, this possibility remains speculative. Thus, results from the current review suggest that future research could expand on the current evidence base by focusing on the manner in which particular protective factors are conceptualised and measured.

2.5.3.1.2. Systematising the risk variable. The review suggests that particular resilience factors may buffer some risk variables but not others. Thus, it is important not only to specify the resilience variable, but to view the buffering interaction as a relationship between three variables. This highlights the importance of prioritising those risk factors which are the strongest predictors of suicidality, the most prevalent or the most unchangeable. Such risk factors may present the most severe challenges to individuals, and may be the most useful to target with a resilience intervention. Some of the studies
included in the review have targeted these variables, but a number have examined resilience factors in relation to other internal constructs which are potentially malleable such as emotion regulation ability (Tamas et al., 2007), or to those not thought to be major causes of suicidality, such as exam failure (e.g., Priester & Clum, 1992).

2.5.3.1.3. Expanding the range of populations investigated. The moderation analyses used to detect buffering factors often require a high level of statistical power and therefore a larger sample than may be necessary for alternative statistical analyses (McClelland & Judd, 1993). From the current review, it appears that the result of this is that resilience factors have often been studied amongst student and community samples as these are most easily accessible. This represents an important starting point, and has provided firm evidence in favour of some resilience factors, such as perfectionism (Blankstein et al., 2007; Hewitt et al., 1994) and attributional style (Hirsch & Conner, 2006; Joiner & Rudd, 1995). However, there is a need to investigate resilience factors amongst high risk populations, for whom they may be particularly important. In this respect, a strong literature supports a role for hopelessness, which has been widely studied amongst both psychiatric and forensic populations (Holden et al., 1989; Uncapher et al., 1998). Future research could focus on expanding the current evidence base for other well-supported resilience factors such as positive attributional style and sense of agency, to examine which appear to be the most relevant, and which may therefore by most appropriate to incorporate into suicide interventions.

2.5.3.1.4. Expanding the range of suicidal outcomes investigated. From the current review, it is apparent that a large proportion of the studies conducted into suicide resilience have investigated suicidal ideation as the outcome. This is an important area to investigate, as suicidal ideation is deeply distressing and associated with a range of negative mental health symptoms and diagnoses (Beck et al., 1993; Garlow et al., 2008). However, future research could expand upon this by investigating resilience factors in relation to a broader range of suicide outcomes, such as plans, attempts and completed suicide over time.
Indeed, this could be particularly important for informing suicide interventions as there may be differences between those factors which relate to suicidal ideation and those which relate to suicide attempt or completed suicide (Kessler, Berglund, Borges, Nock, & Wang, 2005).

2.5.3.2. Methodological suggestions.

Although some resilience factors appeared strongly supported by the evidence, others provided less clear results. Whilst this might suggest the presence of a real effect, it may also be the result of methodological limitations. Therefore, improving methodology may be important for improving the accuracy of findings and improving cross-study convergence in future research.

One way in which to improve the accuracy of findings is to use validated, multi-item inventories to measure both independent and dependent variables. In contrast, a number of the studies used single items to measure either the risk variable, moderator variable, suicide outcome or each of these (Demi et al., 1998; Liu et al., 2006; Luster & Small, 1997; Young et al., 1994). This practice is often employed by large community or cohort studies as a means of gaining information concerning a wide range of constructs as efficiently as possible, but it could have drawbacks when examining interactions. First, it may impair the validity of the construct measured, as a single question may not be sufficient to capture the complexity of a psychological construct. Second, when used for suicide outcomes, single items may measure only one of several forms of suicidal thinking or behaviour. This lack of validity could lead to inaccurate results, and thus increase Type I and Type II error. Second, even when single items are responded to using likert scales, it is likely that the variance between individuals will be restricted. This inter-participant variance is key for detecting moderation effects (McClelland & Judd, 1993), which means that when variance is restricted the likelihood of Type-II error increases.
The statistical issue of skew may also explain some of the difficulty which has been encountered when investigating interactions with suicide variables. Although a small number of the studies reviewed identified and dealt with this problem (Beck et al., 1993; Uncapher et al., 1998), the majority made no reference to the issue. This could be important, as skewed variables violate the assumptions of parametric statistical procedures, which test parameters from the data against the normal distribution, and can result in increased Type I and Type II error. This issue is particularly pertinent in research into suicidality, as suicidal ideation and behaviours have low base-rates. Prevalence of suicidality varies widely between populations, but in non-clinical samples up to half of participants may score zero on measures of lifetime prevalence, potentially leading to severe skewness (Johnson et al., 2010).

There are two main ways of dealing with skew. The first of these is to apply a distributional transformation to the data, such as a square root or logarithm. However, when variables are very skewed, transformations may not be effective. Thus, a second option is to dichotomise variables (for example, comparing those with suicidal ideation to those without) and use the corresponding appropriate analysis, such as a logistic regression. Occasionally this is necessary, such as when examining suicide attempters against non-attempters. However, it has been suggested that the practice of dichotomising can increase both Type I and Type II error due to the loss of information incurred when removing the presence of actual inter-item variance (MacCallum, Zhang, Preacher, & Rucker, 2002). Thus, transformations may be considered a more preferable option.

2.5.3.2. Ascertaining resilience.

In addition to increasing the likelihood of finding significant interactions, future research would also benefit from incorporating two further methods by which to ascertain whether a variable confers resilience.

First, it would be beneficial to ascertain the pattern of the interaction between the risk and resilience variables. This is because a significant interaction does not necessarily
suggest the presence of a buffering effect, but could instead be indicative of another form of interaction, such as a cross-over effect. Ascertaining the pattern of the interaction can be done by plotting the association between risk and outcome for individuals scoring one standard deviation below, above and at the mean on the moderator variable (Aiken & West, 1991). Resilience variables should be those which protect the individual from suicidality at high levels of risk, without exposing them to increased suicidality at lower levels of risk (see Figure 1). To date, a number of studies have incorporated this into their report, but it has not been considered necessary to demonstrate a buffering effect. Furthermore occasionally where interactions have been plotted, the interaction has not demonstrated a clear buffering effect (Bonner & Rich, 1990; Tamas et al., 2007; Wilke, 2004).

Second, future research could focus on longitudinal research, where the moderator measured at baseline can predict the association between subsequently experienced risk and suicidality. This is the only method by which to gain evidence of a causal impact of the proposed resilience variable, but to date, only a minimum number of studies have taken this approach (e.g., Young et al., 1994).

2.5.4. Clinical implications.

2.5.4.1. Implications for prediction of risk.

Several clinical implications are apparent from the findings of the review. First, these findings suggest that buffering effects should be a key consideration when assessing clients for suicide risk. Prediction of individuals at risk from suicide is notoriously difficult, and tends to lead to a high rate of false positives (Hawton & van Heeringen, 2009). It has been suggested that this is due to low overall rates of suicide and low predictive variance of any single risk factor (Hawton & van Heeringen, 2009). The current review suggests that this difficulty in prediction of suicide may be explained, at least in part, by the presence of moderating variables. Whilst a large number of factors are known
to confer risk for suicide, it appears from these findings that there are psychological constructs which may attenuate or amplify the impact of these risk factors. In particular, attributional style, perfectionistic tendencies, sense of agency and perceptions of hopelessness appear to alter the impact of other relevant factors. In order to improve specificity and sensitivity, clinical risk assessment should assess and account for the presence of these intervening variables.

2.5.4.2. Implications for interventions.

The findings of the review also have particular relevance for treatments and interventions for suicidality. This is important because although existing therapies and treatments can be effective for treating suicidality, this effect is not consistent (Tarrier et al., 2006; Tarrier, Taylor, & Gooding, 2008). First, the review suggests that the development of psychological resilience could be of key importance. Often, clinicians focus on the stressors and vulnerabilities that clients are struggling with, which may increase suicide risk. However, the current findings suggest that in addition to reducing risk factors, a key focus of suicide prevention therapy should be on developing the psychological abilities and beliefs known to buffer the association between these stressors and suicidality. The present studies suggest that these can buffer the impact of a range of stressors which are both external, such as chronic life stressors and internal, such as feelings of hopelessness. These buffers appear to be extremely effective and able to attenuate the impact of some of the most severe stressors such as physical and sexual abuse. Furthermore, they appear to be relevant for high-risk populations, such as those suffering from mental health disorders or those who are incarcerated. Not only are people considered at high risk able to develop these resilience factors, but they appear to have the same buffering impact amongst these samples as would be predicted from studies amongst community samples.
In particular, findings from the review indicated a strong moderating role for agency, which can be understood as an individual’s sense of control and their view of their ability to initiate actions (Gallagher, 2000; Synofzik et al., 2008). To some extent, sense of agency may be related to self-esteem, which has previously been acknowledged and incorporated into suicide interventions through methods such as positive data logging, where individuals record instances when they demonstrate positive qualities (Tarrier & Gooding, 2007a). The findings from the current review support this practice, but suggest that the emphasis of such techniques should be on developing the client’s sense of control over their circumstances, and developing their self-concept as a capable and able agent.

2.5.5. Conclusion.

The current review aimed to investigate the presence of suicidality resilience factors as outlined by the buffering hypothesis. This hypothesis suggests that to be viewed as conferring resilience, a variable needs to represent a psychological construct which can moderate the association between risk and suicidality. Findings suggested that a wide range of factors could moderate the impact of risk. In particular, strong evidence was found to support a buffering impact of positive attributional style and high levels of agency and an amplifying impact for higher levels of perfectionism and hopelessness. Furthermore, results suggested that some factors may confer resilience to specific risk factors but not others. Future research may extend these findings by focusing on theoretically driven concepts of resilience, and refining methodological practice.
CHAPTER 3

3. Resilience as Positive Coping Appraisals: Testing the Schematic Appraisals Model of Suicide (SAMS)

3.1. Abstract

The Schematic Appraisals Model of Suicide (SAMS) suggests that positive self-appraisals may be important for buffering suicidal thoughts and behaviours, potentially providing a key source of resilience. The current study aimed to explore whether positive self-appraisals buffered individuals from suicidality in the face of stressful life events. Seventy-eight participants who reported experiencing some degree of suicidality were recruited from a student population. They completed a battery of questionnaires including measures of suicidality, stressful life events and positive self appraisals. It was found that positive self-appraisals moderated the association between stressful life events and suicidality. For those reporting moderate or high levels of positive self-appraisals, raised incidence of stressful life events did not lead to increases in suicidality. These results support the SAMS framework, and suggest that positive self-appraisals may confer resilience to suicide. Positive self-appraisals may be a promising avenue for further resilience research, and an important area to target for suicide interventions.

3.2. Introduction

Suicide is an increasing public health concern. In the past 45 years, rates have shown a 60% increment, and it is now thought to account for around one million deaths worldwide per year (World Health Organization). In particular, there appears to be a need to understand suicide amongst young adults, for whom it may represent the single leading cause of death\(^1\) (Griffiths, Rooney, & Brock, 2005). Completed suicide can be seen as part of a spectrum of suicidality, which comprises of a range of thoughts and behaviours, including suicidal ideation, plans, gestures and attempts.\(^2\) It is this spectrum of thoughts and behaviours that psychological models of suicide aim to explain (Johnson et al., 2008a; Williams, 1997) and which clinical interventions usually target (Tarrier & Gooding, 2007b). A recent framework, the Schematic Appraisals Model of Suicide (SAMS; Johnson et al., 2008a), suggests that positive self-appraisals may be important for buffering individuals against suicidality, and may thus represent a key source of resilience. This study aimed to examine whether positive self-appraisals could buffer the effect that negative life events have on suicidality in a group of young adults.

There is a wide literature showing that the way in which individuals appraise situations and events can affect levels of stress and depression (Birchwood, Iqbal, & Upthegrove, 2005; Gross & John, 2003; Lazarus & Folkman, 1984; Rooke & Birchwood, 1998). Despite this, few studies have directly investigated the way in which negative appraisals affect suicidality (Chang, 2002; Esposito & Clum, 2002; Rudd, Rajab, & Dahm, 1994) and even fewer have examined the role of positive appraisals (Clum & Febbraro, 1994; Esposito & Clum, 2002). One possible reason for this is that socio-cognitive models of suicide, understandably, tend to focus on maladaptive psychological processes (Schotte

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\(^1\) It must be noted that the estimation of suicide rates is difficult due to the interpretation of deaths by coroners and the potential classification of unexplained accidents as suicides. Furthermore, the quantification of the impact of suicide amongst young people partly reflects low mortality rates in young people.

\(^2\) Under some circumstances these may be dissociated (Kessler et al., 2005), but research suggests that they tend to covary and cluster together (Hawton et al., 1998; Osman et al., 2001), with suicidal thoughts putting individuals at risk for later suicide attempt and completed suicide (Funahashi et al., 2000; Mann et al., 1999). This supports the view that suicidal thoughts and behaviours form a single factor or continuum (Johnson et al., 2008a).
& Clum, 1987; Williams, 1997). However, a recently proposed theoretical framework, the Schematic Appraisals Model of Suicide (SAMS; Johnson et al., 2008a) has taken a somewhat divergent approach. Instead of describing the pathway into suicidality, it focuses on the individual’s appraisal system and processes thought to affect this. This appraisals-based structure has the benefit of allowing for the identification of potentially protective mechanisms which may confer resilience.

The SAMS suggests that two types of appraisal are relevant to suicidality (please see Figure 5). First, it suggests that situation appraisals are important and that when stressful events are appraised as defeating and entrapping, for example, the likelihood of suicidality increases. In addition to the situation appraisal system, the model suggests a key role for a self-appraisal construct, which is thought to impact on all other pertinent cognitive processes. Whilst this suggests that negative self-appraisals may be particularly pernicious, it also proposes that positive self-appraisals may be especially protective, providing a source of resilience. Of particular interest, the model suggests that positive self-appraisals may directly impact the situation appraisals system. However, the SAMS does not explain the mechanisms by which positive self-appraisals may have their impact. As stressful situations are known to influence appraisals (for a review, please see Lazarus & Folkman, 1984), one possibility is that self-appraisals could reduce the likelihood that stressful events will be negatively appraised, leading to suicidality (see Figure 5). Thus, the present research aimed to both test the SAMS proposal that positive self-appraisals may have a key protective effect, and explore a potential buffering mechanism. Specifically, it sought to examine whether positive self-appraisals would confer resilience to stressful life events, reducing the likelihood that stress would lead to suicidality.

Just as theoretical research into suicidality has failed to explore resilience, epidemiological studies have tended to focus on risk factors rather than protective factors. The study of risk has successfully highlighted a range of factors which are associated with suicidality such as unemployment (van Heeringen, 1994), family disruption, history of
abuse (Fergusson, Woodward, & Horwood, 2000; Fergusson et al., 2003) and stressful life events (Beautrais, Joyce, & Mulder, 1997; Cavanagh, Owens, & Johnstone, 1999; Heikkinen, Aro, & Lönnqvist, 1994). However, this risk based approach is limited to identifying large groups of people, the vast majority of whom will not attempt suicide. Hence, it is unable to explain why some individuals in the at-risk group will die by suicide, when others appear protected (Bolton et al., 2007). Resilience, or buffering factors, may account for these variations, because they moderate the impact that risk factors have on suicidal thoughts and behaviours. The presence of buffering factors would be expected to attenuate the effect of stressful life events for those with high resilience compared to those with low resilience.

![Diagram](image)

**Figure 5.** The Schematic Appraisals Model of Suicide (SAMS) suggests that negative situation appraisals lead to suicidality. Positive self appraisals are thought to impact these situation appraisals, potentially by reducing the likelihood that stressful events will be interpreted negatively.

Studies examining resilience to suicide have often studied direct linear relations between variables (Perkins & Jones, 2004; Ristkari et al., 2005). This approach has been successful in identifying factors inversely associated with suicidality, but it has not clarified whether these factors can act as a buffer. To ascertain that a factor is a buffer, it is necessary to demonstrate that it moderates the likelihood that the presence of a stressor or risk factor predicts suicidality. For example, for someone with low resilience, it would be
expected that there was a strong association between life stress and suicidality, but for someone with high resilience, this relationship would be expected to be weaker. The majority of resilience to suicide research has only demonstrated negative associations between risk factors and suicide. Although this has often been interpreted as evidence of a protective or buffering effect, it may simply be that such factors reflect a reduced presence of risk.

The main aim of this study was to examine whether positive self-appraisals buffered the impact of negative life events in the development of suicidality in a student sample with (a) some degree of suicidal ideation, and (b) a range of suicidal ideation. This was explored by testing whether scores on a measure of positive self-appraisals moderated the association between recently experienced stressful life events, and suicidality.

A corollary aim was to examine whether positive self-appraisals were more protective than other psychological processes and factors thought to be adaptive. This was important, as although the SAMS suggests a key role for positive self-appraisals, it may be that these simply reflect the presence of adaptive coping and beliefs, and are not in themselves protective. Thus, in addition to positive self-appraisals, the study also explored the possibility that coping strategies and beliefs may moderate the impact of stressful life events. In particular, broadminded coping style (Fredrickson & Joiner, 2002), reappraising emotion regulation style (Gross & John, 2003) and survival and coping related reasons for living (Linehan et al., 1983) were explored. Broadminded coping style is known to boost positive affect over time (Fredrickson & Joiner, 2002) and could be expected to help individuals avoid the negative appraisals associated with suicide. Similarly, a reappraising emotion regulation style has been associated with reduced negative affect in the face of stressful experiences (Egloff, Schmukle, Burns, & Schwerdtfeger, 2006) and may also positively impact the appraisals system, protecting against suicidal cognitions. In addition to coping strategies, the study explored survival and coping related reasons for living (Linehan et al., 1983). These beliefs have often been found to inversely predict suicidality.
Connell & Meyer, 1991; Strosahl, Chiles, & Linehan, 1992), and it is possible that a high level of these beliefs may reduce the development of suicide related appraisals.

These aims were investigated by administering questionnaires of these positive psychological factors together with measures of suicidality and life events to a group of students who reported some lifetime prevalence of suicidality. As the study aimed to investigate suicidality amongst young adults, students represented an age appropriate group. However, on the basis of previous research it was not expected that a majority of the target group would report having experienced suicidal thoughts (Fergusson et al., 2000). Therefore, it was important to recruit a sample experiencing some degree of suicidal thoughts and behaviours. Accordingly, the study was advertised as research into suicide, and participants were later screened to include only those reporting some previous suicidal ideation or behaviour.

To summarise, the study had two main predictions. First, it was predicted that positive self-appraisals would moderate the association between stressful life events and suicidality. Second, it was predicted that broadminded coping, reappraising emotion regulation style and survival and coping related reasons for living would also show a moderating impact on the association between life events and suicidality.

3.3. Method

3.3.1. Participants and procedure.

An initial sample of 150 of students from a university in the north-west of England (16 male, $Mage = 19.37, SD = 3.74$) responded to a poster advertising research into suicide. They participated in exchange for course credits. As the main research question aimed to explore suicidality amongst those with some past or present level of suicidality, participants responding ‘no’ or ‘never’ to each item on the Suicidal Behaviours Questionnaire (SBQ-R; Osman et al., 2001) were screened from the sample. On this basis, 78 participants met inclusion criteria (13 male, $Mage = 19.62, SD = 4.48$). Their scores
ranged from 4, indicating minimal prevalence of suicidal ideation, to 16, which was near the maximum possible score of 18. This range indicated a wide variation of scores according to the measure.

Participants completed measures of suicidal behaviour, potential sources of resilience and life events at one time point. To ensure stressful life events were reliably recorded, two separate measures were used. These were the Life Events Scale for Students (LESS; Clements & Turpin, 1996) and the Recent Life Change Questionnaire (RLCQ; Miller & Rahe, 1997). All participants received information sheets (Appendix I) and signed consent forms prior to participating in the study.

3.3.2. Measures.

3.3.2.1. Suicidal Behaviours Questionnaire – Revised (SBQ-R; Osman et al., 2001).

This 4 item questionnaire (Appendix II) aims to measure lifetime prevalence of suicidal thoughts and behaviours, recent suicidality and future likelihood of suicide attempt. Examples of questions are “Have you ever thought about or attempted to kill yourself?” and “How often have you thought about killing yourself in the past year?” Total scores provide an indication of where an individual lies on the continuum of suicidality, with possible scores ranging from 3 to 18. The questionnaire has been found to be an effective research tool amongst clinical and non-clinical groups, with an alpha reliability ranging from .76 to .88 (Osman et al., 2001).

3.3.2.2. Life Events Scale for Students (LESS; Clements & Turpin, 1996).

This 36 item scale (Appendix III) lists stressful events relevant to students. Events on the scale include “Getting kicked out of college” and “Major arguments with parents”. Each event listed has been given a weighting based on how stressful it is perceived to be (Clements & Turpin, 1996) and participants are required to mark whether they have experienced these events in the past 12 months. Scores are calculated by summing the total
weightings of items checked. Test-retest reliability of individual items was .61 over 6 months (Clements & Turpin, 1996).

3.3.2.3. Recent Life Change Questionnaire (RLCQ; Miller & Rahe, 1997).

The updated version of the Recent Life Change Questionnaire (Appendix IV) lists 74 stressful life events, each of which has been given a weighting based on previous research. Events listed reflect five domains of health, work, home and family, personal and social, and financial. Items include “Death of a parent” and “Change of political beliefs”. Participants are required to mark whether they have experienced these events in the preceding 12 months, and the weightings of items checked are summed to give an overall score of life stress. Test-retest reliability of the full scale has been found to be .85 over one year (Sobell et al., 1988).

3.3.2.4. Reappraisal subscale of the Emotion Regulation Questionnaire (ERQ; Gross & John, 2003).

This six item subscale (Appendix V) measures the extent to which participants use cognitive reappraisal as an emotion regulation strategy. Example items are “When I want to feel more positive emotion, I change the way I’m thinking about the situation” and “When I’m faced with a stressful situation, I make myself think about it in a way that helps me stay calm”. Participants indicate the extent to which they agree with each item by assigning it a value ranging from one (“strongly disagree”) to seven (“strongly agree”). Gross and John (2003) found the alpha coefficient for the reappraisal subscale was .79.

