



## Resilience to suicidality: The buffering hypothesis

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### ABSTRACT

Recent years have seen a growing interest into resilience to suicidality, which has been described as a perception or set of beliefs which buffer individuals from suicidality in the face of 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 this 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 to amplify suicidality. Seventy-seven studies 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 moderating impact of attributional style, perfectionism, agency and hopelessness. These findings support the buffering hypothesis and suggest that a range of psychological factors may confer resilience to suicidality. These results suggest that the identification of moderators may improve estimates of suicide risk and that the development of buffering factors could be a key focus of suicide interventions.

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## 1. 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 behaviors 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, Waternaux, Haas, & Malone, 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 among 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., 2010; Valtonen et al., 2005) and represent the majority of individuals presenting with suicidal behaviors (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, Gooding, Wood, & Tarrier, 2010; Johnson, Gooding, Wood, Taylor, et al., 2010; Rutter, Freedenthal, & Osman, 2008). These studies have tended to focus on the presence of suicidal ideation in non-clinical samples (Blankstein, Lumley, & Crawford, 2007; Chang, 2002a). Suicidal ideation can be understood as suicide-related thoughts, intentions and plans (Beck & Steer, 1991), although there is variation between the suicidality measures used by studies, with some including past suicidal behavior as an indicator (Osman et al., 2001). There is a strong need to investigate suicidal ideation as an outcome, for several reasons. First, suicidality can be understood as a continuum (Carter et al., 2005; Mann et al., 1999) with suicidal ideation increasing risk for completed suicide (Funahashi et al., 2000). Second, suicidal ideation itself is deeply distressing and associated with a range of psychological difficulties (Beck et al., 1993; Garlow et al., 2008; Liu et al., 2006). And third, presence of some level of suicidal ideation may be as high as 50% in some non-clinical samples such as students (Johnson, Gooding, Wood, & Tarrier, 2010), further emphasising the usefulness of such research.

Among the studies which have been conducted, 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 buffer against the pernicious impact

of stress (Johnson, Gooding, Wood, & Tarrier, 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.

### 1.1. 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).

#### 1.1.1. 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 Fig. 1). 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 criteria (Masten, 2001). Furthermore, although research focused on suicidality has highlighted the importance of resilience, methodologies employed have not permitted interaction effects to be examined.

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 Fig. 2). 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.

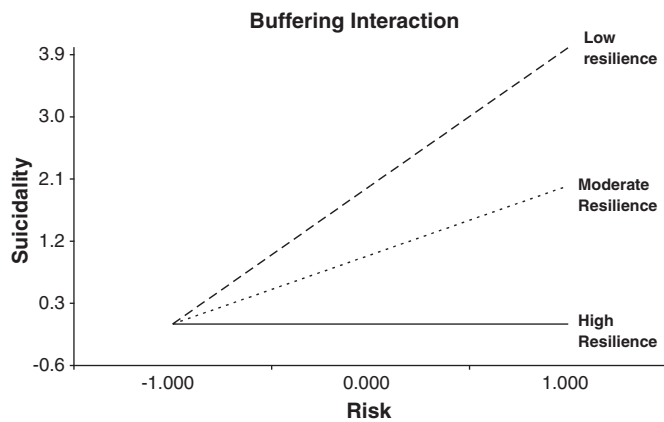


Fig. 1. Hypothetical resilience interaction. For individuals high on resilience, the association between risk and suicidality is diminished.

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 Fig. 2).

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.

Presence of buffering effects can be examined through the use of statistical tests of moderation, such as a moderated regression analysis (Frazier, Tix, & Barron, 2004). These aim to investigate whether a third variable can alter the strength or direction of the association between two other variables, which in the current review will be the risk factor and suicidality outcome. Thus, the aim of the test of moderation is not so much to substantially improve prediction by increasing  $r^2$ , although this is a necessary criterion, but rather to assess whether the moderator variable does indeed change the size or direction of the expected association between two variables. The goal of the current review is to investigate studies which use statistical tests of moderation, and as such the terms 'moderator,' 'buffer,' and 'resilience variable' will all be used to refer to factors which appear to have a moderating impact upon risk and suicidality.