3.3.2.5. Cognitive Analysis Subscale of the Coping Responses Inventory (CRI; Moos, 1988).

The CRI (Appendix VI) asks participants to think of a problem they have experienced in the previous month, and to report the extent to which they used certain coping strategies in response to this. The Cognitive Analysis Subscale of this inventory has previously been used as a measure of broadminded coping (Fredrickson & Joiner, 2002).
Items include “Try to step back from the situation and be more objective” and “Try to find some personal meaning in the situation”. Participants respond by marking A (“No”), B (“Yes, once or twice”), C (“Yes, sometimes”), D (“Yes, fairly often”) or E (“Not applicable”). Coefficient alphas for the scale’s internal reliability were found to be .79 (Fredrickson & Joiner, 2002).

3.3.2.6. Survival and Coping Beliefs subscale of the Reasons for Living Inventory (RFL; Linehan et al., 1983).

The 48-item RFL aims to measure reasons individuals may hold for staying alive. The Survival and Coping Beliefs subscale of the inventory (Appendix VII) has emerged as the most reliable inverse predictor of suicidality (Connell & Meyer, 1991; Linehan et al., 1983; Strosahl et al., 1992). It consists of 24 items including, “I have a love of life” and “I am too stable to kill myself.” Participants respond by indicating how important each item is to them as a reason to stay alive, from one (“Not at all important”) to six (“extremely important). Its coefficient alpha is .92 (Osman et al., 1993).

3.3.2.7. Resilience Appraisals Scale (RAS).

As suggested by the SAMS, three types of positive self-appraisals may be particularly important in buffering individuals from suicidal thoughts in the face of stressful life events (Johnson et al., 2008a). These are appraisals of the individual’s ability to cope with emotions, solve problems, and gain social support. As the authors were aware of no known questionnaire which measures these three types of appraisals, 12 items were developed reflecting these areas. Four of these assessed emotion coping appraisals, four assessed situation coping appraisals, and four assessed social support appraisals. Items are displayed in Table 7. Responses were rated on a five point scale from ‘strongly disagree’ to ‘strongly agree’.

To test the proposed three factor structure of the scale, a confirmatory factor analysis was conducted with data from a pilot sample. Participants were 118 students from Manchester University (15 male, $M_{age} = 21.60, SD = 1.87$) not included in the main study,
who completed the 12-item RAS. The analysis was conducted using the Analysis of Moment Structures (AMOS) version 6 statistical software package. The chi-squared test was non-significant, $\chi^2(51, n=118) = 55.12, p = .322$, indicating good fit. At 0.43, the SRMR was <.09, and the CFI of .10 was >.95. This met recommended combinational rules designed to minimise Type 1 and Type II error (Hu & Bentler, 1999), and supported a three-factor structure to the data. Alpha reliabilities were .88 for the overall scale, .93 for the social support subscale, .92 for the situation coping subscale, and .92 for the emotion coping subscale.

Table 7: Items from the Resilience Appraisals Scale (RAS)

<table>
<thead>
<tr>
<th>Item</th>
<th>Subscale</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. If I were to have problems, I have people I could turn to</td>
<td>Social Support</td>
</tr>
<tr>
<td>2. My family or friends are very supportive of me</td>
<td>Social Support</td>
</tr>
<tr>
<td>3. In difficult situations, I can manage my emotions</td>
<td>Emotion Coping</td>
</tr>
<tr>
<td>4. I can put up with my negative emotions</td>
<td>Emotion Coping</td>
</tr>
<tr>
<td>5. When faced with a problem I can usually find a solution</td>
<td>Situation Coping</td>
</tr>
<tr>
<td>6. If I were in trouble, I know of others who would be able to help me</td>
<td>Social Support</td>
</tr>
<tr>
<td>7. I can generally solve problems that occur</td>
<td>Situation Coping</td>
</tr>
<tr>
<td>8. I can control my emotions</td>
<td>Emotion Coping</td>
</tr>
<tr>
<td>9. I can usually find a way of overcoming problems</td>
<td>Situation Coping</td>
</tr>
<tr>
<td>10. I could find family of friends who listen to me if I needed them to</td>
<td>Social Support</td>
</tr>
<tr>
<td>11. If faced with a set-back, I could probably find a way round the problem</td>
<td>Situation Coping</td>
</tr>
<tr>
<td>12. I can handle my emotions</td>
<td>Emotion Coping</td>
</tr>
</tbody>
</table>

### 3.3.3. Analysis Strategy.

Initially, correlation analyses were carried out to explore associations between key variables. Hierarchical regression analyses were then conducted to examine whether each of the potential resilience factors moderated the association between life events and suicidality. In the first step of these, life events scores were entered. In the second step, scores on the potential resilience measure (positive self-appraisals, broadminded coping, emotion regulation style or reasons for living) were entered. In the third step, the interaction term between the life events score and the possible resilience factor was entered. At each step, standardized variables were used (Frazier, Tix, & Barron, 2004). If
the final step added significant predictive variance to the regression model, it indicated a moderating effecting of the resilience factor on the association between life stress and suicidality. Note that correlations are not interpretable in the presence of an interaction. As there were two life events scales and four potential resilience variables in the study, eight regression analyses were conducted in total.

3.4. Results

3.4.1. Descriptive statistics and correlations.

Zero-order correlations, means and standard deviations for the variables are presented in Table 8. Life events were not found to correlate with suicidality according to either the Life Events Scale for Students or the Recent Life Change Questionnaire. Of the variables thought to potentially moderate the relationship between life events and suicidality, both positive self-appraisals according to the RAS and scores on the Reasons for Living Inventory were found to correlate with suicidality.

3.4.2. Regression analyses.

3.4.2.1. Positive self-appraisals, suicidality and life events.

As can be seen in Table 9, the only key variable which moderated the association between life events and suicidality was positive self-appraisals measured according to the Resilience Appraisals Scale (RAS). When life events were measured according to the Life Events Scale for Students (LESS), positive self-appraisals significantly predicted suicidality in addition to life events scores, $\beta =-.443$. There was also an interaction between positive self-appraisals and life events, $\beta =-.304$, revealing a moderating impact of self-appraisals on life events. From Figure 6 it can be seen that for those with high or moderate scores on the RAS, raised levels of stressful life events did not lead to increases in suicidality.
Table 8: Means, Standard deviations* and correlations for variables

<table>
<thead>
<tr>
<th></th>
<th>Untransformed</th>
<th>Transformed</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Mean</td>
<td>Mean</td>
</tr>
<tr>
<td>1. Suicidality</td>
<td>5.95 (2.41)</td>
<td>.84 (.039)</td>
</tr>
<tr>
<td>(SBQr)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. Student Life Events</td>
<td>270.01 (118.95)</td>
<td>16.04 (3.58)</td>
</tr>
<tr>
<td>(LESS)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. Stressful Life Events</td>
<td>445.71 (161.41)</td>
<td>20.75 (3.93)</td>
</tr>
<tr>
<td>(RLCQ)</td>
<td></td>
<td></td>
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<td>4. Positive Self-Appraisals (RAS)</td>
<td>44.93 (7.56)</td>
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<td>7. Reasons for Living (RFL)</td>
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Note. **p<0.01. SBQr = Suicidal Behaviours Questionnaire, LESS = Life Events Scale for Students, RLCQ = Recent Life Change Questionnaire, RAS = Resilience Appraisals Scale, ERQ = Reappraisal subscale of the Emotion Regulation Questionnaire, CRI = Cognitive Analysis subscale of the Coping Responses Inventory, RFL = Reasons for Living Inventory.

*Standard deviations appear in parentheses below the means.

The variables SBQr, LESS, RLCQ, RAS, CRI and RFL were transformed to bring skew into acceptable levels. Where transformations have been conducted, correlations have been reported for transformed variables only.
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Note. *p<0.05, **p<0.01, ***p<0.001. LESS = Life Events Scale for Students, RLCQ = Recent Life Change Questionnaire, RAS = Resilience Appraisals Scale, ERQ = Reappraisal subscale of the Emotion Regulation Questionnaire, CRI = Cognitive Analysis Subscale of the Coping Responses Inventory, RFL = Reasons for Living Inventory.
The same pattern was found when life events were measured according to the Recent Life Change Questionnaire (RLCQ). Again, positive self-appraisals predicted suicidality in addition to stressful life events, $\beta = -.441$, and also in interaction with life events $\beta = -.273$. As displayed in Figure 7, positive self-appraisals moderated the impact of stressful life events upon suicidality. For those with high or moderate levels of positive self-appraisals according to the RAS, higher levels of stressful live events did not lead to increased suicidality.

**Figure 6.** Level of positive self-appraisals as measured by the RAS moderate the relationship between Life Events measured by the LESS and suicidality measured by the SBQr. Those scoring one standard deviation below the mean on the RAS show a stronger positive relationship between life events and suicidality than those scoring either at the mean, or above the mean on the RAS.

**Figure 7.** Level of positive self-appraisals as measured by the RAS moderate the relationship between Life Events measured by the RLCQ and suicidality measured by the SBQr. Those scoring one standard deviation below the mean on the RAS show a stronger positive relationship between life events and suicidality than those scoring either at the mean, or above the mean on the RAS.
3.4.2.2. Broadminded coping, reappraising emotion regulation style and survival and coping related reasons for living.

As can be seen from Table 9, neither Broadminded Coping nor Emotion Regulation Style explained variance in levels of suicidality in addition to, or in interaction with life events scores according to the LESS or the RLCQ. Reasons for Living did predict suicidality in addition to life events according to both the LESS, \( \beta = -0.373 \), and the RLCQ \( \beta = -0.377 \), but did not moderate life events measured by either scale.

3.5. Discussion

The main aim of the study was to explore whether positive self-appraisals buffered young adults against the development of suicidality in the face of stressful life events. A corollary aim was to examine whether positive self-appraisals were more protective than other adaptive psychological processes and factors. Specifically, these were broadminded coping, reappraising emotion regulation style and survival and coping related reasons for living. These aims were investigated by using moderation regression analyses, which examined whether these potentially protective factors interacted with stressful life events to predict suicidality. The key finding was that positive self-appraisals interacted with stressful life events, such that those with moderate or high levels of positive self-appraisals did not experience increased suicidality even at elevated levels of stress. The second finding was that broadminded coping, reappraising emotion regulation style and survival and coping related reasons for living did not moderate the impact of stressful life events.

These findings support the Schematic Appraisals Model of Suicide (SAMS; Johnson et al., 2008a), which suggests that positive self-appraisals may provide a source of resilience. Although previous research has indicated a role for the self-concept in suicide, exploring aspects such as self-esteem (Fergusson et al., 2003) and emotional wellbeing (Borowsky et al., 2001), this is the first study to explore the SAMS concept of
the self-appraisal. Furthermore, although alternative suicide frameworks may imply or make reference to self-related aspects (Williams, 1997), the SAMS gives the self-appraisal a particularly prominent role. By demonstrating a buffering impact of positive self-appraisals upon suicidality in the face of stressors, the current findings support this central role of self-appraisals.

The model also suggests that the self-appraisal may have a direct impact upon the situation appraisal, although the mechanisms which underlie this association are not described. The current findings suggest that positive self-appraisals reduce the likelihood that stressful events will lead to suicidality. As stressful events are closely associated with the forming of negative appraisals (Lazarus & Folkman, 1984), one possibility is that positive self-appraisals reduce the likelihood that stressful events will be negatively appraised (see Figure 5). Thus, these findings may also extend the SAMS model, providing an explanation of the mechanism which underlies the association between the self-appraisal and the situation appraisal. However, as no explicit measure of situation appraisals was included, this speculation is tentative and will need to be explored by further research.

In addition to supporting the SAMS model, these findings may offer an avenue for further research into resilience to suicidality. To date few studies have explored resilience to this problem and those which have, have often simply explored factors which are inversely correlated with suicide (Perkins & Jones, 2004; Ristkari et al., 2005). This does not determine that a factor is acting as a buffer, and it may be that it only represents an absence of risk. Our results suggest that positive self-appraisals are not only inversely related to suicidality, but that they also moderate the impact of stressful life events, a known risk factor, upon suicide. Specifically, for those scoring high on positive self-appraisals, stressful life events did not lead to increased levels of suicidal thoughts and behaviours. This indicates that positive self-appraisals can exist alongside risk and weaken its impact.
Conversely, broadminded coping, reappraising emotion regulation style and survival and coping related reasons for living did not show this same moderating effect. This suggests that these aspects do not buffer the impact of stressful life events on suicidality, and may not meet the criteria for a resilience factor. These findings may appear counterintuitive, as previous research has suggested that a reappraising emotion regulation style and broadminded coping have a positive effect on emotions and coping (Egloff et al., 2006; Fredrickson & Joiner, 2002), and that survival and coping related reasons for living are inversely associated with suicidality (Strosahl et al., 1992). However, no previous research has studied these coping strategies in relation to suicidality and it may be that, although they can boost affect, they do not have a significant impact on the appraisals system linked to suicide. Similarly, although survival and coping related reasons for living have been inversely associated with suicidality, it may be that they do not have a buffering impact, and tend to co-occur with low levels of suicidal thoughts. It is difficult to draw conclusions on the basis of these results in terms of their implications for these coping strategies and beliefs, but they do underscore the importance of the findings concerning positive self-appraisals. Firstly, they suggest that positive self-appraisals are not simply a reflection of coping strategies or positive beliefs, but may be an aspect of interest in themselves. Secondly, they serve to highlight the importance of the moderating impact of self-appraisals, and suggest that appraisals may be an important factor to study in relation to suicidality.

The findings regarding positive self-appraisals may also explain variations in the research into the association between life events and suicide. Whilst a number of studies have suggested that stressful life events precipitate suicide in several populations, the strength of this association varies widely between studies and samples (Beautrais, 2000; Beautrais et al., 1997; Cavanagh et al., 1999; Heikkinen et al., 1994). Indeed, amongst some populations it has been suggested that this association is weak or even non-existent (Bolton et al., 2007). The current findings suggest that positive self-appraisals moderate
this association, and that for those with a low level of these appraisals there is a strong association between life events and suicidality. However, for those with a moderate or high level of positive self-appraisals, this relationship appears to be considerably weakened or even reversed. These findings suggest that future research into the relationship between life events and suicidality should account for the impact of positive self-appraisals.

The main clinical implication of this study concerns the finding that positive self-appraisals buffer the impact of negative life events in the development of suicidality. Potentially, positive self-appraisals may have their impact by reducing the likelihood that stressful events will be negatively appraised. Often, individuals who are experiencing suicidality appraise their current circumstances as both defeating and entrapping (O'Connor, 2003; Rasmussen et al., 2010). Although these appraisals are important to address directly, the current findings suggest that therapies should also focus on the individual’s self-appraisal, as these types of appraisals may have an indirect effect. Thus, positive self-appraisals may have an impact on current suicidality, and may help to prevent against suicidality in future.

The findings also emphasise the particular importance of three types of self-appraisal in the prevention of suicidality. Specifically, the items on the Resilience Appraisals Scale reflect appraisals concerning the individual’s ability to cope with difficult situations, emotions, and to gain social support. In a recently developed intervention for suicidality amongst individuals with psychosis, Tarrier and Gooding (2007b) have suggested that the self-concept can be improved through the use of techniques such as positive data logging, where clients record examples of times when they demonstrate positive qualities. The current findings suggest that in particular, these techniques should focus on the development of positive appraisals concerning the client’s belief in their coping ability, with reference to problem solving, emotion tolerance and access to social support.
There were four main limitations to the study. The first was the use of a student sample, which may limit the transferability of findings to other populations, particularly clinical populations. However, the sample used was age-appropriate for the study of young adults, for whom suicide represents a substantial health concern (Griffiths et al., 2005). Furthermore, all individuals in the study reported some degree of present or past suicidality. Previous research has suggested that individuals who have experienced even mild suicidal thoughts or behaviours are at increased risk of subsequent suicidality (Kerr, Owen, & Capaldi, 2008). These findings indicate that they may form a qualitatively distinct group from those who have never had suicidal thoughts (Lau, Segal, & Williams, 2004), and findings may be relevant for other at-risk groups.

The second concerned the cross-sectional nature of the research, which limits the extent to which findings can be interpreted as evidence of a protective impact of positive self-appraisals. However, the firm theoretical basis of the research and the significant moderating impact found cross-sectionally strongly support a buffering impact of positive self-appraisals. In order for this to be confirmed, it will be necessary to demonstrate that positive self-appraisals can predict levels of suicidality over time when controlling for risk factors such as stressful life events.

Third was the use of a new questionnaire, the Resilience Appraisals Scale (RAS), to measure positive self-appraisals. This scale was based on the recently proposed Schematic Appraisals Model of Suicide (SAMS; Johnson et al., 2008a), and concerned appraisals of the individual’s ability to cope with problematic situations, their own emotions and their ability to gain social support. As the authors knew of no questionnaire with items reflecting these three areas, it was necessary to develop one for the purposes of the study. The measure had strong theoretical foundations, and its factor structure was supported by confirmatory factor analysis and the high internal reliability of its subscales.

Fourth was the measurement of suicidality using a tool which looked at suicidality over the past year and also over the lifetime. As stressful life events were measured over
only the past year, this may limit the extent which stress can be viewed causally. However, restricting the measure of stress to the preceding year was necessary to reduce distortions in retrospective recall of events. Furthermore, the study aimed to explore an explanatory style which prevents negative events being interpreted in a manner conducive to suicidality. This explanatory style could be expected to be stable over the course of the lifetime, and this pattern should be found regardless of time restrictions. Nevertheless, further research using suicide measures restricted to suicidality in the previous year is necessary to explore the buffering role of self-appraisals.

Additional limitations concerned the multiple analyses which were conducted and the use of self-report. For the purposes of the study, it was necessary to conduct eight regressions, which may have inflated the likelihood of Type I error. However, in order to prevent against spurious results, the study used two measures of life events. This revealed a consistent pattern of results, whereby positive self-appraisals had a buffering impact regardless of the life events measure used, and the other coping and belief measures were not found to be protective when either life events measure used. This consistency indicates a reliable finding, but further research is necessary to confirm this. The use of self-report may also be considered a limitation, as individuals may not accurately report their own coping strategies. Despite this, for this study self-report was deemed the most appropriate method of exploring the constructs of interest. That is, the study aimed to explore the importance of individuals’ own appraisals of their stressors, thoughts, cognitive abilities and beliefs, which might be most appropriately researched by asking participants directly.

In conclusion, the current study found support for the Schematic Appraisals Model of Suicide (SAMS), which suggests that self-appraisals are a key aspect of the cognitive architecture of suicidality. It also identified positive self-appraisals as a potential source of resilience which can buffer individuals from the negative impact of stressful life events. These findings suggest positive self-appraisals may represent a platform for
further research into resilience to suicide, and a target for interventions into suicidal
behaviour.
CHAPTER 4

4. Resilience to Suicidal Ideation in Psychosis: Positive Self-Appraisals Buffer the Impact of Hopelessness

4.1. Abstract

Recent years have seen growing interest into concepts of resilience, but minimal research has explored resilience to suicide and none has investigated resilience to suicide amongst clinical groups. The current study aimed to examine whether a proposed resilience factor, positive self-appraisals of the ability to cope with emotions, difficult situations and the ability to gain social support, could buffer against the negative impact of hopelessness amongst individuals with schizophrenia-spectrum disorders when measured cross-sectionally. Seventy-seven participants with schizophrenia-spectrum disorders completed self-report measures of suicidal ideation, hopelessness and positive self-appraisals. Positive self-appraisals were found to moderate the association between hopelessness and suicidal ideation. For those reporting high levels of positive self-appraisals, increased levels of hopelessness were significantly less likely to lead to suicidality. These results provide cross-sectional evidence suggest that positive self-appraisals may buffer individuals with psychosis against the pernicious impact of a well known clinical risk factor, hopelessness. Accounting for positive self-appraisals may improve identification of individuals at high risk of suicidality, and may be an important area to target for suicide interventions.

4.2. Introduction

Clinical groups are at increased risk of suicide and for those with a diagnosis of schizophrenia, lifetime prevalence is around 4-10% (Caldwell & Gottesman, 1990; Palmer et al., 2005). Completed suicide can be understood as the end point of a continuum of suicidality also comprising suicidal ideation, planning and attempts, which have been found to increase risk for later completed suicide (Funahashi et al., 2000; Hawton, Sutton, Haw, Sinclair, & Deeks, 2005a). Amongst those with a schizophrenia-spectrum disorder, as many as a quarter report current suicidal ideation (Kontaxakis et al., 2004; Nordentoft et al., 2002) and around half report a history of suicide attempts (Tarrier et al., 2004; Taylor et al., in press-c). Recently interest has grown into the concept of resilience to suicide (Osman et al., 2004; Rutter et al., 2008), which has been described as positive self-appraisals which buffer against the development of suicidality in the face of risk factors or stressors (Johnson et al., 2010). However, resilience to suicide has not yet been investigated amongst clinical populations. The current study aimed to address this by exploring whether positive self-appraisals could buffer individuals with non-affective psychosis against the development of suicidal ideation in the face of risk. Specifically, we focused on whether positive self-appraisals could attenuate the impact of hopelessness, which represents a strong clinical predictor of suicide (Hawton & van Heeringen, 2009).

Risk factors for suicidal thoughts and behaviours have been studied extensively, and a range of socio-demographic, external stressors and psychological causal aspects have been suggested (eg. Fortuna, Perez, Canino, Sribney, & Alegría, 2007; Hawton et al., 2005a; Hawton, Sutton, Haw, Sinclair, & Harriss, 2005b; Hawton & van Heeringen, 2009). For example, it has been found that owning a firearm (Willis, Coombs, Drentea, & Cockerham, 2003), presence of family conflict (Fortuna et al., 2007) and substance misuse (Hawton & van Heeringen, 2009) are all associated with suicide risk and can represent areas for suicide interventions to target. In terms of psychological risk factors, consistent evidence has emerged for an association between hopelessness and suicidal thoughts and...
behaviours (Conner, Duberstein, Conwell, Seidlitz, & Caine, 2001; Hawton & van Heeringen, 2009; McMillan, Gilbody, Beresford, & Neilly, 2007; O'Connor, 2003). Findings from case-control and cohort studies suggest hopelessness may increase risk for suicide amongst a range of populations, and longitudinal evidence supports a causal role for perceptions of hopelessness (Beautrais, 2004; Beck, Steer, Kovacs, & Garrison, 1985; Conner et al., 2001; Kuo, Gallo, & Eaton, 2004; Mazza & Reynolds, 1998; O'Connor, Connery, & Cheyne, 2000; Pompili et al., 2009b; Ran et al., 2005). Theoretical models of suicide have also recognised the importance of hopelessness, incorporating perceptions of hopelessness as a key aspect of the proposed psychological architecture underpinning suicidal thoughts and behaviours (Johnson et al., 2008a; Schotte & Clum, 1987; Williams, 1997).

Amongst individuals with non-affective psychosis, hopelessness has emerged as one of the most reliable and consistent clinical predictors of suicidal thoughts and behaviours (Hawton et al., 2005a; Hawton & van Heeringen, 2009; Kim, Jayathilake, & Meltzer, 2003; Pompili et al., 2009b; Tarrier et al., 2004). For example, in a sample of 2,383 inpatients with a diagnosis of schizophrenia, Ahrens and Linden (1996) conducted multiple regressions to explore whether hopelessness, depression and a range of other clinical characteristics could predict suicidal ideation and attempts. It was found that hopelessness was one of the strongest predictors of ideation and attempts, ahead of depressed mood and second only to disturbances in circadian rhythm. Similarly, in a community sample of 510 individuals with a diagnosis of schizophrenia, Ran et al. (2005) conducted a logistic regression analysis and found that hopelessness was the strongest predictor of past suicide attempts, increasing the odds ratio by 22.46. Conversely, positive symptoms increased the odds ratio by just 1.88, and major depressive episodes were not found to be a significant predictor of suicide attempts.

Increasing evidence suggests that hopelessness is a key risk factor for suicidality amongst individuals with psychosis. Despite this, the predictive validity of hopelessness is
limited, and using hopelessness to identify individuals at risk tends to result in a high number of false positives. This effect is pervasive amongst risk factors for suicide and can be attributed to low base rates for suicide and the small variance explained by the presence of any individual risk factor (Hawton & van Heeringen, 2009). This is a particular problem amongst clinical groups for whom risk factors are especially prevalent. One clinical case-control study reported that, using the risk factors identified, only 2 of the 97 inpatients who died by suicide were at a risk of greater than 5% (Powell et al., 2000). Effectively, risk factors tend to identify large groups of individuals, the majority of whom will not experience suicidality (Hawton & van Heeringen, 2009). Consistent with this, although the presence of hopelessness is a strong predictor of suicidality, not all individuals who experience hopelessness also consider, plan or attempt suicide. This is unlikely to be due to a reduced presence of other risk factors, as even when risk factors are combined, their predictive validity can be low (Powell et al., 2000). Instead, it suggests that some individuals may be protected from the pernicious impact of hopelessness by the presence of buffering or ‘resilience’ factors. The co-existence of such buffering factors with the presence of risk suggests that they could be viewed as representing a separate dimension to risk which can exist alongside it to reduce its impact.

The possibility of such resilience factors may be important for both predicting individuals at high risk of suicide and also for the development of effective interventions (Borowsky et al., 2001). Recent years have seen growing interest into the concept of suicide resilience, which has been described as perceptions, beliefs or abilities which buffer individuals from the deleterious impact of risk (Johnson et al., 2010; Osman et al., 2004; Rutter et al., 2008). However, much of the research in this area has tended to study proposed concepts of suicide resilience by examining their direct linear association with suicidality. Whilst this has successfully established an inverse association between the proposed concept of suicide resilience and suicidality, it has not established that it acts as a buffer, reducing the impact of risk.
Conversely, alongside this growing interest into concepts of suicide resilience there has been increasing research into potential moderators and buffers against suicidality. This research has suggested that a range of factors such as emotional intelligence, optimistic explanatory style and social support may have a buffering impact (Cha & Nock, 2009; Chen et al., 2008; Hirsch et al., 2009), but has not incorporated these findings into a concept or framework of suicide resilience. The factors studied have varied widely between studies and the disparate findings lead to difficulties in drawing conclusions regarding the nature of resilience. Furthermore, this research has largely been conducted amongst non-clinical samples and no research has yet investigated potential buffers against suicidality amongst individuals with psychosis.

In a recent study, Johnson et al. (2010) have advanced this literature by developing a concept of suicide resilience based on a theoretical model of suicidal behaviour, the Schematic Appraisals Model of Suicide (SAMS; Johnson et al., 2008a). This suggests that suicide resilience can be understood as positive self-appraisals. These positive self-appraisals are similar to the concept of self-efficacy, which concerns an individual’s confidence in their ability to enact a particular behaviour (Bandura, 1977), but are focussed specifically on the capacity to cope with difficult life circumstances. The self-appraisals thought to be important are those which concern the individual’s ability to cope with emotions, ability to cope with difficult situations and ability to gain social support. In a student sample, Johnson et al. (2010) examined whether scores on a measure of these positive self-appraisals buffered against the development of suicidal ideation in the face of stressful life events. It was found that for students reporting low levels of positive self-appraisals, experiencing stressful events led to increasing levels of suicidal ideation, but for those reporting moderate or high levels of positive self-appraisals, stressful life events did not increase the likelihood of suicidal ideation. These results suggest that positive self-appraisals may represent resilience to suicidal ideation amongst
a student sample, protecting against the deleterious impact of a known risk factor, stressful life events.

The present study aimed to expand upon this research in two main ways. First, it aimed to investigate whether positive self-appraisals could confer resilience to suicidal ideation amongst a clinical sample, specifically individuals with schizophrenia-spectrum disorders. Individuals with non-affective psychosis are at heightened risk of suicidal thoughts and behaviours but research has yet to investigate the existence of potential resilience factors in this group. In particular, the current study investigated whether positive self-appraisals could buffer against perceptions of hopelessness. Johnson et al. (2010) demonstrated a buffering effect of positive self-appraisals against stressful life events, but this risk factor may cease to be relevant amongst clinical groups (Bolton et al., 2007). Instead, this study focused on hopelessness, which is a consistent and strong clinical predictor for suicidal thoughts and behaviours amongst individuals with schizophrenia-spectrum disorders (e.g., Hawton et al., 2005a; Tarrier et al., 2004).

The second aim was to investigate which types of positive self-appraisals may be protective. Johnson et al. (2010) suggest positive self-appraisals of the ability to cope with emotions, difficult situations and to gain social support may be relevant, but only reported findings for the overall positive self-appraisals construct. Accordingly, the current study extended this research by investigating whether each of these types of positive self-appraisals in isolation moderated the impact of hopelessness on suicidal ideation.

4.3. Methods

4.3.1. Participants and procedure.

Participants were outpatients residing in the North West of England who were recruited via their keyworker or appropriate health care professional. Community mental health teams, assertive outreach teams, early intervention services, supported housing associations and voluntary organisations supported recruitment. Following referral,
participants were interviewed by a research psychologist (JJ, PT, DP) in a session which included written consent and clinical measures. Inclusion criteria for the study were (a) a clinical diagnosis based on ICD-10 criteria of a schizophrenia-spectrum disorder (e.g., schizophrenia, schizoaffective disorder, psychosis not otherwise specified); (b) aged 18 years or over; (c) English-speaking; (d) not considered to be an acute and serious suicide risk by their keyworker or appropriate healthcare professional; (e) able to provide informed consent as judged by their keyworker or appropriate healthcare professional. Participants were excluded if drug use or organic disorder was judged to be the major cause of the psychosis. These inclusion criteria were applied by the participants’ keyworker or appropriate mental health professional. The study was reviewed by a national research ethics committee, and all participants were provided with an information sheet (Appendix VIII) prior to consenting to participate in the study.

4.3.2. Measures.

4.3.2.1. Beck Hopelessness Questionnaire (BHS; Beck et al., 1974).

The BHS (Appendix IX) consists of 20 items assessing the prevalence of hopeless thoughts and beliefs in the past week. Items include “My future seems dark to me” and “Things just won't work out the way I want them to”, and responses are marked either “true” or “false”. Evidence of convergent validity of the scale has emerged from findings of negative associations with measures of hope (Miller & Powers, 1988; Raleigh & Boehm, 1994; Steed, 2001) and positive future thinking (O'Connor, O'Connor, O'Connor, Smallwood, & Miles, 2004). The scale has a reported alpha coefficient of .93 and a test-retest reliability of $r = .85$ over three weeks (Holden & Fekken, 1988). Previous research has found it to be an effective measure for use amongst participants with a diagnosis of schizophrenia (e.g., Tarrier et al., 2004; White et al., 2007).
4.3.2.2. Beck Scale for Suicidal Ideation (BSS; Beck & Steer, 1991b).

This comprises 21 items assessing suicidal ideation, planning and intent in the past week (Appendix X). Each item provides participants with three response options (e.g., “I have no wish to die”, “I have a weak wish to die”, or “I have a moderate to strong wish to die”). Previous research has found concurrent validity between scores on the BSS and presence of past suicide attempts (Beck, Brown, & Steer, 1997) and research amongst participants with schizophrenia-spectrum disorders has reported the scale to have an alpha coefficient of .96 and a test re-test reliability of $r = .88$ over one week (Pinninti, Steer, Rissmiller, Nelson, & Beck, 2002).

4.3.2.3. Resilience Appraisals Scale (RAS; Johnson et al., 2010).

This 12-item scale consists of three four-item subscales assessing positive self-appraisals. These subscales focus on appraisals of perceived ability to cope with emotions, perceived ability to cope with difficult situations, and perceived ability to gain social support. Items for the emotion coping scale include “I can handle my emotions”, and “In difficult situations, I can manage my emotions”. Items for the situation coping subscale include “I can usually find a way of overcoming problems”, and “If faced with a set-back, I could probably find a way round the problem”, and items for the social support subscale include “My family or friends are very supportive of me” and “If I were to have problems, I have people I could turn to”. Responses are scored on a five point scale ranging from “Strongly Disagree” to “Strongly Agree”. Johnson et al. (2010) have found the scale to have a robust three factor structure and report evidence of convergence with other measures of appraisals. Findings also suggest scores are distinct from measures of current life stress (Johnson et al., 2010). Alpha reliabilities were .88 for the total scale, .92 for the emotion coping subscale, .92 for the situation coping subscale, and .93 for the social support subscale (Johnson et al., 2010).
4.3.3. Analysis strategy.

Initially, correlation analyses were carried out to explore associations between key variables. A hierarchical regression analysis was then conducted to examine whether positive self-appraisals measured by the Resilience Appraisals Scale (RAS) moderated the association between hopelessness and suicidal ideation. In the first step of this analysis, hopelessness scores were entered into the regression model. In the second step, RAS scores were entered. In the third step, the interaction term between hopelessness and the RAS was entered. At each step, standardized variables were used to avoid multicollinearity (Frazier et al., 2004). If the addition of the interaction term in the third step added significant predictive variance to the regression model, it indicated a moderating effect of positive self-appraisals as measured by the RAS on the association between hopelessness and suicidal ideation (Cohen & Cohen, 1983). This analysis was then repeated for each of the subscales of the RAS, to investigate whether positive self-appraisals of emotion coping, situation coping and social support would have a moderating impact when examined in isolation.

4.4. Results

4.4.1. Participant characteristics.

A total of 90 participants were recruited into the study. Six of these were subsequently excluded due to inappropriate diagnosis and a further seven were excluded due to missing data. The final sample of 77 (22 female; $M_{age} = 42.3$ years, $SD = 11.9$) were predominantly white ($n = 65, 84.4$%), followed by Mixed British ($n = 5, 6.5$%), Asian ($n = 3, 3.9$%), African-Caribbean ($n = 2, 2.6$%) and Chinese British ($n = 1, 1.3$%), with ethnicity data missing for one participant. The majority of participants had a diagnosis of schizophrenia ($n = 70, 90.1$%) then schizoaffective disorder ($n = 4, 5.2$%), psychosis not otherwise specified ($n = 2, 2.6$%) and atypical psychosis ($n = 1, 1.3$%). Participants had a mean duration illness of 17.6 years ($SD = 11$). Twenty-two (28.6$\%$)
participants reported no previous suicide attempt, 17 (22.1%) reported one previous attempt, and 38 (49.3%) reported two or more previous attempts. Age, gender and duration of illness were not found to be related to suicidal ideation (p>.05).

4.4.2. Descriptive statistics and correlations.

Zero-order correlations, means and standard deviations for the variables are displayed in Table 10. Results suggested that hopelessness scores were moderately correlated with suicidal ideation. Similarly, positive self-appraisals according to the RAS were found to be moderately inversely correlated with suicidal ideation, as were the two RAS subscales of emotion coping and situation coping. There was no correlation between the social support subscale of the RAS and suicidal ideation. Inverse correlations between hopelessness, total RAS scores and each of the RAS subscales were also found.

Table 10: Means, Standard deviations* and correlations for variables

<table>
<thead>
<tr>
<th></th>
<th>Untransformed Mean</th>
<th>Untransformed Mean</th>
<th>Transformed Mean</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Suicidality (BSS)</td>
<td>5.60 (6.73)</td>
<td>1.88 (1.45)</td>
<td>.54**</td>
<td>-.47**</td>
<td>-.53**</td>
<td>-.42**</td>
<td>-.11</td>
<td></td>
</tr>
<tr>
<td>2. Hopelessness (BHS)</td>
<td>7.21 (5.47)</td>
<td>2.41 (1.19)</td>
<td>-.56**</td>
<td>-.50**</td>
<td>-.49**</td>
<td>-.32*</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. Positive self-appraisals (RAS)</td>
<td>42.75 (9.80)</td>
<td></td>
<td>.89**</td>
<td>.83**</td>
<td>.60**</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. Emotion Coping Appraisals subscale (RAS Emo)</td>
<td>13.14 (4.67)</td>
<td></td>
<td>.71**</td>
<td>.30*</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5. Situation Coping Appraisals subscale (RAS Situ)</td>
<td>13.31 (4.17)</td>
<td></td>
<td></td>
<td>.19</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6. Social Support Appraisals subscale (RAS Social)</td>
<td>16.30 (3.80)</td>
<td>3.00 (0.85)</td>
<td></td>
<td></td>
<td></td>
<td></td>
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</tr>
</tbody>
</table>

Note. * = p<0.05. **p<.01. BSS = Beck Suicidal Ideation Scale, BHS=Beck Hopelessness Scale, RAS = Resilience Appraisals Scale, RAS Emo = Resilience Appraisals Scale Emotion Coping subscale, RAS Situ = Resilience Appraisals Scale Situation Coping subscale, RAS Social = Resilience Appraisals Scale Social Support subscale.

*Standard deviations appear in parentheses below the means.

The variables BSS, BHS and RAS Social were transformed to reduce skew. Where transformations have been conducted, correlations have been reported for transformed variables only.
4.4.3. Regression analyses.

4.4.3.1. Resilience Appraisals Scale.

As can be seen in Table 11, positive self-appraisals measured according to the RAS were found to moderate the association between hopelessness and suicidal ideation. Once hopelessness scores had been entered, positive self-appraisals predicted suicidal ideation both in addition to hopelessness, $\beta = -0.252$, and when interacting with hopelessness, $\beta = -0.218$, supporting a moderating impact of self-appraisals on hopelessness. From Figure 8 it can be seen that for those with high levels of positive self-appraisals, increased hopelessness corresponded with only minimal increases in suicidal ideation.

Table 11: Hierarchical regression analyses predicting suicidality as measured by the BSS

<table>
<thead>
<tr>
<th>Moderator Variable</th>
<th>Step</th>
<th>Variable Entered</th>
<th>$\beta$</th>
<th>SE $\beta$</th>
<th>Total $R^2$</th>
<th>$\Delta R^2$</th>
</tr>
</thead>
<tbody>
<tr>
<td>Positive Self-Appraisals (RAS)</td>
<td>1</td>
<td>BHS</td>
<td>.536***</td>
<td>.097</td>
<td>.287</td>
<td></td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>BHS</td>
<td>.395**</td>
<td>.115</td>
<td>.331</td>
<td>.044*</td>
</tr>
<tr>
<td></td>
<td></td>
<td>RAS</td>
<td>-.252*</td>
<td>.115</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>3</td>
<td>BHS</td>
<td>.396**</td>
<td>.112</td>
<td>.367</td>
<td>.036*</td>
</tr>
<tr>
<td></td>
<td></td>
<td>RAS</td>
<td>-.269*</td>
<td>.113</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>BHSxRAS interaction</td>
<td>-.218*</td>
<td></td>
<td>.107</td>
<td></td>
</tr>
<tr>
<td>Emotion Coping Appraisals (RASEmo)</td>
<td>1</td>
<td>BHS</td>
<td>.536***</td>
<td>.097</td>
<td>.287</td>
<td></td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>BHS</td>
<td>.360**</td>
<td>.104</td>
<td>.380</td>
<td>.092**</td>
</tr>
<tr>
<td></td>
<td></td>
<td>RASEmo</td>
<td>-.351**</td>
<td></td>
<td>.106</td>
<td></td>
</tr>
<tr>
<td></td>
<td>3</td>
<td>BHS</td>
<td>.389***</td>
<td>.104</td>
<td>.4186</td>
<td>.039*</td>
</tr>
<tr>
<td></td>
<td></td>
<td>RASEmo</td>
<td>-.311**</td>
<td></td>
<td>.105</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>BHSxRASEmo interaction</td>
<td>-.228*</td>
<td></td>
<td>.103</td>
<td></td>
</tr>
<tr>
<td>Situation Coping Appraisals (RASSitu)</td>
<td>1</td>
<td>BHS</td>
<td>.536***</td>
<td>.097</td>
<td>.287</td>
<td></td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>BHS</td>
<td>.437***</td>
<td>.110</td>
<td>.318</td>
<td>.031</td>
</tr>
<tr>
<td></td>
<td></td>
<td>RASSitu</td>
<td>-.203</td>
<td></td>
<td>.110</td>
<td></td>
</tr>
<tr>
<td></td>
<td>3</td>
<td>BHS</td>
<td>.442***</td>
<td>.109</td>
<td>.342</td>
<td>.024</td>
</tr>
<tr>
<td></td>
<td></td>
<td>RASSitu</td>
<td>-.194</td>
<td></td>
<td>.109</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>BHSxRASSitu interaction</td>
<td>-.174</td>
<td></td>
<td>.107</td>
<td></td>
</tr>
<tr>
<td>Social Support Appraisals (RASSocial)</td>
<td>1</td>
<td>BHS</td>
<td>.536***</td>
<td>.097</td>
<td>.287</td>
<td></td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>BHS</td>
<td>.558***</td>
<td>.103</td>
<td>.292</td>
<td>.005</td>
</tr>
<tr>
<td></td>
<td></td>
<td>RASSocial</td>
<td>-.071</td>
<td></td>
<td>.103</td>
<td></td>
</tr>
<tr>
<td></td>
<td>3</td>
<td>BHS</td>
<td>.553***</td>
<td>.104</td>
<td>.295</td>
<td>.003</td>
</tr>
<tr>
<td></td>
<td></td>
<td>RASSocial</td>
<td>-.067</td>
<td></td>
<td>.104</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>BHSxRASSocial interaction</td>
<td>-.065</td>
<td></td>
<td>.109</td>
<td></td>
</tr>
</tbody>
</table>

Note. *p<.05, **p<.01, ***p<.001. BSS = Beck Suicidal Ideation Scale, BHS = Beck Hopelessness Scale, RAS = Resilience Appraisals Scale, RAS Emo = Resilience Appraisals Scale Emotion Coping subscale, RAS Situ = Resilience Appraisals Scale Situation Coping subscale, RAS Social = Resilience Appraisals Scale Social Support subscale.
4.4.3.2. Subscales of the Resilience Appraisals Scale.

Next, each of the RAS subscales was examined as a moderator of hopelessness. A significant moderating impact was found for the subscale of emotion coping, which predicted suicidal ideation both in addition to hopelessness scores, $\beta = -.351$, and also interactively with hopelessness $\beta = -.228$. As shown in Figure 9, this pattern was similar to that found for the overall scale and suggests that for those who are high on emotion coping appraisals, there is minimal increase in suicidal ideation at higher levels of hopelessness. By contrast, neither the situation coping subscale nor the social support subscale was found to predict suicidal ideation either in addition to hopelessness, or in interaction with hopelessness.

Figure 8. Resilience appraisals (RAS) moderate hopelessness (BHS) to predict suicidality (BSS).

Discussion

Figure 9. Appraisals of emotion coping ability (RASEmo) moderate hopelessness (BHS) to predict suicidality (BSS).
4.5. Discussion

The main aim of this study was to examine whether positive self-appraisals buffered the association between hopelessness and suicidal ideation in a clinical population with schizophrenia-spectrum diagnoses. A corollary aim was to examine which types of positive self-appraisals may be important for this group. These aims were investigated by testing whether positive self-appraisals, as measured by the Resilience Appraisals Scale (Johnson et al., 2010) and each of the three subscales of this measure, interacted with hopelessness to predict suicidal ideation using moderation regression analyses. The main finding was that positive self-appraisals moderated the impact of hopelessness, such that individuals with high levels of positive self-appraisals were significantly less likely to experience suicidal ideation even at the highest levels of hopelessness. When specific types of self-appraisals were examined in isolation, appraisals of emotion coping ability appeared to moderate the impact of hopelessness, but appraisals of situation coping and social support did not show this moderating impact.

These results support previous research which suggests that positive-self-appraisals may confer resilience against risk, reducing the likelihood that risk will lead to suicidal thoughts (Johnson et al., 2010). Interest into concepts of suicide resilience has grown in recent years, but generally this research has explored potential resilience factors by examining their direct linear association with suicidal thoughts (Osman et al., 2004; Rutter et al., 2008), which does not demonstrate a buffering or resilience role for the variable. Instead, resilience needs to be understood as a separate dimension to risk which can exist alongside it, acting to attenuate the likelihood that risk will lead to suicidality. By finding an interaction between positive self-appraisals and hopelessness in a sample of individuals with schizophrenia-spectrum diagnoses, the current results both support these previous findings and expand on them in four main ways.