### 1.1.2. 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

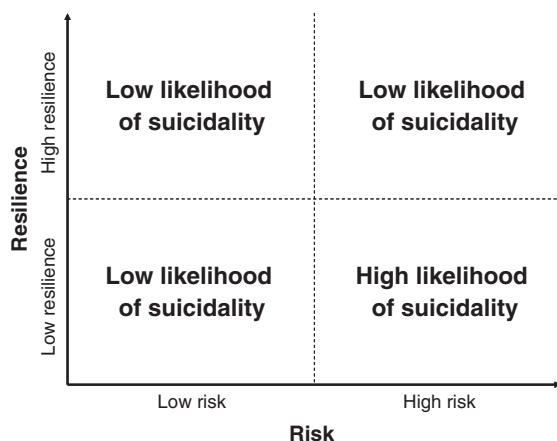


Fig. 2. Risk and resilience as separate dimensions.

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 Fig. 3). 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 Fig. 3). For example, whereas high levels of positive self-appraisals have been described as conferring resilience and buffering suicidal thoughts (Johnson, Gooding, Wood, & Tarrier, 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, Ireland, & Resnick, 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.

### 1.1.3. 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, Gooding, Wood, & Tarrier, 2010; Johnson, Gooding, Wood, Taylor, 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.

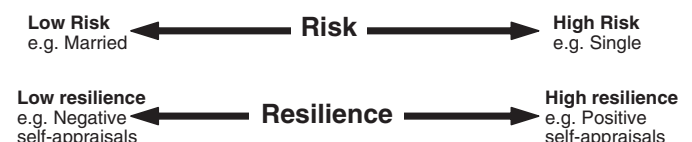


Fig. 3. Risk and resilience as separate bipolar dimensions.

## 1.2. 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, Gooding, Wood, & Tarrier, 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. Selection of research

### 2.1. 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, behavior, 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 behaviors (e.g., aggressive behaviors and fearful behaviors), affect (e.g., depressed mood and positive mood) or clinical symptomatology (e.g., psychotic symptoms and 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.

### 2.2. 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.

## 3. Research review

### 3.1. Cognitive abilities, processes and tendencies as resilience to suicidality

#### 3.1.1. 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 behaviors (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 positivity of 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 positivity of cognitive interpretations of the world, self and future among 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 generalize 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), although the nature of the interaction for this second study is not clear.



**Table 1**  
Moderating variables.

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

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 Fig. 1 (Chang et al., 2007; Hirsch & Conner, 2006; Hirsch et al., 2009). Overall, strong evidence supports attributional style as a suicide resilience factor. In particular, it appears that overall positivity of attributional or interpretative style (Chang et al., 2007; Hirsch & Conner, 2006; Hirsch et al., 2009) and a reduced tendency to generalize negative interpersonal events and (Joiner & Rudd, 1995) may buffer the impact of risk on suicidality.

### 3.1.2. 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, 2001, 2004; 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 & Febraro, 1994; Clum et al., 1997; 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 et al., 2007; Chang, 2002a; Clum & Febraro, 1994; Edwards & Holden, 2001; Grover et al., 2009; Kwok & Shek, 2009).

Together, these studies provide mounting evidence in favor of a buffering impact of problem solving ability. However, there were two studies which failed to find supporting evidence in favor of problem solving ability measured using the MEPS (Clum & Febraro, 1994; Clum et al., 1997), 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 & Febraro, 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 & Febraro, 1994; Grover et al., 2009; Yang & Clum, 1994). Conversely, of the two studies which investigated exam failure as a risk factor (Priester & Clum, 1993a,b), 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 among self-

**Table 2**

Studies reviewing cognitive abilities and tendencies as potential resilience variables where the outcome was suicidality.