First, the current results indicate that positive self-appraisals may also be a resilience factor for clinical populations, specifically for individuals with schizophrenia-
spectrum disorders, who are at particularly high risk of suicidality (Cavanagh, Carson, Sharpe, & Lawrie, 2003; Conwell et al., 1996). Risk factors for suicidality have been studied extensively for this group, and a range of factors have been found to increase the likelihood of suicide (Hawton et al., 2005a; Pompili et al., 2009b). One of the strongest psychological factors is hopelessness (Ahrens & Linden, 1996; Ran et al., 2005). Although an understanding of risk factors can increase the prediction of suicide risk and inform clinical interventions, it is limited. The current results suggest that some factors can act as buffers and that when they are studied in interaction with risk, they can increase predictive validity. This may improve identification of individuals who are at risk from suicide and reduce the number of false positives.

Second, the present study investigated an interaction between positive self-appraisals and hopelessness. Previously, positive self-appraisals were studied in relation to life-events in a student sample (Johnson et al., 2010), but as life events may not be an accurate predictor of suicide amongst individuals with psychosis (Bolton et al., 2007) the current study focused on a clinical risk factor, namely, hopelessness. The finding that positive self-appraisals can also buffer against hopelessness demonstrates that their buffering impact is not limited to life-events and suggests that positive self-appraisals may be an important resilience factor for a range of risk factors. Although this will need to be explored by further research, the current findings suggest that positive self-appraisals could be an important resilience factor.

Third, the present study used a concept of suicide resilience based on the Schematic Appraisals Model of Suicide (SAMS; Johnson et al., 2008a). This model suggests that cognitive biases and a suicide schema interact with appraisals of the self and the situation to lead to suicidal thoughts and behaviours. In particular, the self-appraisals construct is thought to have a central role, impacting upon all other relevant processes. This suggests that positive self-appraisals could be especially beneficial, potentially buffering against maladaptive processes taking place elsewhere in the model. Johnson et
al. (2010) found support for this proposed central role of positive self-appraisals amongst a student sample and the current study extends this by finding further evidence for the importance of the self-appraisal construct amongst individuals with schizophrenia-spectrum disorders. This suggests that the processes described by the SAMS may be relevant amongst both clinical and non-clinical samples and supports other findings which identify the SAMS as a useful framework for understanding suicidality amongst individuals with schizophrenia-spectrum disorders (Taylor et al., 2010).

Fourth, by exploring each of the subscales of the positive appraisals measure (RAS; Johnson et al., 2010) the current findings indicate which types of positive self-appraisals may be relevant for individuals with non-affective psychosis. The measure comprises three subscales designed to capture an individual’s appraisal of their ability to cope with their emotions, their ability to cope with difficult situations, and their ability to gain social support. When each of these subscales was studied, the only one found to moderate the impact of hopelessness was ability to cope with emotions. This subscale is designed to reflect an individual’s confidence in their ability to manage their emotions, and contains items such as “I can handle my emotions” and “In difficult situations, I can manage my emotions”. The present results suggest that although the overall construct of the self-appraisal may be relevant, emotion coping appraisals could be a key aspect of resilience.

Interestingly, the present study found that although scores on the appraisals of social support and appraisals of situation coping subscales were moderately correlated with suicidal ideation, when entered into a regression analysis they did not predict suicidality either in addition to, or when interacting with hopelessness. This may appear counterintuitive, as research from previous studies has suggested that social support and aspects related to situation coping, such as problem solving can reduce the likelihood of suicidality (e.g., Chang, 2002a; Hawton et al., 2005a). One possible explanation for this finding is that although emotion coping appraisals can moderate hopelessness when
considered in isolation, social support and problem solving confidence could have a compensatory impact upon each other. This would imply that high levels of one could compensate for low levels of the other and this possibility is supported by the finding that although neither subscale was a buffer when considered in isolation, the overall appraisals scale was significant. It should be noted that this suggestion is tentative, and further research is necessary before any conclusions can be drawn.

The present findings have two main implications for clinical practice. First, when assessing individuals for suicide risk, it may be important to account for the presence of resilience factors in addition to risk factors and to be mindful that some factors, such as the self-appraisal, may alter the impact of risk. The self-appraisals investigated by the study concerned the individual’s view of their ability to cope, and can be understood as reflecting a form of self-efficacy (Bandura, 1977). In particular, appraisals of ability to cope with emotions appeared to have a buffering impact and could be a key aspect to focus upon. For individuals who have a low level of positive self-appraisals, risk factors such as hopelessness may be particularly deleterious and such individuals may be regarded as especially high-risk. By contrast, for individuals who are high on positive self-appraisals, hopelessness may cease to be considered a risk factor for suicidal ideation. This is not to suggest that it should not be monitored as it could still have relevance to psychological well-being and clinical symptomatology, but it should not be considered to be a relevant predictor for suicidal thoughts and behaviours in this group.

Second, as positive self-appraisals can alter the impact of clinical risk factors, these may be an important aspect to incorporate into clinical interventions. Reducing an individual’s level of risk is an important part of any suicide treatment programme, and practical interventions such as the removal of firearms, potentially lethal substances and other means of suicide can have a strong impact on likelihood of suicide (Lewis, Hawton, & Jones, 1997). However, the present results suggest that developing positive self-appraisals may indirectly reduce the likelihood of suicide risk by attenuating the impact of
risk. Thus, they may represent a particularly beneficial area to target when conducting treatment interventions. Tarrier and Gooding (2007a) suggest that the use of techniques such as positive data logging, where clients record specific examples of times they have demonstrated positive qualities, may be useful in developing a more positive self-concept.

There were three main limitations to the study. First, it was cross-sectional, which limits the extent to which findings can be interpreted as evidence of a causally buffering role of positive self-appraisals. To investigate this, it will be necessary to conduct longitudinal research, where positive self-appraisals can moderate the impact of hopelessness on suicidality at a later time point. Second, the study was examining the impact of risk and resilience on suicidal thoughts and not completed suicide. Some research has suggested that these are distinct phenomena which may need to be studied separately (Kessler et al., 2005). However, other research has found that suicidal thoughts and behaviours exist on a continuum with completed suicide, which suggests they may share underlying mechanisms and be a relevant criteria through which to investigate suicidality and suicide prevention strategies (Funahashi et al., 2000; Hawton et al., 1998; Mann et al., 1999). Third, due to ethical guidelines the study did not include participants who were judged to be an acute and serious suicide risk, and so results may not generalise to this sub-population. Despite this, participants who were actively suicidal were included and the results can be expected to generalise to the large majority of individuals with psychosis.

In conclusion, the current study found that positive self-appraisals buffered the pernicious impact of hopelessness in the development of suicidal thoughts amongst a sample of individuals with a schizophrenia-spectrum diagnosis. When considered in isolation, positive self-appraisals of emotion coping appeared to be particularly important. These findings suggest positive self-appraisals may be an area for further research into suicide resilience amongst clinical groups, and a target for interventions for suicidal behaviour.
CHAPTER 5

5. Trait Reappraisal Amplifies Subjective Defeat in Response to Failure

5.1. Abstract

Perceptions of defeat have been linked to a range of clinical disorders including psychosis. Perceived defeat sometimes increases in response to failure, but the strength of this association varies between individuals. The present research investigated whether trait reappraisal, a thought-focused coping style, amplified response to stressful events. Two studies (Study 1, \( n = 120 \) non-clinical participants; Study 2, \( n = 77 \) participants with schizophrenia-spectrum disorders) investigated whether trait reappraisal amplified feelings of defeat following an experience of failure. Individuals with high levels of trait reappraisal reported the largest increases in subjective defeat following an experience of failure in both studies. High levels of reappraisal may confer vulnerability to feelings of defeat in response to stressful life events amongst non-clinical and clinical populations and could be an area for relapse prevention interventions to target.

This article is currently under review by Journal of Abnormal Psychology.
5.2. Introduction

Psychological defeat has been described as a sense of failed struggle or loss of social rank (Gilbert & Allan, 1998) which has been implicated in the development of a number of psychological disorders (Ehlers, Maercker, & Boos, 2000a; Gilbert & Allan, 1998) including psychosis (Selten & Cantor-Graae, 2005, 2007). The extent to which perceived defeat increases following experiences of failure varies between individuals (Johnson et al., 2008b), but the role of emotional regulation strategies in moderating defeat is currently unknown. If such strategies either exacerbate or counter the effects of failure upon defeat then this information could be important for informing clinical interventions. Thus, the aim of the current research was to investigate the extent to which the emotion regulation strategy of reappraisal (Gross, 1998; Gross & John, 2003) moderated the impact of failure on perceived defeat amongst both a non-clinical sample and individuals diagnosed with a schizophrenia-spectrum disorder, for whom perceived defeat may be particularly important (Selten & Cantor-Graae, 2005, 2007).

Perceptions of defeat have been associated with the onset and exacerbation of a range of psychiatric conditions and disorders. Appraising episodes of trauma in terms of defeat has, for example, been associated with an increased risk of developing PTSD (Dunmore, Clark, & Ehlers, 1997, 1999, 2001; Ehlers & Clark, 2000; Ehlers et al., 1998; Ehlers, Maercker, & Boos, 2000b). The social rank theory of depression emphasises how perceptions of defeat are central to the formation of depressive disorders (Gilbert & Allan, 1998; Sloman, Gilbert, & Hasey, 2003). It has also been shown that amongst those diagnosed with schizophrenia-spectrum disorders, perceived defeat is linked to elevated levels of suicidal ideation (Taylor et al., 2010).

Given the central role that defeat is thought to play in the onset and maintenance of clinical disorders, it is important to determine factors which moderate the perception of defeat in response to failure. It has been suggested that an appraisal system may underlie
feelings of defeat (Johnson et al., 2008a), and if this is the case, then those cognitive-emotional processes which impact on appraisals are an important area for investigation in relation to moderating feelings of defeat. One such process could be reappraisal, which is a component of a recently proposed emotion regulation theory (Gross & Thompson, 2007). According to emotion regulation theory, reappraisal is conceived of as an antecedent-focused strategy acting at the level of cognitive change to modulate the emotion before it arises (Gross & Thompson, 2007). Because reappraisal occurs early on in the sequence of cognitive-emotional processes arising in response to an emotion inducing event, it is thought to be an adaptive strategy which does not demand a high level of cognitive resources. Reappraisal has been contrasted with emotional suppression which involves concealing the expression of emotions being experienced. Suppression is characterised as response-focused, late occurring, and as being resource demanding. It is, therefore, considered a maladaptive regulation strategy (Gross & Thompson, 2007).

Reappraisal has been studied in two different forms. The first of these is instructed reappraisal, where participants are instructed to reappraise a stressor prior to exposure. Studies investigating this form of reappraisal have tended to support emotion regulation theory, showing a reduced increase in negative emotions and physiological reactivity amongst individuals who reappraise (Goldin, Manber-Ball, Werner, Heimberg, & Gross, 2009; Gross, 1998). For example, in an experiment where participants watched a film clip of the treatment of burn victims, those instructed to reappraise reported lower levels of subsequent disgust than those who were instructed to suppress their emotions (Gross, 1998). The second is naturally occurring, or ‘trait’ reappraisal measured using the Emotion Regulation Questionnaire (ERQ; Gross & John, 2003). Contrary to emotion regulation theory, studies investigating this form of reappraisal suggest that higher levels of reappraisal may in fact have a negative impact upon subsequently experienced stressors (Butler, Wilhelm, & Gross, 2006; Lam, Dickerson, Zoccola, & Zaldivar, 2009). For example, in an experiment where individuals took part in a speech task, it was found that
high levels of trait reappraisal predicted increased cortisol reactivity (Lam et al., 2009). This has led to the suggestion that whilst reappraising under instruction may have an attenuating impact upon stressful events, the natural tendency to reappraise situations or ‘trait’ reappraisal, may have an amplifying impact (Lam et al., 2009).

This divergence between instructed reappraisal and trait reappraisal suggests that whilst a single act of reappraising can be beneficial, the persistent drive to change emotions by changing thoughts, as in trait reappraisal, may have a negative impact. Consistent with this is the convergence of trait reappraisal with concepts of rumination. Rumination refers to a mode of thought characterised by repetitive, abstract and analytical processing of self-focused information (Nolen-Hoeksema, Wisco, & Lyubomirsky, 2008a; Smith & Alloy, 2009), and induced rumination has been found to impair recovery from negative-affect and increase emotional reactivity to negative experiences (Watkins, 2004; Watkins, Moberly, & Moulds, 2008). Some theorists are now suggesting that rumination may simply be a particular instance of a more general process of repetitive thought (Watkins, 2008). Potentially, individuals with high levels of trait reappraisal may also be engaging in a repetitive thinking style focused on the regulation of their emotions, and trait reappraisal may have a similar impact to rumination. However, to date, only a limited number of studies have investigated the impact of trait reappraisal, no research has investigated reappraisal in relation to feelings of defeat, and no research has investigated reappraisal amongst individuals with a schizophrenia-spectrum disorder.

In contrast to the research into reappraisal, research investigating the impact of suppression has been more consistent and studies investigating both the impact of instructed suppression (Butler et al., 2006; Gross, 1998) and naturally occurring or ‘trait’ suppression suggest that it serves to amplify negative emotions and physiological responding to stressors (Lam et al., 2009). However, as with reappraisal, research has yet to investigate suppression in relation to feelings of defeat and amongst individuals with schizophrenia-spectrum disorders.
5.3. Study 1

The main aim of Study 1 was to investigate the impact of reappraisal and suppression on the association between an experience of failure and subsequent subjective defeat. In line with recent findings suggesting that trait reappraisal exacerbates the impact of stress (Lam et al., 2009), the first prediction was that higher levels of reappraisal would amplify the association between failure and subsequent defeat. The second prediction was that higher levels of suppression would also amplify the association between failure and defeat. A corollary aim of the study was to investigate whether these results were specific to feelings of defeat, or whether they generalised to other emotions and general affect. These aims were investigated using a quasi-experimental design, whereby participants completed measures of trait reappraisal and suppression together with measures of current affect at baseline, before random allocation to a condition with either a task with a fixed success outcome, or a task with a fixed failure outcome. Following the task, current affect was measured a second time.

5.3.1. Methods.

5.3.1.1. Participants.

Participants were 120 undergraduate students from a university in the north-west of England (28 male, \( M \) age = 20.53, \( SD = 2.82 \). Sixty participants (14 male, \( M \) age = 20.60, \( SD =3.00 \)) were randomly assigned to the failure condition and 60 participants (14 male, \( M \) age = 20.47, \( SD = 2.64 \)) were randomly assigned to the success condition. Participants were recruited using a poster advertising the study, and received course credits in exchange for taking part. The study was approved by a university ethics committee and all participants received information sheets (Appendix XI) and provided informed consent. After completion of the experiment, participants were debriefed and provided with an information sheet listing contact details for help-lines and counselling services (Appendix XII).
5.3.1.2. Materials.

5.3.1.2.1. Emotion Regulation Questionnaire (ERQ; Gross & John, 2003).

The ERQ contains two subscales measuring emotion reappraisal and emotion suppression. The six item reappraisal subscale assesses the extent to which individuals regulate their emotions through the use of thought-change strategies. Items for this subscale include “When I want to feel more positive emotion (such as joy or amusement), I change what I’m thinking about”, and “When I want to feel less negative emotion, I change the way I’m thinking about the situation”. The four item suppression subscale measures the extent to which individuals regulate their emotions through the use of suppression strategies, and includes items such as “I keep my emotions to myself” and “I control my emotions by not expressing them”. Reappraisal subscale scores have been found to be significantly associated with higher levels of peer-rated positive emotion expression ($r = .44$) and suppression subscale scores have been found to be associated with lower levels of peer-rated positive emotion expression ($r = -.62$). Test-retest reliability for both subscales was found to be $r = .69$ across three months (Gross & John, 2003).

5.3.1.2.2. Measure of current mood. Participants were asked to mark their mood on five visual analogue scales (VASs; Appendix XIII) measuring how defeated, sad, calm, happy and frustrated they were feeling at that moment. Each VAS was a 10cm vertical line, with the bottom of the line representing an absence of the emotion (e.g., “Not at all defeated”) and the top of the line representing high levels of the emotion (e.g., “Very defeated”). Participants were required to draw a dash across the line at any point which reflected their current mood. VASs were used as previous research indicates that that they are an optimal method for capturing mood fluctuations which occur in response to experimental tasks (Goldstein & Willner, 2002; Johnson et al., 2008b). Furthermore, they are a brief method for measuring mood which converges with longer mood scales such as the Beck Depression Inventory (Beck et al., 1996; Folstein & Luria, 1973). Test-retest
reliability for VASs has been found to be $r = .85$ over the space of one hour (Ahearn & Carroll, 1996).

5.3.1.2.3. Positive and Negative Affect Scales (PANAS; Watson, Clark, & Tellegen, 1988). The PANAS (Appendix XIV) comprises of twenty items measuring different feelings and emotions during a time period specified by the researcher (e.g., “During the past few weeks”, or “During the past few days”). In order to detect mood fluctuations occurring in response to the task, the version used in the current study specified, “At the moment”. The PANAS contains two ten-item subscales. One of these measures positive affect (PA) and includes items such as “enthusiastic” and “proud”. The other measures negative affect (NA) and includes items such as “upset” and “guilty”. The NA scale has been found to be correlated with measures of depression ($r = .60$), and the PA scale has been found to be negatively correlated with depression ($r = .48$; Crawford & Henry, 2004). The trait version of the PA scale has been found to have a 2-month test-retest reliability of $.68$, and the trait version of the NA scale has been found to have a 2-month test-retest reliability of $.71$ (Watson et al., 1988).

5.3.1.2.4. Puzzles to induce success or failure. There were two tasks used to induce either success or failure. Both of these were variations of the Remote Associates Test (McFarlin & Blascovich, 1984; Mednick, 1962). This requires participants to read three words presented on a slide, which are all related to a fourth word, which is not presented. The task is to identify this fourth word. For example, participants may be presented with “Soap”, “Shoe” and “Tissue”, where the correct answer is “Box” (for more examples, see Appendix XV). Each task comprised of 20 items, and following each item participants were informed if their response was correct or incorrect. As participants were allowed up to 30 seconds to solve each item, the tasks took up to 10 minutes to complete. Items on the failure version of the task were not insoluble, but were designed to be so difficult that participants were unlikely to be able to identify the fourth word on any of the
trials. In the success version, items are set to be easier, and participants were offered the option of receiving an additional 'hint' to help them.

5.3.1.3. Procedure.

Participants provided written consent to the take part in the study. The testing session then began with the completion of the Emotion Regulation Questionnaire (Gross & John, 2003), the VASs and the PANAS scales. Following this, participants were randomly allocated to either the success task or the failure task. After taking part in the tasks, participants completed all the measures of mood a second time.

5.3.1.4. Analysis Strategy.

A hierarchical regression analysis was conducted to examine (a) whether condition predicted post-task defeat and (b) whether emotion regulation strategy (reappraisal or suppression) moderated the association between condition (success or failure) and post-task defeat. Both of these were conducted whilst controlling for baseline levels of defeat. In the first step of this analysis, baseline levels of defeat were entered into the regression model so as to control for any residual differences between experimental groups. In the second step, condition (failure or success) was entered. In the third step, emotion regulation strategies, reappraisal and suppression, were entered. In the final step, the interaction terms between condition and reappraisal and condition and suppression were entered. At each step, standardized variables were used to avoid multicollinearity (Frazier et al., 2004). If either of the interaction terms in the fourth step (reappraisal and condition or suppression and condition) were significant predictors, it indicated a moderating effect of that emotion regulation strategy (reappraisal or suppression) on the association between condition and subsequent feelings of defeat (Cohen & Cohen, 1983). This analysis was then repeated for each of VAS scales and the positive and negative emotion subscales of the PANAS, in order to investigate (a) whether the impact of failure was specific to feelings of defeat and (b) whether the interaction between reappraisal and condition was
specific to feelings of defeat, or whether it had an impact on a range of moods. Furthermore, if results found using the PANAS replicated those of the VAS scales, then this would validate the use of the VAS scales for further research.

5.3.2. Results.

5.3.2.1. Baseline scores.

Baseline scores on reappraisal and suppression are displayed in Table 12, and measures of mood for each condition and across conditions are displayed in Table 13. Correlation analyses revealed significant negative associations between reappraisal and baseline defeat, sadness, and negative affect, significant positive associations between reappraisal and positive affect, significant negative associations between suppression and baseline happiness, and significant positive associations between suppression and frustration (see Table 13).