	Participant sample	Cognitive ability or tendency	Risk factor	Measure of suicidality	Significant interactions	Remarks
Rasmussen et al., 2008 <sup>a</sup>	Self-harmers, N = 40 (17 M)	Overgenerality in autobiographical memory for both positive and negative events measured using the autobiographical memory task (Williams & Broadbent, 1986)	Three dimensions of perfectionism (socially prescribed perfectionism, other-oriented perfectionism and self-oriented perfectionism) measured using the MPS	Suicidal ideation measured using the suicidal ideation subscale of the SPS	Overgeneral memory for positive events amplified the association between socially prescribed perfection and suicidal ideation.	Results plotted
Surrence et al., 2009	Undergraduates, N = 96 (2 M)	Rumination (reflection and brooding). Measured using the Ruminative Responses Scale (Treyner et al., 2003)	Suicide attempter status	Suicidal ideation measured using the BSS	Reflection interacted with attempt history	Results not plotted
Selby et al., 2007	Undergraduates, N = 83 (18 M)	Rumination (Thoughts of Revenge, Angry Afterthoughts, Angry Memories and understanding of causes) measured using the Anger Rumination Scale (Sukhodolsky, Golub, & Cromwell, 2001)	Depression measured using the BDI-II	Suicidal ideation measured using the BSS	Thoughts of revenge amplified the impact of depression	The issue of skewness is not addressed, which could be expected to be a particular problem in this study as an undergraduate sample was used and suicidality was measured with the BSS. Plotted interaction suggests presence of a cross-over effect
Bonner & Rich, 1988 <sup>a</sup>	Undergraduates, N = 186 (85 M)	Rational cognitive processes and reasoning measured using the Rational Beliefs Inventory; (Shorkey & Whiteman, 1977)	Two risk variables: Reasons for living (Reasons for Living Questionnaire; Linehan et al., 1983) and loneliness (UCLA Loneliness Scale; Russell, Peplau & Cutrona, 1980)	Suicidal ideation measured using a self-report adaptation of the BSS	None	
Bonner & Rich, 1990	Individuals residing in a detention centre N = 146 (146 M)	Rational cognitive processes and reasoning measured using the Rational Beliefs Inventory; (Shorkey & Whiteman, 1977)	Jail stress scale designed for use in the study	Suicidal ideation measured using a self-report adaptation of the BSS	Rational cognitive processes interacted with jail stress	Results not plotted
O'Connor & Forgan, 2007 <sup>a</sup>	Undergraduates, N = 255 (56 M)	Goal adjustment (goal disengagement and goal reengagement) measured using the goal adjustment scale (Wrosch, Scheier, Miller, Schulz, & Carver, 2003)	Three dimensions of perfectionism (socially prescribed perfectionism, other-oriented perfectionism and self-oriented perfectionism) measured using the MPS	Suicidal ideation measured using 4 items from the GHQ	Goal re-engagement attenuated the impact of socially prescribed perfectionism	Results plotted
Restifo et al., 2009	Individuals with schizophrenia or schizoaffective disorder, N = 164 (90 M)	Insight measured using a single dichotomous item	Premorbid social and school functioning measured using the Premorbid Adjustment Scale (Cannon-Spoor, Potkin, & Wyatt, 1982)	Suicide attempt status classified using a modified version of the Harkavy Asnis Suicide Survey (Harkavy Friedman & Asnis, 1989)	None	
Priester & Clum, 1993b	Undergraduates, N = 282	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	Exam failure	Suicidal ideation measured using the MSSl	Ability to generate more relevant alternatives to problems and tendency to see drawbacks to solutions interacted with exam failure	Gender and age information not provided. Results not plotted
Yang & Clum, 1994	International Undergraduates, N = 101 (73 M)	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	Life stress measured using the LES	Suicidal ideation measured using the MSSl	Tendency to see drawbacks to solutions attenuated the impact of life stress	Results plotted, indicate clear buffering impact of tendency to see drawbacks to solutions

Table 2 (continued)

	Participant sample	Cognitive ability or tendency	Risk factor	Measure of suicidality	Significant interactions	Remarks
Clum & Febraro, 1994	Individuals reporting high levels of suicide ideation $N = 59$ (25 M)	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	Life stress measured using the LES	Two outcome measures; Suicidal Ideation measured using both the BSS and MSSSI	Self-reported approach-avoidance subscale interacted with life stress where the outcome was suicidal ideation measured using the BSS	The interaction was not plotted so it is difficult to draw firm conclusions, but an examination of group means suggests that the problem-solving subscale did not act as a buffer
Clum et al., 1997	Individuals with depressive symptoms, $N = 132$ (47 M)	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	Life stress measured using the LES	Two outcome measures; Suicidal Ideation measured using both the BSS and MSSSI	None	
Grover et al., 2009	Adolescent psychiatric inpatients, $N = 102$ (32 M)	Self-reported problem solving measured using the PSI	Stressful life events; chronic life stress, both measured using the Chronic Stress and Episodic Life Events Interview for Adolescents (Hammen, 2004)	Suicidal Ideation measured using the MSSSI	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
Priester & Clum, 1993a	Undergraduates, $N = 303$	Self-reported problem solving ability (self reported approach-avoidance style, personal control and perceived confidence) measured using the PSI	Exam failure	Suicidal Ideation measured using the MSSSI	None	Gender information of participants not provided
Chang, 2002a <sup>a</sup>	Undergraduates, $N = 371$ (72 M)	Self-reported problem solving ability measured using the SPSI-R-SF	Perfectionism measured using the MPS	Suicidal ideation measured using the SIQ	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 ( $SD = 20.78$ ), suggesting skewness may have been present
Chang, 2002b	Undergraduates, $N = 306$ (121 M)	Self-reported problem solving ability measured using the SPSI-R-SF	Life stress over the past month measured using the inventory of High-School Students' Recent Life Experiences (Kohn & Milrose, 1993)	Suicidal ideation measured using the SIQ	None	
Kaslow et al., 1998	African-American women, $N = 285$	Self-reported problem solving ability measured using the Preliminary Strategic Approach to Coping Scale (Hobfoll, Dunahoo, Ben-Porath, & Monnier, 1994)	Physical and non-physical partner abuse measured using the Index of Spouse Abuse (Hudson & McIntosh, 1981)	Suicide attempter status	None	

(continued on next page)

Table 2 (continued)