Table 12: Means and standard deviations\(^a\) for reappraisal and suppression\(^b\) in Study 1

<table>
<thead>
<tr>
<th>Variable</th>
<th>Failure condition</th>
<th>Success condition</th>
<th>Across conditions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reappraisal (ERQ)</td>
<td>29.63 (7.23)</td>
<td>29.05 (6.41)</td>
<td>29.34 (6.81)</td>
</tr>
<tr>
<td>Suppression (ERQ)</td>
<td>13.13 (6.32)</td>
<td>12.57 (5.23)</td>
<td>12.85 (5.81)</td>
</tr>
<tr>
<td>Transformed Suppression (ERQ)</td>
<td>3.53 (0.82)</td>
<td>3.47 (0.75)</td>
<td>3.50 (0.80)</td>
</tr>
</tbody>
</table>

Note. ERQ = Emotion Regulation Questionnaire.
\(^a\)Standard deviations appear in parentheses below the means.
\(^b\)Scores on the Suppression subscale of the ERQ were transformed to reduce skew.
Table 13: Means and standard deviations\(^a\) for measures of mood\(^b\), and correlations between baseline measures of mood and reappraisal and suppression in Study 1

<table>
<thead>
<tr>
<th>Variable</th>
<th>Failure condition</th>
<th>Success condition</th>
<th>Across conditions</th>
<th>Reappraisal (ERQ)</th>
<th>Suppression (ERQ)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Baseline Round</td>
<td>Post-round Round</td>
<td>Baseline Round</td>
<td>Post-round Round</td>
<td>Baseline Round</td>
</tr>
<tr>
<td>Defeat (VAS)</td>
<td>1.62 (2.05)</td>
<td>4.69 (3.11)</td>
<td>1.45 (1.90)</td>
<td>1.99 (2.58)</td>
<td>1.53 (1.97)</td>
</tr>
<tr>
<td>Transformed Defeat (VAS)</td>
<td>0.32 (0.25)</td>
<td>0.64 (0.25)</td>
<td>0.29 (0.24)</td>
<td>0.35 (0.29)</td>
<td>0.31 (0.25)</td>
</tr>
<tr>
<td>Sad (VAS)</td>
<td>1.73 (2.17)</td>
<td>2.71 (28.37)</td>
<td>2.22 (2.44)</td>
<td>1.80 (2.22)</td>
<td>1.97 (2.31)</td>
</tr>
<tr>
<td>Transformed Sad (VAS)</td>
<td>0.09 (.06)</td>
<td>0.11 (.06)</td>
<td>0.11 (.06)</td>
<td>0.09 (.07)</td>
<td>0.10 (.06)</td>
</tr>
<tr>
<td>Calm (VAS)</td>
<td>7.40 (2.40)</td>
<td>6.14 (2.44)</td>
<td>6.77 (2.68)</td>
<td>6.57 (2.60)</td>
<td>7.09 (2.55)</td>
</tr>
<tr>
<td>Transformed Calm (VAS)</td>
<td>0.63 (0.22)</td>
<td>0.51 (0.23)</td>
<td>0.57 (0.23)</td>
<td>0.55 (0.23)</td>
<td>0.60 (0.23)</td>
</tr>
<tr>
<td>Happy (VAS)</td>
<td>7.10 (1.83)</td>
<td>6.10 (2.30)</td>
<td>6.97 (1.98)</td>
<td>7.04 (2.19)</td>
<td>7.03 (1.90)</td>
</tr>
<tr>
<td>Transformed Happy (VAS)</td>
<td>0.18 (0.18)</td>
<td>0.10 (0.20)</td>
<td>0.18 (0.19)</td>
<td>0.18 (0.20)</td>
<td>0.18 (0.19)</td>
</tr>
<tr>
<td>Frustrated (VAS)</td>
<td>3.07 (2.66)</td>
<td>5.90 (2.88)</td>
<td>3.18 (2.66)</td>
<td>3.29 (2.69)</td>
<td>3.13 (2.65)</td>
</tr>
<tr>
<td>Transformed Frustrated (VAS)</td>
<td>0.49 (0.27)</td>
<td>0.50 (0.28)</td>
<td>0.49 (0.27)</td>
<td>-.13</td>
<td>.26**</td>
</tr>
<tr>
<td>Negative Affect (PANAS)</td>
<td>14.03 (4.60)</td>
<td>16.19 (5.55)</td>
<td>14.38 (4.05)</td>
<td>13.92 (4.93)</td>
<td>14.21 (4.32)</td>
</tr>
<tr>
<td>Transformed Negative Affect (PANAS)</td>
<td>0.92 (0.02)</td>
<td>0.93 (0.02)</td>
<td>0.93 (0.02)</td>
<td>0.92 (0.02)</td>
<td>0.93 (0.02)</td>
</tr>
<tr>
<td>Positive Affect (PANAS)</td>
<td>30.37 (8.29)</td>
<td>24.87 (9.76)</td>
<td>28.85 (7.20)</td>
<td>27.77 (8.68)</td>
<td>29.61 (7.77)</td>
</tr>
</tbody>
</table>
| Note. \(^*\)p<0.05, \(^**\)p<0.01. ERQ = Emotion Regulation Questionnaire, VAS = Visual Analogue Scales, PANAS = Positive and Negative Affect Scales. \(^a\)Standard deviations appear in parentheses below the means. \(^b\)Scores on the VAS scales (with the exception of post-induction frustrated) and the PANAS negative affect subscale were transformed to reduce skew. Where transformations have been conducted, correlations have been reported for transformed variables only.
5.3.2.2. Reappraisal and suppression as moderators of defeat.

A regression analysis was conducted to investigate (a) whether condition (success or failure) predicted subsequent feelings of defeat, and (b) whether emotion regulation strategy (reappraisal or suppression) could moderate this association. As can be seen in Table 14, condition (success or failure) predicted post-task defeat when controlling for baseline defeat, with individuals in the failure condition reporting higher post-task levels of defeat compared to those in the success condition (see Table 13). Reappraisal was also found to moderate the impact of failure upon subsequent feelings of defeat. The graph of this interaction (Figure 10A) shows that individuals in the failure condition who were high on reappraisal reported the highest levels of post-task defeat, but individuals high on reappraisal who were in the success condition reported the lowest levels of defeat. Suppression was not found to moderate the impact of failure upon defeat.

5.3.2.3. Reappraisal and suppression as moderators of sadness, calmness, happiness and frustration.

This regression analysis was then repeated with each of the remaining emotions measured using VAS, to examine whether this pattern was specific to defeat or generalised to other emotions. These found that condition was a significant predictor of each of these emotions. Specifically, participants in the failure condition reported higher levels of sadness and frustration and lower levels of calmness and happiness post-task (see Table 13). Furthermore, reappraisal was found to moderate the impact of failure upon both feelings of sadness and calmness (see Table 14). The graphs of these interactions suggest that individuals in the failure condition who were high on reappraisal reported the highest levels of post-task sadness (Figure 10B) and the lowest levels of post-task calmness (Figure 10C). Reappraisal was not found to have a significant moderating impact upon either happiness or frustration, and suppression did not moderate the impact of failure upon any emotion.
<table>
<thead>
<tr>
<th>Step</th>
<th>Variable entered</th>
<th>Defeat (VAS)</th>
<th>Sad (VAS)</th>
<th>Calm (VAS)</th>
<th>Happy (VAS)</th>
<th>Frustrated (VAS)</th>
<th>Negative Affect (PANAS)</th>
<th>Positive Affect (PANAS)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Baseline mood</td>
<td>.596***</td>
<td>.074</td>
<td>.604***</td>
<td>.073</td>
<td>.716***</td>
<td>.064</td>
<td>.480***</td>
</tr>
<tr>
<td>2</td>
<td>Baseline mood</td>
<td>.574***</td>
<td>.061</td>
<td>.638***</td>
<td>.071</td>
<td>.720***</td>
<td>.061</td>
<td>.487***</td>
</tr>
<tr>
<td></td>
<td>Condition</td>
<td>.903***</td>
<td>.122</td>
<td>.491**</td>
<td>.141</td>
<td>-.330*</td>
<td>.146</td>
<td>-.425**</td>
</tr>
<tr>
<td>3</td>
<td>Baseline mood</td>
<td>.609***</td>
<td>.065</td>
<td>.662***</td>
<td>.075</td>
<td>.744***</td>
<td>.062</td>
<td>.504***</td>
</tr>
<tr>
<td></td>
<td>Condition</td>
<td>.894***</td>
<td>.122</td>
<td>.492**</td>
<td>.141</td>
<td>-.329*</td>
<td>.146</td>
<td>-.440***</td>
</tr>
<tr>
<td></td>
<td>Reappraisal</td>
<td>.097</td>
<td>.066</td>
<td>.078</td>
<td>.075</td>
<td>-.086</td>
<td>.074</td>
<td>.041</td>
</tr>
<tr>
<td></td>
<td>Suppression</td>
<td>-.029</td>
<td>-.014</td>
<td>.071</td>
<td>.042</td>
<td>.074</td>
<td>.140*</td>
<td>-.060</td>
</tr>
<tr>
<td>4</td>
<td>Baseline mood</td>
<td>.584***</td>
<td>.065</td>
<td>.653***</td>
<td>.073</td>
<td>.619***</td>
<td>.073</td>
<td>.746***</td>
</tr>
<tr>
<td></td>
<td>Condition</td>
<td>.896***</td>
<td>.120</td>
<td>.490**</td>
<td>.139</td>
<td>-.326*</td>
<td>.144</td>
<td>-.441***</td>
</tr>
<tr>
<td></td>
<td>Reappraisal</td>
<td>-.080</td>
<td>.096</td>
<td>-.122</td>
<td>.108</td>
<td>.109</td>
<td>.109</td>
<td>.005</td>
</tr>
<tr>
<td></td>
<td>Suppression</td>
<td>.055</td>
<td>.092</td>
<td>.094</td>
<td>.104</td>
<td>-.074</td>
<td>.108</td>
<td>.131</td>
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<tr>
<td></td>
<td>ReappraisalxCondition interaction</td>
<td>.291*</td>
<td>.126</td>
<td>.336*</td>
<td>.114</td>
<td>-.326*</td>
<td>.149</td>
<td>.073</td>
</tr>
<tr>
<td></td>
<td>SuppressionxCondition interaction</td>
<td>-.091</td>
<td>.127</td>
<td>-.129</td>
<td>.144</td>
<td>.146</td>
<td>.149</td>
<td>.034</td>
</tr>
</tbody>
</table>

Note. *p<0.05, **p<0.01, ***p<0.001. VAS = Visual Analogue Scales, PANAS = Positive and Negative Affect Scales.
5.3.2.4. Reappraisal and suppression as moderators of general positive and negative affect.

Regression analyses were also used to examine whether reappraisal and suppression moderated the impact of condition upon general positive and negative affect. These found that condition was a significant predictor of both positive and negative affect, with individuals in the failure condition reporting higher post-task negative affect and lower post-task positive affect. The regression analyses also found that reappraisal moderated the impact of failure upon subsequent negative affect. The graph of this interaction (Figure 10D) suggested that individuals in the failure condition who were high on reappraisal reported the highest levels of post-task negative affect. Suppression was not found to moderate the impact of failure upon either positive or negative affect.

*Figure 10*: Reappraisal moderates the impact of failure upon subsequent feelings of defeat (A), sadness (B), calmness (C) and negative affect (D).
5.3.3. Brief discussion.

In line with the first prediction, Study 1 found that higher levels of trait reappraisal amplified subjective defeat following an experience of failure. Interestingly, there was some evidence to suggest that trait reappraisal also amplified the impact of success, as amongst individuals in the success condition, self-reported defeat was most reduced amongst individuals with high levels of reappraisal. This pattern was also found to replicate for feelings of sadness and calmness and to a lesser extent, also for general negative affect. Specifically, it was found that for individuals with higher levels of reappraisal, failure was associated with greater increases in sadness and negative affect and greater decreases in calmness. Conversely, for individuals in the success condition, there was also some evidence that higher trait reappraisal was associated with greater decreases in sadness and negative affect and greater increases in calmness. Contrary to the second prediction, trait suppression was not found to moderate the association between failure and defeat or any of the other emotions.

5.4. Study 2

The participants in Study 1 were from a non-clinical population, and so findings from this study cannot be generalised to clinical populations. Defeat has been linked to a range of psychopathological disorders. For example, it is thought to contribute to the development of PTSD (Dunmore et al., 1997, 1999, 2001; Ehlers et al., 1998), depression (Gilbert & Allan, 1998; Sloman et al., 2003) and suicidality (Taylor, Wood, Gooding, & Tarrier, in press-d; Williams, 1997; Williams et al., 2005). It has also been suggested that defeat contributes to the development of schizophrenia (Selten & Cantor-Graae, 2005, 2007), and it has been associated with elevated levels of suicidality amongst individuals with schizophrenia-spectrum disorders (Taylor et al., 2010). Thus, the main aim of Study 2 was to investigate whether reappraisal also amplified the association between failure and defeat in a sample of individuals with psychosis. It was predicted that higher levels of
reappraisal would exacerbate the association between failure and subsequent perceived defeat. The second aim of the study was to investigate whether trait suppression moderated feelings of defeat in this sample. Consistent with the results from Study 1, it was predicted that trait reappraisal would amplify feelings of defeat following failure, and trait suppression would not have a moderating impact. A corollary aim of the study was to investigate whether the impact of reappraisal and suppression generalised to the emotions of sadness, happiness, calmness and frustration. Measures of general positive affect and negative affect were not included to reduce participant burden.

5.4.1. Methods.

5.4.1.1. Participants.

Participants were outpatients residing in the North West of England who were recruited via their keyworker or appropriate health care professional. Community mental health teams, assertive outreach teams, early intervention services, supported housing associations and voluntary organisations supported recruitment. Following referral, participants were interviewed by a research psychologist (JJ or PT). Inclusion criteria for the study were (1) a clinical diagnosis based on ICD-10 criteria of a schizophrenia spectrum disorder (e.g., schizophrenia, schizoaffective disorder, psychosis not otherwise specified); (2) aged 18 years or over; (3) English-speaking; (4) not considered to be a current high suicide risk by their keyworker or appropriate healthcare professional; (5) able to provide informed consent as judged by their keyworker or appropriate healthcare professional. Participants were excluded if drug use or organic disorder was judged to be the major cause of the psychosis. The study was approved by a national research ethics committee prior to commencing.

A total of 78 participants were recruited into the study. One of these was subsequently excluded due to missing data. Of the final sample of 77 (18 female; $M_{age} = 42.3$ years, $SD = 11.9$), 39 were randomly allocated to the success condition and 38 were
allocated to the defeat condition. The participants were predominantly white \((n = 60, 77.9\%)\), followed by Mixed British \((n = 6, 7.8\%)\), Asian \((n = 4, 5.2\%)\), Afro-Caribbean \((n = 2, 2.6\%)\), Iranian \((n = 1, 1.3\%)\) and Black British \((n = 1, 1.3\%)\) with ethnicity data missing for three participants. The majority of participants had a diagnosis of schizophrenia \((n = 69, 89.6\%)\) then schizoaffective disorder \((n = 5, 6.5\%)\), psychosis not otherwise specified \((n = 2, 2.6\%)\) and atypical psychosis \((n = 1, 1.3\%)\).

5.4.1.2. Materials.

Materials used in the present study were the Emotion Regulation Questionnaire, 10.5cm Visual Analogue Scales of defeat, sadness, calmness, happiness and frustration and the two versions of the Remote Associates Test, all of which are described in Study 1.

5.4.1.3. Procedure.

Participants received an information sheet (Appendix XVI) and provided written consent to the take part in the study. The testing session then began with the completion of the Emotion Regulation Questionnaire and the VASs. Following this, participants were randomly allocated to either the success task or the failure task, after which they completed the measures of mood a second time.

5.4.1.4. Analysis strategy.

Initially, a Mann-Whitney \(U\) test was conducted to check that the manipulation was effective and the individuals in the defeat condition scored lower on the task than individuals in the success condition. Following this, a series of hierarchical regression analyses were conducted, as described in Study 1.
5.4.2. Results.

5.4.2.1. Manipulation check.

Individuals in the success condition gained higher scores on the Remote Associates Task (median = 19, $M = 18.69$, $SD = 1.52$) than individuals in the failure condition (median = 0, $M = 0.89$, $SD = 1.23$). A Mann-Whitney $U$ test was conducted to check that that this difference was significant. The results of the test were in the expected direction and significant, $z = -7.67$, $p<0.001$.

5.4.1.2. Baseline scores.

Baseline scores on reappraisal and suppression are displayed in Table 15. Means and standard deviations for mood scores and correlations for baseline mood with reappraisal and suppression are displayed in Table 16. There was no association between either reappraisal or suppression and any baseline VAS emotion score. There appeared to be some baseline differences between groups on VAS emotion scales, but the regression analyses conducted controlled for these differences.

5.4.1.3. Reappraisal and suppression as moderators of defeat.

A regression analysis was conducted to investigate (a) whether condition (success or failure) predicted subsequent feelings defeat, and (b) whether emotion reappraisal or emotion suppression could moderate this association. As can be seen in Table 17, condition (success or failure) predicted post-task defeat when controlling for baseline defeat, with individuals in the failure condition reporting higher post-task levels of defeat compared to those in the success condition (see Table 16). Neither emotion reappraisal or emotion suppression predicted changes in defeat in addition to condition, but reappraisal was found to moderate the impact of condition. The graph of this interaction (Figure 11) shows that individuals high in trait reappraisal reported greater levels of defeat in response
to an experience of failure. There is also evidence that individuals high in reappraisal in the success condition showed greater decreases in defeat.

Table 15: Means and standard deviations\(^a\) for reappraisal and suppression in Study 2

<table>
<thead>
<tr>
<th>Variable</th>
<th>Failure condition</th>
<th>Success condition</th>
<th>Across conditions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reappraisal (ERQ)</td>
<td>27.16 (8.50)</td>
<td>24.31 (7.53)</td>
<td>25.63 (8.10)</td>
</tr>
<tr>
<td>Suppression (ERQ)</td>
<td>17.55 (6.42)</td>
<td>15.49 (5.94)</td>
<td>16.54 (6.19)</td>
</tr>
</tbody>
</table>

Note. ERQ = Emotion Regulation Questionnaire.
\(^a\)Standard deviations appear in parentheses below the means.

Table 16: Means and standard deviations\(^a\) for measures of mood\(^b\), and correlations between baseline measures of mood and reappraisal and suppression in Study 2

<table>
<thead>
<tr>
<th>Variable</th>
<th>Failure condition</th>
<th>Success condition</th>
<th>Across conditions</th>
<th>Reappraisal (ERQ) Baseline</th>
<th>Suppression (ERQ) Baseline</th>
</tr>
</thead>
<tbody>
<tr>
<td>Defeat (VAS)</td>
<td>2.11 (2.41)</td>
<td>5.25 (3.50)</td>
<td>4.03 (3.56)</td>
<td>2.64 (2.78)</td>
<td>3.09 (3.16)</td>
</tr>
<tr>
<td>Transformed Defeat (VAS)</td>
<td>1.82 (0.86)</td>
<td>1.72 (1.05)</td>
<td>1.46 (0.99)</td>
<td>-0.11 (0.09)</td>
<td></td>
</tr>
<tr>
<td>Sad (VAS)</td>
<td>2.68 (2.53)</td>
<td>2.91 (2.88)</td>
<td>3.41 (3.04)</td>
<td>2.49 (3.22)</td>
<td>3.01 (2.80)</td>
</tr>
<tr>
<td>Transformed Sad (VAS)</td>
<td>1.39 (0.88)</td>
<td>1.43 (0.94)</td>
<td>1.58 (0.97)</td>
<td>1.20 (1.04)</td>
<td>1.47 (0.92)</td>
</tr>
<tr>
<td>Calm (VAS)</td>
<td>7.96 (2.32)</td>
<td>6.89 (2.99)</td>
<td>6.63 (3.16)</td>
<td>7.14 (3.04)</td>
<td>7.28 (2.82)</td>
</tr>
<tr>
<td>Transformed Calm (VAS)</td>
<td>2.45 (0.23)</td>
<td>2.37 (0.27)</td>
<td>2.34 (0.25)</td>
<td>2.40 (0.28)</td>
<td>2.39 (0.24)</td>
</tr>
<tr>
<td>Happy (VAS)</td>
<td>7.21 (2.93)</td>
<td>6.11 (3.10)</td>
<td>5.50 (3.12)</td>
<td>6.80 (2.50)</td>
<td>6.30 (2.13)</td>
</tr>
<tr>
<td>Frustrated (VAS)</td>
<td>3.11 (3.12)</td>
<td>5.78 (3.50)</td>
<td>3.38 (3.00)</td>
<td>2.62 (2.74)</td>
<td>3.26 (3.00)</td>
</tr>
<tr>
<td>Transformed Frustrated (VAS)</td>
<td>1.50 (0.95)</td>
<td>1.58 (0.95)</td>
<td>1.55 (0.94)</td>
<td>-0.03 (0.04)</td>
<td></td>
</tr>
</tbody>
</table>

Note. *\(p<0.05\), **\(p<0.01\). ERQ = Emotion Regulation Questionnaire, VAS = Visual Analogue Scales
\(^a\)Standard deviations appear in parentheses below the means.
\(^b\)Scores on the VAS scales (with the exception of pre-induction and post-induction happy and post-induction defeat and frustrated) were transformed to reduce skew. Where transformations have been conducted, correlations have been reported for transformed variables only.
Table 17: *Hierarchical regression analyses predicting post-induction mood measured by the VASs and the PANAS positive and negative affect subscales for Study 2*

<table>
<thead>
<tr>
<th>Step</th>
<th>Variable entered</th>
<th>Defeat (VAS)</th>
<th>Sad (VAS)</th>
<th>Calm (VAS)</th>
<th>Happy (VAS)</th>
<th>Frustrated (VAS)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>β</td>
<td>SE β</td>
<td>β</td>
<td>SE β</td>
<td>β</td>
</tr>
<tr>
<td>1</td>
<td>Baseline mood</td>
<td>.257*</td>
<td>.111</td>
<td>.590***</td>
<td>.093</td>
<td>.463***</td>
</tr>
<tr>
<td>2</td>
<td>Baseline mood</td>
<td>.390***</td>
<td>.101</td>
<td>.609***</td>
<td>.092</td>
<td>.504***</td>
</tr>
<tr>
<td></td>
<td>Condition</td>
<td>.978***</td>
<td>.202</td>
<td>.356</td>
<td>.183</td>
<td>-.349</td>
</tr>
<tr>
<td>3</td>
<td>Baseline mood</td>
<td>.384***</td>
<td>.104</td>
<td>.595***</td>
<td>.096</td>
<td>.502***</td>
</tr>
<tr>
<td></td>
<td>Condition</td>
<td>.949***</td>
<td>.210</td>
<td>.337</td>
<td>.189</td>
<td>-.352</td>
</tr>
<tr>
<td></td>
<td>Reappraisal</td>
<td>.023</td>
<td>.104</td>
<td>-.021</td>
<td>.098</td>
<td>.011</td>
</tr>
<tr>
<td></td>
<td>Suppression</td>
<td>.052</td>
<td>.104</td>
<td>.070</td>
<td>.098</td>
<td>.001</td>
</tr>
<tr>
<td>4</td>
<td>Baseline mood</td>
<td>.381***</td>
<td>.102</td>
<td>.605***</td>
<td>.095</td>
<td>.510***</td>
</tr>
<tr>
<td></td>
<td>Condition</td>
<td>.956***</td>
<td>.206</td>
<td>.347</td>
<td>.188</td>
<td>-.332</td>
</tr>
<tr>
<td></td>
<td>Reappraisal</td>
<td>-.181</td>
<td>.148</td>
<td>-.175</td>
<td>.141</td>
<td>-.044</td>
</tr>
<tr>
<td></td>
<td>Suppression</td>
<td>.089</td>
<td>.145</td>
<td>.081</td>
<td>.136</td>
<td>-.202</td>
</tr>
<tr>
<td></td>
<td>ReappraisalxCondition interaction</td>
<td>.473*</td>
<td>.214</td>
<td>.352</td>
<td>.203</td>
<td>-.036</td>
</tr>
<tr>
<td></td>
<td>SuppressionxCondition interaction</td>
<td>-.228</td>
<td>.213</td>
<td>-.143</td>
<td>.203</td>
<td>.427</td>
</tr>
</tbody>
</table>

Note. *p<0.05, **p<0.01, ***p<0.001. VAS = Visual Analogue Scales
5.4.1.4. Reappraisal and suppression as moderators of sadness, calmness, happiness and frustration.