	Participant sample	Cognitive ability or tendency	Risk factor	Measure of suicidality	Significant interactions	Remarks
Kidd & Carroll, 2007	Homeless youths, <i>N</i> = 208 (122 M)	Self-reported problem solving ability and coping measured using a range of single items	Gender	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, & Seeley, 1996)	None	
Edwards & Holden, 2001 <sup>a</sup>	Undergraduates, <i>N</i> = 298 (147 M)	Two types of dysfunctional coping measured using The Coping Inventory for Stressful Situations (Endler & Parker, 1990); emotion oriented coping and avoidance distraction coping	Meaning in life measured using the Sense of Coherence scale, (Antonovsky, 1987) and Purpose in Life measured using the Purpose in Life Test (Crumbaugh & Maholick, 1969)	Three outcomes: Suicidal ideation, suicide attempts and likelihood of future suicidality measured using eight items from the Suicidal Manifestations Questionnaire (Johns & 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 purpose in life where the outcome was suicidal ideation in women only; Emotion oriented coping interacted with purpose in life where the outcome was likelihood of suicide in women only	In total, 24 regressions were investigated increasing likelihood of Type I error. Results not plotted
Kwok & Shek, 2009 <sup>a</sup>	Secondary school students, <i>N</i> = 5557 (2950 M)	Problem solving measured using the Chinese version of the Social Problem Solving Inventory in a short form (Siu & Shek, 2005)	Perceived family functioning measured using the Chinese Family Assessment Instrument (Shek, 2000)	Family functioning assessed using the Chinese Family Assessment Instrument (Shek, 2000)	Suicidal ideation assessed using the suicidal ideation subscale of the Suicidal Risk Scale for Hong Kong students (Tse & Bagley, 2002)	Results plotted
Blankstein et al., 2007 <sup>a</sup>	Undergraduates, <i>N</i> = 205 (61 M)	Overall perfectionism and the 3 dimensions of perfectionism (socially prescribed perfectionism, other-oriented perfectionism and self-oriented perfectionism) measured using the MPS	Overall adaptive coping and three subscales of problem-solving, social support seeking and avoidance coping measured using the CSI; total self-esteem, social self-esteem and academic self-esteem measured using an extended version of the RSES; perceived social support (overall support; friends support; significant other support; family support) all measured using the MSPSS; achievement hopelessness, interpersonal hopelessness, and overall hopelessness measured using an extended version of the BHS; optimism measured using the LOT	Suicidal ideation measured using a questionnaire developed specifically for the study	Overall perfectionism interacted with overall hopelessness and optimism among men, overall self-esteem in women and overall social support in both men and women; Socially prescribed perfectionism interacted with overall self-esteem and optimism in men; self-oriented perfectionism interacted with significant other support in both women and men; Other oriented perfectionism interacted with problem-solving and family support among women and interpersonal hopelessness among men	Results not plotted. Due to having multiple risk factors, potential buffers and conducting analyses among 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
Hirsch & Conner, 2006 <sup>a</sup>	Undergraduates, <i>N</i> = 284 (99 M)	Attributional style measured using an extended version of the ASQ	Hopelessness measured using the BHS	Suicidal ideation measured using the BSS	Attributional style buffered hopelessness	Results plotted, indicating strong resilience effect
Hirsch et al., 2009	Undergraduates, <i>N</i> = 138 (38 M)	Attributional style measured using an extended version of the ASQ	Lifetime incidence of traumatic events measured using the student form of the LITE	Suicidal ideation measured using the BSS	Attributional style buffered lifetime incidence of traumatic events	Results plotted, indicating strong resilience effect
Joiner & Rudd, 1995	Undergraduates, <i>N</i> = 203 (89 M)	Attributional style (Generality for negative interpersonal events and generality for negative achievement events) = measured using an extended version of the ASQ	Stressful interpersonal events and stressful achievement events both measured using the Negative Life Events Questionnaire (Saxe & Abramson, 1987)	Suicidal ideation measured using the Suicidality Subscale of the Depressive Symptom Inventory (Metalsky, 1991)	Generality in attributions for interpersonal events amplified the impact of experiencing negative interpersonal events	Results not plotted



Table 2 (continued)