This regression analysis was then repeated with each of the other emotions, in order to investigate whether this interaction was specific to perceptions of defeat. As can be seen in Table 17, emotion reappraisal and emotion suppression were not found to predict any of these emotions either in addition to or when interacting with condition.

Figure 11. Reappraisal moderates the impact of failure upon subsequent feelings of defeat.

5.5. Discussion and General Discussion

Two studies were conducted with the main aim of investigating whether naturally occurring or ‘trait’ reappraisal moderated the impact of an experience of failure on subsequent perceived defeat. Supporting the prediction, it was found that reappraisal amplified the impact of failure, such that the highest increases in self-reported defeat were amongst individuals allocated to the failure condition who also reported the highest levels of reappraisal. These results extend the previous literature in three main ways.

First, these results demonstrate that there are cognitive processes which can moderate perceptions of defeat in the face of failure. Defeat has been implicated in a range
of mental health disorders including psychosis (Ehlers et al., 2000a; Gilbert & Allan, 1998; Rooke & Birchwood, 1998; Selten & Cantor-Graae, 2005, 2007) and is thought to be a key factor in the development of suicidality (Williams, 1997; Williams et al., 2005). Perceived defeat sometimes increases following an experience of failure, but the strength of this relationship varies between individuals (Johnson et al., 2008b). The current results extend this previous research by identifying a cognitive process, specifically trait reappraisal, which may account for these inter-individual differences. Furthermore, these results could have relevance for psychological theories which incorporate concepts of defeat. One such theory is the Cry of Pain model of suicidality (Williams, 1997; Williams et al., 2005), which suggests that when stressful life events are appraised in terms of defeat and this is then compounded by concomitant perceptions of entrapment and hopelessness, suicidality increases. The current studies have identified one mechanism which may moderate the likelihood that stressful events will lead to subsequent suicidality.

Second, results from Study 2 provide the first evidence that trait reappraisal is a relevant factor to consider when predicting response to negative events amongst individuals with schizophrenia-spectrum disorders. Previously, cross-sectional research amongst individuals with schizophrenia has suggested that reappraisal is not associated with either the positive or negative symptoms of psychosis, although higher levels of reappraisal were found to be negatively associated with depression and positively associated with social functioning (Henry, Rendell, Green, McDonald, & O'Donnell, 2008). The current research extends this by showing that trait reappraisal does not appear to be significantly associated with the specific emotions of defeat, sadness, calmness, happiness or frustration cross-sectionally, but it does moderate response to negative events amongst this group.

Third, the current studies found that trait reappraisal did not attenuate the impact of a stressor as emotion regulation theory would predict (Gross & Thompson, 2007), but
in fact acted to amplify the impact of failure on defeat in both studies, and to amplify sadness, happiness and general negative affect in the first study. This supports recent evidence that reappraisal can act to amplify physiological responses to stressors (Butler et al., 2006; Lam et al., 2009), and suggests that trait reappraisal has a different impact to instructed reappraisal (Lam et al., 2009). Previously, much research into reappraisal has used an experimental approach, whereby participants follow instructions to either reappraise or suppress, which has tended to report a benefit of using reappraisal over suppression, or no regulation strategy (Goldin, McRae, Ramel, & Gross, 2008; Gross, 1998; Hermann, Pejic, Vaitl, & Stark, 2009). By contrast, the current studies investigated naturally occurring trait reappraisal and response to a subsequent stressor. It could be that whilst reappraising under instruction is beneficial, trait reappraisal is not. Potentially, trait reappraisal may reflect an underlying thought-focused cognitive coping style which converges with concepts of rumination. Rumination refers to a thought processes which are repetitive, abstract and analytical (Nolen-Hoeksema et al., 2008a; Smith & Alloy, 2009), but there has been some debate over the definition of rumination, and it has been suggested that rumination could be related to a more general process of repetitive thinking (Watkins, 2008). It may be that both trait reappraisal and rumination are aspects of this tendency towards repetitive thought. Supporting this possibility are previous findings that induced rumination exacerbates negative-affect and emotional reactivity to negative experiences (Watkins, 2004; Watkins et al., 2008), consistent with the current findings that trait reappraisal exacerbated the impact of failure upon defeat.

Further supporting the view that reappraisal may reflect an underlying cognitive tendency to use repetitive thought-focused coping strategies is the finding that it was not an inherently negative trait. That is, in both studies it was found that whilst high reappraisers in the failure condition felt more defeated following failure, high reappraisers in the success condition did not feel more defeated following an experience of success. By contrast, there was some evidence that high reappraisers showed a greater reduction in
feelings of defeat following an experience of success than low reappraisers. In the first study, there was also some evidence that high reappraisers showed greater reductions in feelings of sadness and greater increases in calmness following success. Thus, the same cognitive process which amplified feelings of defeat may have also amplified feelings of success, suggesting that high reappraisal could potentially be advantageous in situations with more positive than negative events. The possibility that reappraisal is only disadvantageous when individuals are facing higher rates of negative events is further supported by baseline results from the current studies. Whilst, in the non-clinical sample, reappraisal was associated with lower levels of baseline negative emotions, in the clinical sample no such associations were found. In light of evidence that clinical populations experience higher rates of negative events (Kendler, Hettema, Butera, Gardner, & Prescott, 2003) these results are what might be expected. These findings also support views emerging from the field of positive psychology, which suggest that studying both positive and negative emotions and outcomes in an integrated, combined manner is the most effective way of understanding clinical phenomena (Wood & Tarrier, 2010).

However, it must also be considered that whether reappraisal has an attenuating or amplifying impact on stressors may be dependent upon the particular type of stressor being studied. Much research which has found reappraisal to be beneficial has used a non-social stressor such as an unpleasant film (Goldin et al., 2008; Gross, 1998), and findings from such studies may not replicate when the stressor is social in nature, such as a speech task (Lam et al., 2009). Supporting this view, in the present studies the stressor was failure at a task where each item was administered by an experimenter who also provided ongoing verbal feedback, and as such was failure experienced within a social context. As social stressors are amongst the strongest risk factors for mental health disorders and suicidality (Harwood, Hawton, Hope, Harriss, & Jacoby, 2006; Liu & Tein, 2005; Rudolph & Flynn, 2007), these findings may be the most relevant when considering psychopathology and mental health interventions.
The second aim of the studies was to investigate whether trait suppression moderated the impact of failure upon perceived defeat. It was predicted that suppression would have an amplifying impact upon failure, but this was not upheld by results from either study. Although this finding was unexpected, there are two possible explanations. First, although suppression may be a detrimental strategy to approach in response to disgust eliciting films, for example (Goldin et al., 2008; Hermann et al., 2009), it could be a neutral strategy to use in relation to feelings of defeat in response to failure. Second, it could be the result of study design, whereby the impact of different levels of trait suppression is investigated. As described above, much previous research investigating the effect of suppression on subsequent negative events has compared instructed suppression to instructed reappraisal or no instructions, as opposed to investigating levels of trait suppression (Gross, 1998; Hermann et al., 2009). This would suggest that higher levels of suppression were not necessarily detrimental. However, only a small amount of research has been conducted into trait suppression and further research is necessary to elucidate the specific reasons for the divergence in findings.

A corollary aim of the studies was to investigate whether the moderating impact of reappraisal on an experience of failure would be specific to perceptions of defeat. Results from Study 1 found that reappraisal also amplified feelings of sadness and general negative affect following failure, and attenuated decreases in calmness. Results in Study 2 found that the amplifying impact of reappraisal was specific to feelings of defeat. Together, these results suggest that the amplifying impact of reappraisal is consistent in relation to defeat, which is an emotion with important clinical relevance. They also suggest that amongst non-clinical populations, reappraisal may have a wider-reaching effect.

The current studies have two main clinical implications. First, the present findings emphasise the importance of cognitive processes, specifically reappraisal, in explaining the association between experiencing failure and subsequent perceptions of defeat. In
particular, the present studies investigated trait reappraisal, which is a thought-focused coping strategy that may share the same underlying cognitive processes as rumination. As reappraisal was found to intensify feelings of defeat in response to failure, these findings suggest that measures of trait reappraisal could be used as a tool to inform assessments of relapse vulnerability. Furthermore, they suggest that reappraisal could be an area for relapse prevention interventions to target. No interventions for reappraisal have yet been developed, but there have been several recommendations for targeting rumination which may also be relevant to reappraisal. These suggest that interventions such as mindfulness meditation (Jain et al., 2007), and cognitive behaviour therapy for rumination (Watkins et al., 2007) are effective for reducing rumination and could be useful avenues for investigating reappraisal interventions.

Second, the current studies demonstrate a strong association between the experience of failure and subsequent perceptions of defeat in both a non-clinical sample and a sample of individuals with a diagnosis of schizophrenia. Previous research has suggested that life events are an important aspect to consider in the development of psychopathology (Finlay-Jones & Brown, 1981; Kendler et al., 2003). The current study extends this by demonstrating that this relationship may be quite specific, with particular events leading to particular negative emotions and perceptions, even amongst individuals with severe mental health problems. This suggests that clinicians should be careful to take detailed information concerning recent stressful events when creating formulations to explain a client’s current emotional difficulties.

The main limitation of the study is the use of self-report measures, as individuals may not accurately report their own coping strategies. However, this has been the standard method of measuring trait reappraisal and currently appears to be an effective way of measuring thought-focused coping strategies (Gross & John, 2003; Lam et al., 2009). A second limitation is the use of an experimental manipulation to induce failure, as this may not have closely resembled experiences of failure in natural situations. However, it was
not possible to study the impact of naturally occurring failures and the use of an experimental task enhanced the internal validity of the study. Furthermore, the task was conducted in a social context in order to increase resemblance to naturally occurring failures. A third limitation concerns the lack of measurement of depression. As it is unclear the extent to which the current population reflects the wider population of individuals with psychosis with regards to depression levels, this limits the extent to which findings from the current study can be generalised to other populations with psychosis. Furthermore, participants in the two conditions were not matched according to depression. However, participants were randomised to conditions, which should have controlled for the impact of all potential confounding variables including depression (Jager, Zoccali, MacLeod, & Dekker, 2007).

In conclusion, the current studies found that high levels of reappraisal amplified the association between experiencing failure and subsequent perceptions of defeat amongst a non-clinical sample and a sample of individuals with a schizophrenia-spectrum disorder. This identifies a cognitive process which may be used to improve identification of individuals at risk from relapse, and may also be an effective area to target in relapse prevention interventions.
CHAPTER 6

6. A Therapeutic Tool for Boosting Mood: The Broad-Minded Affective Coping Procedure (BMAC)

6.1. Abstract

The broaden-and-build theory of emotions postulates that positive emotions, such as happiness and hope, expand thought-action repertoires and support the building of resources and resilience to a variety of disorders. Even brief, transient experiences of positive emotions have been found to increase resilience measured one month later, suggesting a role for clinical mood inductions. This study evaluates the new Broad-Minded Affective Coping (BMAC) procedure, a positive emotion induction technique involving the recall of positive autobiographical memories. Fifty people with schizophrenia-spectrum disorders were allocated to either the BMAC condition or a control condition. Participants who took part in the BMAC showed greater increases in both hope and happiness. These results suggest that the BMAC represents a practical and effective method for boosting mood amongst individuals with schizophrenia-spectrum disorders, and provide the first empirical evidence in favour of this new technique.

This article is currently under review by Behaviour Research and Therapy.
6.2. Introduction

The broaden-and-build theory of emotions (Fredrickson, 1998, 2001) postulates that positive emotions, such as happiness, hope and contentment, serve to expand the range and scope of thoughts and actions in which an individual engages (Fredrickson & Branigan, 2005). These broadened thought-action repertoires are believed to support the building of social and physical resources and trigger upward spirals into wellbeing (Fredrickson & Joiner, 2002). Recently, it has been suggested that positive emotions may also support the therapeutic process by enabling the individual to reflect more positively, to integrate these positive reflections into their self-concept and worldview, and to take positive actions (Tarrier, 2010). The newly developed Broad-Minded Affective Coping (BMAC) method aims to boost mood through the recall of past positive memories, and may be useful for increasing feelings such as happiness and hope in therapeutic settings (Tarrier, 2010). The current research aimed to conduct the first empirical study testing whether the BMAC was an effective method for the short term boosting of feelings of happiness and hope compared to a control task amongst a sample of individuals with psychosis.

Traditionally, psychological therapies have tended to focus on the reduction or elimination of negative experiences, thoughts and emotions. This may be an intuitive response when faced with individuals suffering from depression, anxiety or positive symptoms of psychosis (Sheldon & King, 2001), but it has been suggested that the incorporation of interventions designed to boost positive emotions could optimise treatment (Seligman et al., 2005). Consistent with this, the broaden-and-build theory of emotions suggests that positive emotions may have several benefits which could enhance well-being. Specifically, it proposes that whilst negative emotions tend to narrow cognitions and actions, positive emotions are associated with broadened cognitions and behaviours (Fredrickson, 2001). For example, whereas fear results in the desire to escape,
joy is thought to lead to creativity and the urge to play (Fredrickson, 2001). These broadened thought-action repertoires are thought to assist the individual in building social and material resources which, in turn, are thought to support the experience of positive emotions (Fredrickson, 2001).

The broaden-and-build theory has since been supported by a wide body of research. This has found that positive affect or subjective happiness is associated with a range of positive outcomes such as mental well-being, physical health and occupational success both cross-sectionally and longitudinally (for a review, see Lyubomirsky, King, & Diener, 2005). Furthermore, the benefits of positive emotions are not negated by the presence of negative emotion (Cohn et al., 2009) and positive emotions may have an ‘undoing’ impact on the effect of negative emotions (Fredrickson & Levenson, 1998). Indeed, even brief, transitory experiences of positive affect have been found to have a positive impact on subsequent life satisfaction and resilience (Cohn et al., 2009).

Findings from research into the broaden-and-build theory of positive emotions may have particular relevance amongst individuals with diagnosis of a schizophrenia-spectrum disorder. This group demonstrate increased levels of negative affect (MacDonald, Antony, MacLeod, & Richter, 1997; Salkovskis et al., 2000; Smith et al., 2006), and anhedonia, or the inability to experience positive emotions (Blanchard, Mueser, & Bellack, 1998; Harvey, Bodnar, Sergerie, Armony, & Lepage, 2009). Furthermore, anhedonia is known to increase the likelihood of subsequently developing psychosis amongst at-risk individuals (Kwapil, 1998), and predicts a more chronic course of the disorder in diagnosed individuals (Herbener, Harrow, & Hill, 2005). Potentially, developing the ability to generate and experience positive emotions may help build resources which could both aid recovery and support the development of resilience in this group.

One method by which to boost mood amongst clinical groups could be the recently developed Broad-Minded Affective Coping procedure (BMAC; Tarrier, 2010). Based on
evidence of an association between autobiographical memories and current affect (Ruiz Caballero & Moreno, 1993) and a role of mental imagery in emotional disorders (Hackmann, Surawy, & Clark, 1998), the BMAC aims to boost mood through the cued recall and reliving of a personal positive memory. When taking part in the BMAC, the client receives prompts in the form of questions or suggestions from the therapist to assist them in scaffolding the visual, sensory, emotional and cognitive aspects of the memory. The aim of this is to enable the individual to recall the memory in as much detail, and as vividly as possible. Tarrier (2010) outlines a number of aims that the clinical use of BMAC might achieve. These are: (a) to facilitate engagement with the client by performing a positive task, (b) for the client to learn to be able to focus their attention on a positive memory and achieve a balance of positive and negative memories, (c) for the client to learn to be able to improve emotional regulation, (d) for the client to learn attentional control, (e) for the client to learn and implement a coping strategy, (f) to increase awareness of how cognition and attention affect emotions, and (g) as a behavioural experiment to challenge negative expectations of emotional control and experience. The positive impact of the BMAC in clinical settings has been supported by narrative case-study evidence (Tarrier, 2010), but it has yet to be investigated empirically.

The BMAC is one of several methods for boosting mood that have now been proposed, including mindfulness, which aims to develop a non-judgmental awareness of present experience (Bishop et al., 2004; Kabat-Zinn, 2003) and loving-kindness meditation which aims to increase compassionate attitudes towards the self and others (Garland et al., in press). Both these alternative interventions have been found to boost positive emotions amongst clinical populations (for a review, see Garland et al., in press). However, the BMAC has three main strengths which distinguish it from these approaches, and recommend it for use in clinical settings. First, it is a brief procedure lasting ten to twenty minutes, which can be incorporated into a range of therapeutic interventions. This is in comparison to mindfulness and loving-kindness meditation, which are full
interventions within themselves. Second, the BMAC is distinguished by its basis in the individual’s personal experiences, which may aid the development of positive self-appraisals. For example, reflecting on a positive personal achievement may increase appraisals of personal ability and sense of self-efficacy. As these types of self-appraisals have been found to buffer against the negative impact of risk (Johnson et al., 2010; Johnson et al., in press), the BMAC may also boost longer-term resilience. Related to this, the third benefit of the BMAC technique is its activation of autobiographical memory, which may mean that it is particularly effective for boosting hopefulness. This proposition is based on research which suggests that specific autobiographical memory recall is linked to the ability to generate positive future expectancies (D'Argembeau, Raffard, & Van der Linden, 2008; Evans, Williams, O'Loughlin, & Howells, 1992; Williams et al., 1996). This possibility is particularly important amongst individuals with psychosis who show lower levels of hope (Aguilar et al., 1997) and in whom reduced hope is associated with poor clinical outcomes and suicide risk (Tarrier et al., 2004).

Thus, the BMAC may represent a useful clinical tool for boosting mood in clinical groups, at least in the short term. However, although Tarrier (2010) has described several cases where the BMAC has been a useful technique for boosting mood in clinical settings, it has yet to be tested empirically. Furthermore, Tarrier (2010) reports evidence from a sample of individuals with PTSD and depression, and it has yet to be tested in a group with schizophrenia-spectrum disorders. Increasing subjective positive emotion in this group could be particularly important, as they tend to demonstrate increased levels of negative affect (MacDonald et al., 1997; Salkovskis et al., 2000) and anhedonia, or the inability to experience positive emotions (Blanchard et al., 1998; Harvey et al., 2009). Furthermore, anhedonia in this group has been found to predict a more chronic course of the disorder (Herbener et al., 2005). Consequently, the current study aimed to investigate whether the BMAC was a more effective technique for boosting feelings of happiness and hopefulness amongst individuals with psychosis than a control condition. It was predicted
that participants allocated to the BMAC condition would show significantly greater increases in both happiness and hope following the mood induction than individuals in the control condition.

6.3. Methods

6.3.1. Participants.

Participants were outpatients in mental health services in the North West of England who were recruited as part of a wider research study into psychosis and suicidality through contact with their keyworker or appropriate health care professional. Community mental health teams, early intervention services, assertive outreach teams, supported housing associations and voluntary organisations assisted with recruitment. After referral, participants were interviewed by a research psychologist (the first author). There were four criteria for the study, (1) a clinical diagnosis of a schizophrenia-spectrum disorder based on ICD-10 confirmed by the research team (e.g., schizophrenia, psychosis not otherwise specified, schizoaffective disorder), (2) aged 18 years or over; (3) English-speaking; (4) able to provide informed consent as judged by their keyworker or appropriate healthcare professional. Participants were excluded if organic disorder or drug use was judged to be the primary diagnosis and main cause of the psychosis. The study was approved by an NHS research ethics committee.

6.3.2. Measures.

6.3.2.1. Beck Depression Inventory-II (BDI-II; Beck et al., 1996).

This 21-item scale (Appendix XVIII) aims to measure symptoms of depressed mood such as “sadness” and “worthlessness” which have been experienced over the past 2 weeks. Items are responded to on a four-point scale which is scored from 0-3. For example, for the item “sadness”, possible responses include (a) I do not feel sad, (b) I feel sad much of the time, (c) I am sad all the time, and (d) I am so sad or unhappy that I can’t stand it.
Possible scores range from 0-63. BDI-II scores have been found to distinguish individuals with a diagnosis of Major Depressive Disorder from individuals without depression \((d = 2.51; \text{Arnau, Meagher, Norris, \\ & Bramson, 2001})\), and amongst individuals with a diagnosis of schizophrenia, BDI-II scores have been found to converge with clinician-rated depression \((r = .45, p < 0.001; \text{Chemerinski, Bowie, Anderson, \\ & Harvey, 2008})\).

6.3.2.2. Suicidal Behaviours Questionnaire-Revised (SBQ-R; Osman et al., 2001).

This four item questionnaire measures past history of suicidal thoughts and behaviours, recent suicidal thoughts and future likelihood of suicide attempt. Questions include “Have you ever thought about or attempted to kill yourself?” and “How often have you thought about killing yourself in the past year?” Total scores indicate where an individual lies on the continuum of suicidality (range = 3-18). SBQ-R scores have been found to distinguish between suicidal and non-suicidal individuals in samples of high school students \((d = 2.91)\), undergraduate students \((d = 2.56)\), adolescent psychiatric inpatients \((d = 2.56)\) and adult psychiatric inpatients \((d = 1.86; \text{Osman et al., 2001})\).

6.3.2.3. Measure of current mood.

Participants were asked to mark their mood on two visual analogue scales (VASs) measuring how hopeful and happy they were feeling at that moment. Each VAS was a 100mm vertical line, with the bottom of the line representing an absence of the emotion (e.g., “Not at all hopeful”) and the top of the line representing high levels of the emotion (e.g., “Very hopeful”). Participants were required to draw a dash across the line at any point which reflected their current mood. VASs were chosen as they represent a brief method for measuring mood amongst clinical samples which converges with longer mood questionnaires including the Beck Depression Inventory (Beck et al., 1996; Davies, Burrows, \\ & Poynton, 1975; Folstein \\ & Luria, 1973) and they have been found to show good test-retest reliability over the space of one hour \((r = .85; \text{Ahearn \\ & Carroll, 1996})\).
Furthermore, previous studies have found that they are an effective method for capturing mood fluctuations which occur in response to experimental mood inductions (Goldstein & Willner, 2002; Johnson et al., 2008b; Liverant, Brown, Barlow, & Roemer, 2008). Supporting their validity in the current study, VAS happiness and hope scores at baseline were found to correlate negatively with both depression measured with the BDI-II, ($r = -0.401, p<.01$ and $r = -0.361, p<.05$, respectively) and suicidality measured with the SBQ-R ($r = -0.341, p<.05$ and $r = -0.311, p<.05$, respectively).

**6.3.3. Procedure.**

Participants received an information sheet (Appendix XVII) and provided written consent to the take part in the research. The session then began with the completion of the VASs, after which participants were randomly allocated to either the BMAC condition or the control condition. Following this, participants completed the VASs a second time. Thus the second assessment took place immediately after completion of the BMAC or control task.

**6.3.3.1. Broadminded Affective Coping procedure (BMAC).**

Prior to taking part in the BMAC, the procedure and its purpose were explained to the participant. The BMAC itself then consisted of roughly five stages, which are outlined in Table 18.

Once the BMAC had been practiced once, participants discussed their experience of the procedure and any difficulties they had with the researcher before repeating it a second time. Altogether, this took around 20 minutes. A detailed description of the BMAC procedure is provided in Tarrier (2010).

*Control Task.* The control task consisted of relaxing and listening to 20 minutes of classical music without lyrics. At the beginning of the task, participants were instructed to make themselves comfortable, relax and enjoy the music.
Table 18. The five phases of the Broad-Minded Affective Coping (BMAC) procedure and example prompts. Prompts are used to enable visualisation of the memory.

<table>
<thead>
<tr>
<th>Stage</th>
<th>Aim</th>
<th>Example prompts</th>
</tr>
</thead>
<tbody>
<tr>
<td>Preparation stage</td>
<td>To relax and facilitate the experience of positive emotions and associate a relaxed physical state with positive memories</td>
<td>“Ensure that your body is resting comfortably” “Focus on your breathing. Every time you breath out let your body relax a bit more”</td>
</tr>
<tr>
<td>Guided imagery of positive memories</td>
<td>To create a vivid mental image</td>
<td>“Look all around the room” “What can you see?”</td>
</tr>
<tr>
<td>Engaging the senses</td>
<td>To recall all sensory aspects of the memory</td>
<td>“What can you smell?” “What sounds can you hear, what’s the background noise? “Take a sip of your drink”</td>
</tr>
<tr>
<td>Exploring emotions</td>
<td>Re-experiencing the emotions related to the memory</td>
<td>“Which emotions were you experiencing? Re-create those emotions” “How did you feel at that moment?”</td>
</tr>
<tr>
<td>Interrogating the memory</td>
<td>To develop explicit positive appraisals associated with the memory and to strengthen the association between these, the memory, and the positive emotions</td>
<td>“What was it about that moment that made you feel that way?” “What was it about that day that was important?”</td>
</tr>
</tbody>
</table>

6.3.4. Analysis strategy.

In order to investigate whether the BMAC boosted hope more effectively than the control task, an ANCOVA was conducted to investigate whether condition could predict post-induction hope whilst covarying for baseline hope. This ANCOVA was then repeated to investigate whether the BMAC also boosted happiness.

6.4. Results

6.4.1. Participant characteristics.

A total of 51 participants were recruited into the study. One of these subsequently withdrew prior to data collection due to self-reported concentration difficulties. Of the final sample of 50 (12 female; \( M_{\text{age}} = 43.1 \) years, \( SD = 11.9 \)), 25 were randomly allocated to the BMAC condition (5 female; \( M_{\text{age}} = 44 \) years, \( SD = 12.5 \)) and 25 were allocated to the control condition (7 female; \( M_{\text{age}} = 42.2 \) years, \( SD = 11.5 \)). The majority of
participants were white ($n = 44, 88\%$), then Mixed British ($n = 2, 4\%$), Asian ($n = 1, 2\%$), and African ($n = 1, 2\%$), with ethnicity data missing for two participants. The majority of participants had a diagnosis of schizophrenia ($n = 45, 90\%$) then schizoaffective disorder ($n = 4, 8\%$) and atypical psychosis ($n = 1, 2\%$).

Depression measured with the BDI-II ($M = 9.68, SD = 9.45$) was slightly lower than that found amongst other samples with a diagnosis of schizophrenia ($d = 0.29; $ Waters, Badcock, Maybery, & Michie, 2003), but higher than that reported amongst non-clinical samples ($d = 0.51; $ MacDonald et al., 1997). Suicidality measured by the SBQ-R ($M = 8.78, SD = 3.65$) was higher than that found amongst non-clinical participants ($d = 0.92; $ Johnson et al., 2010), and also somewhat higher to that found amongst other clinical samples ($d = 0.71; $ Levitt et al., 2009).

6.4.2. Assessing the impact of the BMAC.

6.4.2.1. Hope.

As can be seen in Table 19, baseline hope appeared to be roughly equivalent in each condition at baseline, but higher amongst individuals in the BMAC condition post-induction. In order to assess this post-induction difference, an ANCOVA was conducted. This found a significant impact of condition upon post-task hope whilst covarying for baseline hope, $F (1, 47) = 6.37, p<.05$. Hope scores (and confidence intervals) for each condition are displayed in Figure 12.

Table 19: Means and standard deviations* for happiness and hope in each condition

<table>
<thead>
<tr>
<th>Condition</th>
<th>Happiness</th>
<th>Hope</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Baseline</td>
<td>Post-induction</td>
</tr>
<tr>
<td>BMAC</td>
<td>6.69</td>
<td>8.07</td>
</tr>
<tr>
<td></td>
<td>2.53</td>
<td>1.75</td>
</tr>
<tr>
<td>Control</td>
<td>5.99</td>
<td>6.62</td>
</tr>
<tr>
<td></td>
<td>2.63</td>
<td>2.29</td>
</tr>
</tbody>
</table>

* Standard deviations appear in italics below the means.

Happiness. Happiness scores appeared to be slightly higher amongst individuals in the BMAC condition at baseline (see Table 19). Happiness scores appeared to increase in
both conditions at post-induction, but this increase was greater amongst individuals in the BMAC condition. In order to assess this post-induction change whilst controlling for the difference in baseline scores, an ANCOVA was conducted. This found a significant impact of condition upon post-task happiness whilst covarying for baseline happiness, $F(1, 47) = 5.89, p<.05$. Happiness (and confidence intervals) for each condition have been plotted in Figure 13.

![Figure 12](image1.jpg)

*Figure 12.* Self-reported hope at baseline and post-induction, including confidence intervals, in the Control condition and the BMAC condition.

![Figure 13](image2.jpg)

*Figure 13.* Self-reported happiness at baseline and post-induction, including confidence intervals, in the Control condition and the BMAC condition.
6.5. Discussion

The main aim of this study was to investigate whether the Broad-Minded Affective Coping (BMAC) procedure was more effective in the short term than a control task for boosting feelings of happiness and hope in a sample of individuals with psychosis. Supporting our prediction, the results demonstrated significantly greater increases in self-reported happiness and hopefulness amongst individuals who took part in the BMAC than those in the control condition who listened to music. These results support previous narrative evidence from a report of case-studies which found the BMAC to be an effective mood-boosting procedure amongst individuals with PTSD and depression (Tarrier, 2010), and expand on this in three main ways.

First, the current results are the first empirical findings supporting a mood-boosting impact of the BMAC procedure. Although narrative support for the BMAC has been provided (Tarrier, 2010), the current study adds to this by demonstrating that the BMAC was more effective for boosting self-reported mood than a control task. Further supporting the effectiveness of the BMAC was that participants also found that the control task, which involved listening to classical music, increased their subjective happiness. Indeed, the potential for music to boost mood has previously been noted, and it has been suggested that it may have therapeutic value (Smith & Noon, 1998). However, the current results suggest that BMAC boosted mood more effectively than music, and could be a particularly useful tool in this respect.

The importance of boosting mood has been highlighted by the broaden-and-build theory of positive emotions and the body of research that this has inspired. Broaden-and-build theory suggests that positive emotions widen cognitions and the scope of behaviours an individual engages in, which serves to help the individual build resources and resilience (Fredrickson, 2001). These suggestions have been supported by evidence suggesting that self-reported happiness and positive mood can predict a range of outcomes longitudinally, including marital well-being (Ruvolo, 1998) job satisfaction (Diener,
Nickerson, Lucas, & Sandvik, 2002) and income level (Diener et al., 2002). A recent study found that even transient, in-the-moment experiences of positive emotions can predict higher levels of trait resilience and self-reported life satisfaction one month later (Cohn et al., 2009). The current findings suggest that taking part in the BMAC can help to provide these in-the-moment boosts in emotion, and could be an important adjunct to psychological interventions seeking to build resilience and lead to recovery. Indeed, although the BMAC may have positive effects in its own right, it is best construed as a springboard to other clinical strategies facilitated by an improvement in mood, albeit brief. For example, the BMAC could be used to promote and facilitate engagement in positive behaviour or behaviour change, or to enhance positive appraisals and interpretative judgements.

Second, the current results suggest that the BMAC is not only useful for boosting positive affect or ‘happiness’ in general, but may also be an effective tool for boosting feelings of hope, specifically. This is particularly interesting, as research suggests that low levels of hope increase risk for developing subsequent depressive symptoms (Alford, Lester, Patel, Buchanan, & Giunta, 1995) and suicidality (Beck et al., 1985; Lester, 2006; O’Connor et al., 2000). Potentially, the impact of the BMAC procedure on hope may be due to its activation of autobiographical memory. The ability to access this type of specific, episodic memory has been associated with the ability to generate positive future expectancies and hope (D’Argembeau et al., 2008; Evans et al., 1992; Williams et al., 1996). Furthermore, this process is known to be affected by mood, with low mood having a deleterious impact (Dalgleish, Spins, Yiend, & Kuyken, 2001; Johnson et al., 2008b). By acting to boost mood and access autobiographical memory in tandem, the BMAC may be a particularly efficient method for retrieving specific episodic information and thus increasing the ability to generate future expectancies and hope.

Third, the current study is the first to investigate the BMAC amongst individuals with psychosis. Previously, evidence in favour of the BMAC has come from narrative
case studies of individuals with PTSD and depression (Tarrier, 2010), but the current results provide empirical evidence supporting its utility amongst individuals with schizophrenia-spectrum disorders. Investigating methods of boosting happiness and hope in this population is particularly important, as they tend to report higher levels of depression (MacDonald et al., 1997; Salkovskis et al., 2000; Waters et al., 2003), hopelessness (Aguilar et al., 1997) and anhedonia (Blanchard et al., 1998; Harvey et al., 2009) than non-clinical samples. This population also tend to demonstrate deficits in autobiographical memory, which might have been expected to affect the practicality of the BMAC (Corcoran & Frith, 2003). However, the current results suggest that the BMAC is not only a procedure which individuals with psychosis are able to engage in, but also one that boosts both subjective happiness and hope.

There were two main limitations of the research. First was use of Visual Analogue Scales (VASs) to measure mood. These are single-item scales, and as such, may not have captured the full concepts of ‘hope’ and ‘happiness’. However, the use of these scales was deemed appropriate in the current study, as previous research suggests they are responsive to the mood fluctuations which occur in response to experimental mood inductions (Goldstein & Willner, 2002; Johnson et al., 2008b; Liverant et al., 2008). Furthermore, scores on these measures are known to converge with longer measures of mood such as the Beck Depression Inventory (Davies et al., 1975; Folstein & Luria, 1973), which was also found in the present study. The second limitation related to the investigation of an isolated and brief experience of the BMAC. This procedure is designed to be used in a more consistent, repeated manner as part of longer-term interventions. Repeated practice is thought to improve concentration and engagement with the memory (Tarrier, 2010), and as such, the current study may not reflect the full impact which the BMAC may have when it used in context. For this reason, the current study should be regarded as a preliminary investigation on the short term effects of the BMAC compared to another
potentially mood enhancing method, and further research investigating the long-term impact of the BMAC is necessary.

In summary, the current study sought to investigate whether the BMAC procedure could boost self-reported happiness and hopefulness amongst individuals with psychosis. Results suggested that the BMAC was both a practical and useful tool for boosting mood amongst this population, and may be useful to incorporate into psychological interventions.
CHAPTER 7

7. General Discussion

The overarching aim of this thesis was to investigate resilience to suicidality. In order to meet this aim, this thesis (a) provided the first framework for the investigation of resilience to suicide, (b) conducted the first review of suicide resilience factors, (c) investigated the first theoretically grounded concept of resilience to suicidality and (d) conducted the first empirical research into a recently proposed clinical technique which may be useful for boosting resilience. These contributions advance theory in the area of resilience to suicidality, but also provide recommendations for the prediction and treatment of suicidal behaviour in clinical settings.

7.1. Chapter Summary

It was noted that there was a lack of clarity surrounding the distinction between resilience and risk and that although research into suicide resilience had described it as a buffer, it had not been investigated as such. Instead it had been investigated as a negative correlate of suicidality. This approach led to a tautology whereby individuals who were not suicidal were considered resilient, and individuals were considered resilient because they were not suicidal.

To overcome this tautology, a framework was proposed which described resilience factors as those which alter the strength of the relationship between risk factors and suicidality (Chapter 2). Specifically, it was suggested that individuals who are high on resilience are those who are able to face a high level of risk without the development of suicidal thoughts and behaviours. Similar descriptions of resilience had been outlined in the wider resilience literature but these tended to view this approach as one of several ways of investigating resilience (e.g., Fergusson et al., 2003; Masten, 2001). The description and basis of the framework described in the review presented in Chapter 2
advanced this literature by clarifying both the need for a buffering approach and the manner in which this could be operationalised. By suggesting that resilience factors are those which buffer risk, the proposed framework implied that resilience must be understood as a separate dimension to risk. In addition to this, the framework described two further aspects of resilience.

The first of these referred to the bipolarity of resilience. Previously, it had been assumed that suicide resilience could be established on the basis of a negative relationship between a proposed resilience factor and suicidality, which created a necessity for resilience factors to be, essentially, positive. However, as described in Chapter 2, most factors have an inverse or opposite pole which could be viewed as risk (Wood & Tarrier, 2010). By instead defining resilience as a moderator, the proposed framework removed the need for it to be measured as a ‘positive’ construct. Instead, both positive and negative moderators can be viewed as potentially conferring resilience. For example, evidence that hopelessness amplifies the association between risk and suicidality (e.g., Blankstein et al., 2007) would also imply that low levels of hopelessness are a buffer.

The second of these referred to the psychological nature of resilience. In the previous suicide resilience literature, the psychological nature of resilience was an assumption of the research (Heisel & Flett, 2008; Osman et al., 2004; Rutter et al., 2008), but there was a need to clarify this in the proposed framework for two main reasons. First, in the framework, moderators were identified via the use of statistical analyses of interaction effects. This then raised the issue, which of the factors in the analysis should be viewed as resilience? In order to be consistent with existing views of suicide resilience the framework proposed that if one of these factors is psychological, this should be viewed as the resilience factor and the non-psychological, or ‘external’ factor should be viewed as risk. Where both factors are psychological, both of these should be viewed as potential risk and resilience factors. The second reason to clarify the psychological nature of resilience was due to a discrepancy in the wider literature. Although resilience had
generally been viewed as a psychological construct in a number of domains of psychology, environmental resources such as improved school environments and academic success had occasionally been included in proposed concepts of resilience (Olsson, Bond, Burns, Vella-Brodrick, & Sawyer, 2003). The current framework suggested that although such factors may be related to the development of resilience, they do not constitute resilience.

Having described a framework for the investigation of resilience, there was a need to (a) test whether ‘resilience’ according to this framework existed and if so, to (b) investigate which factors may confer resilience. In order to meet these aims, a systematic literature review was conducted (Chapter 2). Perhaps most strikingly, in contrast to the apparent paucity of suicide resilience research this revealed that when the criteria outlined by the framework were used, a larger number of suicide resilience studies were identified. That is, in place of the three articles which labelled their variable of interest ‘resilience’ to suicide, there were a total of 71 articles which investigated ‘resilience’ as defined by the framework. These articles suggested that a wide range of factors, such as perceived social support, problem solving-confidence and self-esteem act to moderate the impact of risk upon suicidality. In particular, the most reliable findings were found for a moderating role of attributional style, perfectionism, sense of agency and hopelessness.

However, the review also revealed that there was a lack of theory-driven suicide resilience concepts investigated. It was proposed that a more theoretically-founded basis to the factors investigated would (a) improve the efficient and effective prediction of potential resilience factors, and (b) link research findings to a wider theoretical framework of research, promoting clinical application.

In order to address the lack of theory-driven suicide resilience factors investigated in the current literature, a concept of resilience based on the Schematic Appraisals Model of Suicide (SAMS; Johnson et al., 2008a) was proposed (Chapter 3). The SAMS suggests that suicidality arises from interactions between several cognitive processes, including
biases in information processing, the development of a suicide schema and a negatively-focused appraisal system. The model assigns a central role to the self-appraisal sub-system, which is thought to impact upon all other relevant processes. On the basis of this, it was hypothesized that positive self-appraisals would have a disproportionately protective role and act as a potential buffer against risk. In particular, based on the model, it was proposed that appraisals of ability to cope with problems, regulate emotions and to gain social resources would be especially important.

In order to investigate this possibility, a set of questions were generated in order to measure positive self-appraisals (Chapter 3). These questions related to the specific types of appraisals thought to be important within the SAMS framework. Specifically, these were (a) situation-coping appraisals, (b) emotion-coping appraisals, and (c) social-support appraisals. These questions were then administered together with measures of risk and suicidality amongst a sample of students (Chapter 3) and a sample of individuals with psychosis (Chapter 4) to test whether positive self-appraisals conferred resilience according to the framework proposed in Chapter 2.

In the sample of students, positive self-appraisals were investigated as a moderator of stressful life events (Chapter 3). It was found that positive self-appraisals had a buffering impact on stressful life events, such that for those individuals who had a high level of positive self-appraisals, life stress did not lead to increased suicidality. In the sample of individuals with schizophrenia-spectrum disorders, positive self-appraisals were investigated as a moderator of hopelessness (Chapter 4). Hopelessness was investigated instead of life events, as life events may cease to be a significant predictor of suicidality in this group (Bolton et al., 2007) but evidence suggests that hopelessness remains a consistent and reliable risk factor (Hawton et al., 2005a; Tarrier et al., 2004). Results from this study suggested that positive self-appraisals buffered the impact of hopelessness, such that for individuals high on positive self-appraisals, hopelessness was less likely to lead to suicidality.
Furthermore, the study amongst individuals with schizophrenia-spectrum disorders (Chapter 4) investigated each of the three types of positive self-appraisals as independent moderators of hopelessness. Results from this suggested that emotion coping appraisals had a buffering impact when they were considered in isolation, but appraisals of the ability to cope with difficult situations and to gain social support did not. These findings suggest that emotion coping appraisals are particularly important and by implication, that appraisals of situation coping and social support may be less important. Initially, this may appear to be contrary to proposals from theories of suicide which suggest that problem solving appraisals and social support are particularly relevant to suicidality, such as the Cry of Pain model of suicide (Williams et al., 2005). However, it could be that social support and problem solving contribute to the development and maintenance of emotion coping appraisals and support the development of resilience in this manner. Alternatively, it could be that emotion coping appraisals are particularly important for individuals with schizophrenia-spectrum disorders and these findings may not generalise to other populations. However, future research in this area would be necessary before any conclusions can be drawn.

Chapter 4 did not include or account for the impact of depression, which could be expected to have been related to both the risk factor investigated, which was hopelessness, and the outcome of suicidality. The rationale for this was that interactions are extremely difficult to detect (McClelland & Judd, 1993), and when the relatively small sample size of 78 was considered, there was a high likelihood of Type-II error had depression been controlled for. Furthermore, previous researchers have warned against controlling for potentially related variables when there is no theoretical reason to do so, as this can bias results and eradicate the presence of meaningful results (Spector, Zapf, Chen, & Frese, 2000).

A further implication of the SAMS is that those factors which impact appraisals may also potentially buffer against the impact of risk. In order to address this possibility,
two studies were conducted which investigated whether trait reappraisal moderated the impact of a stressor (Chapter 5). Trait reappraisal refers to a tendency to regulate emotions by re-directing and changing thoughts, which could be expected to impact an individual’s appraisals of both the situation and themselves. It was measured using the reappraisal scale of the Emotion Regulation Questionnaire (ERQ; Gross & John, 2003), which includes items such as “When I want to feel more positive emotion (such as joy or amusement), I change what I’m thinking about”, and “When I want to feel less negative emotion, I change the way I’m thinking about the situation”. The first of these studies of trait reappraisal was conducted amongst non-clinical participants, and the second was conducted to establish whether findings from the first replicated amongst individuals with psychosis. In particular, the studies in Chapter 5 investigated whether reappraisal moderated the association between an experience of failure and subsequent defeated mood. Defeated mood was chosen as the outcome for two main reasons. First, for both practical and ethical reasons, it was not possible to use a task which would have directly increased suicidality. Second, perceptions of defeat are implicated in the development of suicidality (Gilbert & Allan, 1998; O'Connor, 2003; Williams, 1997). Therefore, this research was expected to have relevance to the study of suicidality. It was found that a tendency to reappraise amplified the association between failure and perceived defeat amongst both non-clinical participants and individuals with schizophrenia-spectrum disorders. These findings suggested that lower levels of reappraisal conferred resilience against the impact of a stressor.

A final issue addressed by the thesis related to the development of resilience (Chapter 6). This focused on the experience of positive emotion, as previous research suggests that positive emotions may buffer the impact of stressors (Fredrickson et al., 2000) and help to build resilience (Cohn et al., 2009). In response to this, a piece of research was conducted which investigated whether a recently proposed clinical technique, the Broadminded Affective Coping procedure (BMAC; Tarrier, 2010), was a
useful tool for boosting mood. The BMAC aims to improve mood through the cued recall of a positive autobiographical memory and its associated sensory, emotional and appraisal-based aspects. The study conducted in Chapter 6 investigated whether the BMAC could boost feelings of happiness and hopefulness more effectively than a control task, which was listening to music. Although narrative evidence of the effectiveness of the BMAC has been provided (Tarrier, 2010), this study was the first empirical test of the technique. Amongst a sample of individuals with schizophrenia-spectrum disorders the BMAC was found to significantly boost both hope and happiness. As recent research suggests that even brief, transient experiences of positive mood can lead to higher levels of resilience measured one month later (Cohn et al., 2009), the BMAC may represent a useful technique by which to boost resilience in therapeutic settings.

7.2. Limitations

The studies reported in this thesis are the first which have taken a systematic and theoretically driven approach to the investigation of resilience to suicide and as such, can only represent a starting point for further research. In particular, there were four areas upon which future research could expand. First, future research could begin to establish evidence of a causal basis for resilience factors. The research conducted in this thesis was cross-sectional. Although this was necessary as an initial starting point for establishing the validity of the proposed resilience factors, future research could investigate whether both positive self-appraisals (investigated in Chapters 3 and 4) and thought-focused coping (Chapter 5) also moderate outcome when measured longitudinally.

Second, future research could investigate resilience to suicide in a wider range of clinical populations. The clinical research in this thesis was restricted to individuals with psychosis, which may limit transferability of findings to other populations. It should also be noted that clinical participants were recruited from referrals by their keyworkers, and may not be representative of either the general population of individuals with psychosis,
or those individuals with psychosis who are using mental health services. In addition to this, the sample used in the clinical research was ethnically homogenous (e.g., 84.4% white; Chapter 4) and tended to have chronic mental health problems (mean duration of illness = 17.6 years; Chapter 4). However, individuals with schizophrenia-spectrum disorders report elevated levels of suicidal thoughts (Kontaxakis et al., 2004) and behaviours (Palmer et al., 2005) and as such, represented an important population to research. Furthermore, as findings from the research into both positive self-appraisals (Chapters 3 and 4) and thought-focused emotion coping style (Chapter 5) replicated amongst a student and clinical sample, it could be expected that these results would also be found amongst other groups.

Third, future research could investigate resilience measured using methods other than self-report. A self-report method was chosen in the current thesis because it was proposed that resilience should be understood to be a psychological construct (Chapter 2), for which self-report appeared to be an appropriate method of measurement. However, this limits the findings from the current thesis to those factors which are consciously available and it may be interesting for future research to investigate potential resilience factors which are not consciously available, such as implicit self-esteem.

Fourth, future research could begin to investigate resilience to a range of suicidal behaviours, in addition to suicidal ideation. The research in this thesis was limited to investigating resilience to either suicidal ideation (Chapter 4) or a composite measure of suicide ideation and past attempts (Chapter 3). It appeared that positive self-appraisals buffered the association between risk and either of these outcomes, but future research could expand upon this by investigating whether resilience varies when suicide attempts or completed suicide are the outcome. In the case of completed suicide, it would be necessary to either conduct a large scale, longitudinal study or to take a ‘psychological autopsy’ approach. The latter approach would involve the identification of individuals
who had died by suicide according to their death certificates, followed by analysis of
documents recorded when they were alive.

7.3. Observations from the Research: Recommendations for Future Suicide Resilience Research

7.3.1. Research practice.

In this thesis, it has been suggested that significant interaction effects are necessary
to establish whether putative resilience factors act as a buffer. One of the observations
which arose from the present research was that the detection of such interaction effects
requires a high level of statistical power. The effect of this on future resilience research
could be a predominance of Type II error, where significant resilience factors go
undetected due to causes unrelated to the factor under study. This presents a potential
difficulty for future research, but there are steps which can be taken in order to maximize
power and overcome this potential difficulty.

One such step could be to use statistical analyses which maximize power. There
are two parametric tests of interaction effects, ANOVA and regression. To investigate
interactions using an ANOVA, predictor variables are dichotomised or split into groups,
for example by dividing the data into two categories on the basis of a median split, prior to
being entered into the analysis. In regression, however, there is no need to dichotomize the
distribution. This latter approach maintains more information regarding inter-participant
variability and provides more power to detect interaction effects, reducing the likelihood
of Type II error (MacCallum et al., 2002).

A second step could be to reduce the skewness present in measured variables.
Skewness violates the assumptions of parametric tests and can increase likelihood of Type
II error. Skewness in outcome variables is a widespread difficulty in clinical psychology
research, as areas of clinical interest such as depression, anxiety, and psychotic symptoms
tend to be positively skewed in most populations. Due to the relatively low prevalence of
suicidality, this problem is even greater in suicide research. However, there are methods by which to reduce skewness. The first of these is to carefully select the initial population investigated. Although a number of other factors will affect the choice of population, where possible it would be beneficial to select a population whose level of suicidality is elevated, and therefore more likely to be normally distributed. Of the studies in the present thesis which looked at suicidality as the main outcome variable (Chapters 3 and 4), the population was either a non-clinical population selected for reporting some degree of suicidality (Chapter 3) or a sample of individuals with psychosis (Chapter 4) who are known to have elevated levels of suicidality (Palmer et al., 2005). A second method by which to reduce skew is to use statistical transformations on variables. These are described in more detail in Chapter 2, but in brief, transformations alter the numerical distance between data points whilst maintaining their rank order, and can improve the normality of a distribution. In the present research, transformations were conducted to minimise skew in suicide outcome measures (Chapters 3 and 4).

A third step is to choose those inventories which highlight inter-participant variability most clearly. This maximises power by increasing the amount of information entered into the analysis, and is a particularly important consideration in relation to the suicidality outcome measure (McClelland & Judd, 1993). As mentioned above, the prevalence of suicidality in the general population tends to be low, and it would be beneficial to choose a measure which (a) distinguishes between differing levels of suicidal ideation, which is more common than suicidal behaviours and (b) measures suicidality over a range of time periods, in order to identify both individuals with any suicidality over the lifetime and those who are currently suicidal. Where point-prevalence of suicidality is low, this would enable lifetime vulnerability to suicide to be investigated, which could be expected to be higher. In the present research, both the Beck Scale for Suicidal Ideation (BSS; Beck & Steer, 1991b; Chapter 4) and the Suicidal Behaviours Questionnaire-Revised (SBQ-R; Osman et al., 2001; Chapter 3) were used. The BSS contains a greater
number of items and questions suicidal ideation in more detail than the SBQ-R. It was found that the distribution of scores on the BSS was less skewed than that on the SBQ-R, indicating that it may be a preferable measure to use. However, it should be noted that the SBQ-R was used amongst a student population and the BSS was used amongst individuals with psychosis, preventing a direct comparison or any firm conclusions from being drawn.

7.3.2. Concepts of suicide resilience.

This thesis investigated the concept of resilience to suicide. Here, the implications of the research findings for the concept of resilience to suicide will be discussed and future directions for suicide resilience research will be outlined. Broadly, these are that future research should aim to (a) develop a broader concept of resilience to suicide which incorporates the wide range of factors highlighted by the review in Chapter 2, (b) establish a causal basis for suicide resilience factors, and (c) integrate concepts of resilience to suicide with concepts of resilience to other negative outcomes, to move towards an understanding of cross-cutting resilience factors. It should be noted that before this third aim can be investigated, more research into resilience to specific outcomes will be necessary.

7.3.2.1. Integrating theory with empirical findings.

In this thesis it was suggested that concepts of resilience to suicide should be founded in a theoretical model of suicide (see Chapter 2 and Chapter 3). Supporting this suggestion, it was subsequently found that a concept of resilience as positive self-appraisals, which was based on the SAMS model of suicide, buffered against the development of suicidality in the face of risk (Chapter 3 and Chapter 4). Furthermore, it was found that trait reappraisal, a process conceptually linked to the development of appraisals, moderated perceptions of defeat in the face of failure (Chapter 5). However, resilience research is currently in its infancy and the present research should be regarded as only a starting point for further work. The review (Chapter 2) identified a wide range of
moderators such as perfectionism and attributional style, which are not incorporated into the questionnaire used to measure positive self-appraisals, the Resilience Appraisals Scale (RAS; see Chapter 3). Future research could move towards elucidating the potential associations between different buffers and integrating these buffers with theories of suicide in order to create a more widely informed concept of suicide resilience.

In particular, the review suggested that a wide range of different aspects of the self-concept including self-esteem and sense of agency may also confer resilience against suicidality. These findings appear to converge to some extent with the SAMS-based concept of resilience as positive self-appraisals, and there is a need to examine this possibility more closely. A first step could be to conduct a study which administers a range of questionnaires reflecting different aspects of the self-concept, such as self-esteem, sense of agency and positive self-appraisals, together with measures of risk and suicidality. A series of moderated regression analyses could then be conducted to establish (a) whether each of the initial concepts buffers suicidality when examined in isolation, (b) whether there is one of these which appears to explain more variance than the others, and (c) whether each of the aspects of the self-concept which are significant buffers when considered in isolation, are still significant when entered together with other self-concept measures into a single regression. Results from these analyses would indicate which concepts are most robust and those which appear to lose significance when other aspects of the self-concept are accounted for.

7.3.2.2. Establishing a causal basis for positive self-appraisals as resilience:

Longitudinal research.

An optimal approach for any programme of research is to use a number of different research methods and to attempt to garner convergent evidence across these methods. The thesis reported cross-sectional evidence that positive self-appraisals buffered against the impact of risk. Future research could further explore this by assessing
whether there is causal evidence for a buffering impact of positive self-appraisals, potentially by conducting a longitudinal study. This could measure positive self-appraisals and suicidality at baseline, and risk and suicidality a second time at follow-up. A moderated regression could then be conducted to assess whether positive self-appraisals interact with risk at follow-up to predict suicidality at follow-up, whilst controlling for baseline suicidality. A relatively long follow-up period of at least 1-2 years would be advisable, in order to allow for changes in risk factors, such as the occurrence of major life events. Furthermore, as the analysis would be investigating only fluctuations in suicidality, a high level of power would be necessary to detect the interaction effect. This would suggest that a large initial sample would be necessary.

**7.3.2.3. Suicide resilience and the wider resilience literature.**

On the basis that resilience is a multifaceted construct, with some individuals resilient to certain outcomes but not others, the current thesis focused specifically on resilience to suicide. In contrast to this, in the past, concepts of resilience have often been developed on the basis of a-priori assumptions, and then investigated in relation to a range of risk factors and outcomes. For example, the Connor-Davidson Resilience Scale (CD-RISC; Connor & Davidson, 2003) was developed on the basis of ideas from a range of theorists, without any unifying theoretical framework. It has since been used to investigate ‘resilience’ with relation to suicide attempts (Nrugham, Holen, & Sund, 2010), sub-threshold depression (Vahia et al., 2010), substance abuse (Sutherland, Cook, Stetina, & Hernandez, 2009), PTSD (Davidson et al., 2008), and help-seeking (Pietrzak, Johnson, Goldstein, Malley, & Southwick, 2009). This approach does not encourage the development of the resilience concept as there is an emphasis on investigating the areas in which the proposed concept acts as a buffer rather than refining the concept until it appears to confer a strong resilience effect against any particular outcome. However, future research could systematically review the factors which appear to buffer against a
wide range of negative outcomes. This would identify those factors which appear to occur repeatedly and may be central aspects of resilience to any negative outcome and those which appear to have a specific association with particular outcomes.

7.3.3. Trait reappraisal.

This thesis found that trait reappraisal amplified the impact of failure upon defeat, suggesting that low levels of reappraisal confer resilience (Chapter 5). This is in contrast to previous research, which has suggested that reappraisal has a buffering impact. However, whereas past research has tended to investigate reappraisal by instructing participants to reappraise (e.g., Gross, 1998), the studies in the current thesis looked at the impact of trait reappraisal, measured using the Emotion Regulation Questionnaire (ERQ; Gross & John, 2003).

Future research could further investigate this potential divergence between trait reappraisal and instructed reappraisal. This could be done by conducting a study where trait reappraisal and self-reported defeat are measured in all participants at baseline, before exposing them to either an experience of success or failure. Furthermore, half of the participants allocated to both the success condition and the failure condition could be instructed to reappraise the task, using an instruction such as “This is a difficult task, and we would like to see how people cope with difficult tasks. Try and look at it in a different a way that makes you feel nothing”. This is similar to instructions used in one of the seminal studies conducted in this area by Gross (1998). The remaining participants could receive a basic instruction, such as “This is a difficult task. Please complete it in the allotted time.” After the task, defeat would be measured a second time.

Findings from this research could then be analysed to assess (a) the effect of condition upon change in defeat scores, (b) the effect of reappraisal instruction on change in defeat scores, (c) whether there is a condition by reappraisal instruction interaction effect, (d) whether there is a trait reappraisal by condition interaction effect, and (e)
whether there is a three-way interaction effect between condition and trait reappraisal and instructed reappraisal. This could be analysed using two moderated regressions. In the first, post-task defeat would be predicted from condition, reappraisal instruction, the condition by reappraisal instruction interaction effect and the three-way condition by reappraisal instruction by trait reappraisal interaction effect, whilst controlling for baseline defeat. In the second, post-task defeat would be predicted from condition, trait reappraisal, the condition by trait reappraisal interaction effect, and the condition by trait reappraisal by instructed reappraisal interaction effect, whilst controlling for baseline defeat. This would establish whether the patterns of interaction replicate findings from previous studies using these designs, with instructed reappraisal buffering failure, and trait reappraisal amplifying it. It would also assess whether the results found were due to trait reappraisal only exerting an effect under certain reappraisal instructions, or reappraisal instructions only exerting an effect amongst individuals with either high or low trait reappraisal.

7.3.4. Broad-Minded Affective Coping procedure (BMAC).

This thesis found evidence that a single experience of the BMAC was useful for boosting feelings of happiness and hope amongst individuals with psychosis. Although this provided the first empirical evidence of the effectiveness of the BMAC for boosting mood, the procedure is intended to be included as part of a longer-term intervention and there is a need to investigate the impact of the BMAC when it is used in this way. Thus, future research could conduct a study spanning a period of two weeks, where half of the participants are allocated to a condition where they practice the BMAC each day and half are allocated to a control condition. Participants could be asked to complete visual analogue scales at the same time each day. In order to remind participants of this daily questionnaire, they could potentially be allocated a watch alarm which is set to go off at a particular time. In addition to this, a longer measure of affect and psychiatric symptoms
could be taken at baseline, on completion of the study, and again six months later. This follow-up would establish whether this two-week intensive period of practicing the BMAC has a lasting impact on affect and resilience and to investigate whether participants in the BMAC condition spontaneously continued to practice it following the study.

Furthermore, the Resilience Appraisals Scale (RAS) could be included in this study to establish whether the BMAC has an impact on positive self-appraisals. Due to its basis in autobiographical memory, it might be expected that practicing the BMAC over a period of time could improve positive self-appraisals simply through increasing familiarity with past positive achievements and events. This possibility is particularly interesting, as it would provide more evidence to suggest that the BMAC could be a useful tool for boosting resilience.

7.3.5. Ethical considerations.

Conducting research into suicide resilience presents two main challenges. First is the issue of measuring suicidality. This is a real and genuine concern to ethics committees, who may feel that asking about suicide could have a suggestive impact and potentially increase subsequent suicidality. A second consideration relates to research which uses a mood induction or task designed to increase negative mood. In the current thesis, some participants were led to believe that they had failed a task, in order to assess their response to failure (Chapter 5). By purposefully inducing negative emotion, this approach does present some risks, and precautions need to be taken.

In order to both monitor and prepare for these possibilities in our student sample, we identified individuals reporting elevated levels of suicidality using the suicide outcome measure included in the study. We then emailed all these participants, and offered to put them in touch with the university counselling service. For those who responded affirmatively to this offer \((n = 6)\), the counselling service was contacted on their behalf.
and subsequent arrangements were made with the participant. In our clinical sample, we contacted each participant both one day and one week after the study in order to monitor any adverse effects. Where participants did report any distress, keyworkers were contacted and informed. We had no adverse events whilst running this research, indicating that these may be effective measures for future suicide research to adopt.

Furthermore, when conducting the research reported in the current thesis, it became apparent that despite the potential for risk, there are also several potential benefits. For example, following one of the studies reported in this thesis (Chapter 4) participants were asked for feedback regarding their experiences of the study. When these responses were coded for valence, it appeared that positive experiences were common (>45%) and negative experiences were rare (<16%; Taylor et al., in press-a). A qualitative analysis of the responses was also conducted, and this suggested that participants gained a wide range of benefits from taking part, including enjoyment and therapeutic value (Taylor et al., in press-a). These findings suggest that risk is a concern, but the potential for risk should not be exaggerated and the potential benefits of research for the participant should be acknowledged.

7.3.6. Investigating transdiagnostic processes.

The current research focused on investigating suicidality amongst individuals with psychosis. However, despite this focus on individuals with psychosis, the underlying processes investigated were not designed to be diagnosis specific. That is, there are no theoretical reasons to assume that positive self-appraisals or trait reappraisal should be more or less protective against suicidality amongst individuals with psychosis than individuals with other clinical disorders. This suggests that potentially these processes may be transdiagnostic, which was supported by the replication of findings concerning both positive self-appraisals and trait reappraisal within non-clinical populations. Furthermore, previous research has found that several factors associated with suicidality
such as hopelessness (Fawcett et al., 1990; Lester, 2006; Malone et al., 2000) and specificity of autobiographical memory (Startup et al., 2001; Taylor, Gooding, Wood, & Tarrier, in press-b), occur amongst different diagnostic groups, suggesting that the cognitive processes underlying suicidal behaviour in general may be transdiagnostic. Thus, the findings in the current thesis may potentially be relevant for other clinical groups, and this is one area which could be investigated by future research.

7.4. Clinical Implications

Findings from this thesis suggest that resilience interacts with risk factors to alter the likelihood that risk factors will lead to suicidality. As such, studying the interactions between resilience and risk factors could be a more accurate method for predicting overall suicide risk than considering either risk factors or resilience in isolation, or in an additive way. For example, when a clinician is working with a client who is facing a high level of a risk factor, such as stressful life events it may be beneficial for them to consider the client’s levels of resilience factors, such as social support and positive self-appraisals. If social support and positive self-appraisals are also low, then this client should be considered to be at high risk of suicide. However, if social support and positive self-appraisals are high then the presence of stressful life events should not be viewed as indicative of potential suicidality.

In terms of interventions for suicidality, the ability of resilience to buffer the impact of risk factors suggests that the development of resilience could be an effective and important focus of treatment. Furthermore, resilience development may be a particularly beneficial approach when the risk factors the client is facing are unchangeable (such as exposure to stressful life events including bereavement, ill health or redundancy). Results of the review (Chapter 2) suggest that a positive attributional style, high sense of agency, low levels of hopelessness and low levels of perfectionism could be important resilience factors to develop amongst individuals experiencing suicidality.
In particular, this thesis focused on the moderating role of (a) positive self-appraisals and (b) a thought-focused coping strategy, trait reappraisal. Positive self-appraisals refer to the individual’s view of their ability to cope, and can be understood as reflecting a form of self-efficacy (Bandura, 1977; Chapter 4). Results suggested that high levels of these conferred resilience against two recognised risk factors, namely stressful life events (Chapter 3) and hopelessness (Chapter 4). Subsequently, it may be useful for suicide intervention programmes to focus on the boosting of positive self-appraisals.

There are a wide range of practices that may help to boost positive self-appraisals, including positive data-logging, whereby clients log instances of successful coping (Tarrier & Gooding, 2007a) and assertiveness training, where clients learn to verbalise their needs and requirements (Mruk, 2006). The latter technique may exert its impact by increasing the individual’s sense of control over their environment, which could then provide them with a greater sense of competence and self-efficacy (Mruk, 2006).

In contrast to this, high levels of trait reappraisal were found to amplify the impact of failure upon subsequent subjective defeat, suggesting that low levels of reappraisal are protective. These findings suggest that it may be useful to measure trait reappraisal to gauge the extent to which a person may be likely to relapse if faced with stressors. Furthermore, developing alternative coping strategies and reducing reliance on this thought-focused coping strategy may promote resilience. Recently, there has been a huge growth in research into mindfulness (Kabat-Zinn, 2003; Williams & Swales, 2004), which may be an effective alternative to reappraisal as a coping strategy. Instead of attempting to modify emotions, mindfulness training encourages clients to simply observe their emotions and perceptions, without evaluating them (Baer, 2003). Evidence suggests that mindfulness training can reduce symptoms of anxiety and depression (Evans et al., 2008), and reduce likelihood of relapse to depression (Ma & Teasdale, 2004). Furthermore, mindfulness has been found to have a wide range of benefits, and it has been shown that the amount of time spent practicing mindfulness corresponds to improvements in working
memory capacity, higher levels of positive affect, and lower levels of negative affect (Jha, Stanley, Kiyonaga, Wong, & Gelfand, 2010).

Based on evidence that positive emotions can boost resilience (Cohn et al., 2009), the current thesis also aimed to investigate the effectiveness of a recently developed mood-boosting technique, the Broad-Minded Affective Coping procedure (BMAC; Tarrier, 2010). Previous narrative evidence suggests that the BMAC may be a useful therapeutic tool amongst individuals with PTSD and depression (Tarrier, 2010). However, findings from the current thesis suggest that the BMAC can significantly boost self-reported hope and happiness more effectively than alternative therapeutic techniques, such as relaxing music. Furthermore, the participants used in the current thesis were individuals with psychosis, which suggests that the BMAC may have transdiagnostic utility. Thus, it appears that the BMAC may be a practical and effective technique for boosting positive emotions in clinical settings, which may in turn contribute to the development of resilience (Cohn et al., 2009).

7.5. Conclusion

In conclusion, the current thesis investigated resilience to suicidality. Resilience was proposed to be a factor which buffers the association between risk and suicidality, such that for individuals high on resilience who are facing increased risk, there is a reduced likelihood of suicidality. This proposal was accompanied by a framework for the investigation of suicide resilience factors which future research in this area can work from. Original research in this thesis suggested that high levels of positive self-appraisals and low levels of a thought focused coping strategy, reappraisal, confer resilience amongst both non-clinical participants and individuals with schizophrenia-spectrum disorders. These findings suggesting that both the development of positive self-appraisals and the reduction of thought-focused emotion coping should be targets of suicide intervention treatments. Furthermore, evidence was found to support the utility of a recently developed
technique, the Broad-Minded Affective Coping procedure (BMAC; Tarrier, 2010) for boosting mood. As positive emotions are thought to build resilience, it may be useful to incorporate this technique into future resilience-building interventions.
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