	Participant sample	Cognitive ability or tendency	Risk factor	Measure of suicidality	Significant interactions	Remarks
Priester & Clum, 1992	Undergraduates, <i>N</i> = 269	Sub-types of attributional style (positive-internal, positive-stable, positive-global, negative-internal, negative-stable, negative-global) measured using the ASQ	Exam failure	Suicidal ideation measured using the MSSI	Negative-stable and positive-internal attributional styles interacted with exam grade	Gender information not provided
Chang et al., 2007	Adolescents, <i>N</i> = 1245 (710 M)	Cognitive interpretations of the world, self and future measured using the Cognitive Triad for children (Kaslow, Stark, Printz, Livingston, & Ling Tsai, 1992)	Depression measured using the Chinese version of the Children's Depression Inventory (Kovacs, 1981)	Suicidal ideation measured using the Positive and Negative Suicide Ideation Scale (Osman, Gutierrez, Kopper, Barrios, & Chiro, 1998)	Interpretations of the world, self and future moderated the impact of depression on suicidality	Results not plotted
Cha & Nock, 2009	Adolescents, <i>N</i> = 54 (8 M)	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 et al., 2005)	Childhood trauma measured using a subscale of the Childhood Trauma Questionnaire (Bernstein, Ahluvalia, Pogge, & Handelsman, 1997)	Two outcomes, suicidal ideation and suicide attempts over the past year both measured using the Self-Injurious Thoughts and Behaviors Interview (Nock, Holmberg, Photos, & Michel, 2007)	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	Transformations were applied to skewed variables. Results plotted, clear resilience effects emerging
Ciarrochi et al., 2002	Undergraduates, <i>N</i> = 302 (70 M)	'Objective' emotional perception ability using the Stories Test (Mayer & Geher, 1996); self-reported emotion perception and self-reported ability to manage others' emotions (Schutte et al., 1998)	Daily life stress measured using the HAS; Stressful life experiences using the LES	Suicidal ideation measured using the SIQ	Ability to manage others' emotions subscale buffered daily life stress; 'objective' emotion perception amplified daily life stress	Results not plotted
Tamas et al., 2007 <sup>a</sup>	Children with major depressive disorder, <i>N</i> = 407 (218 M)	Temperament (emotionality, activity, sociability and shyness) measured using the EAS Temperament Questionnaire (Buss & Plomin, 1984)	Emotion regulation style (adaptive and maladaptive) both measured using a subscale of the "Feelings and Me" Child Version Questionnaire (Kovacs, 2000)	Suicidality measured using four items from the depressive disorder section from the Schedule for Children and Adolescents-Diagnostic Version (Sherrill & Kovacs, 2000)	Shyness interacted with adaptive emotion regulation style; sociability interacted with emotion regulation ability	Results plotted but not do demonstrate clear evidence of a buffering effect
Hewitt et al., 1994	Undergraduates, <i>N</i> = 160 (55 M)	Perfectionism (self-oriented and socially prescribed perfectionism) measured using the MPS	Life stress measured using the LEI	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
Ciarrochi et al., 2005 (Study 1)	Undergraduates, <i>N</i> = 240 (50 M)	Personal need for Structure (Desire for Simple Structure and Intolerance of Uncertainty) measured using the Personal Need for Structure scale (Neuberg & Newsom, 1993)	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
Ciarrochi et al., 2005 (Study 2)	Undergraduates, <i>N</i> = 36 (9 M)	Personal need for Structure (Desire for Simple Structure and Intolerance of Uncertainty)	Life stress measured using the HAS	Suicidal ideation measured using the SIQ	None	Results not plotted
Slap et al., 2001	Adolescents, <i>N</i> = 6577 (3267 M)	Impulsivity measured using a single dichotomous item	Adoptive status	Presence or absence of suicide attempts in the past year	None	Each variable included was a single dichotomous variable

Note. BDI-II = Beck Depression Inventory II (Beck, Steer, & Brown, 1996). MPS = The Multidimensional Perfectionism Scale (Hewitt & Flett, 1991b). SPS = Suicide Probability Scale (Cull & Gill, 1988). BSS = Beck Suicide Ideation Scale (Beck, Kovacs, & Weissman, 1979). GHQ = General Health Questionnaire (Goldberg, 1978). MEPS = Means End Problem Solving task (Platt & Spivack, 1972). LES = Life Experiences Survey (Sarason, Johnson, & Siegel, 1978). MSSI = Modified Scales for Suicidal Ideation (Miller, Norman, Bishop, & Dow, 1986). PSI = Problem-Solving Inventory (Heppner & Petersen, 1982). SIQ = Suicidal Ideation Questionnaire (Reynolds, 1987). SPSSI-R-SF = Short-form of the Social Problem-Solving Inventory-Revised (D'Zurilla, Nezu, & Maydeu-Olivares, 2001). LITE = Lifetime Incidence of Traumatic Events (Greenwald & Rubin, 1999). ASQ = Attributional Style Questionnaire (Peterson et al., 1982). BHS = Beck Hopelessness Scale (Beck et al., 1974). HAS = Hassles Scale (Kanner, Coyne, Schaefer, & Lazarus, 1981). LEI = Life Events Inventory (Cochrane & Robertson, 1973). RSES = Rosenberg Self-esteem Scale (Rosenberg, 1965). CSI = Coping Strategy Indicator (Amirkhan, 1994); MSPSS = Multidimensional Scale of Perceived Social Support (Zimet, Dahlem, Zimet, & Farley, 1988).

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

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.

### 3.1.3. 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., 2009; 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 favor 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 (Brezo et al., 2006) may represent an important area for future research into resilience.

### 3.1.4. 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. While 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, 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).

### 3.1.5. Cognitive biases

The past two decades have seen considerable growth in research into the cognitive biases linked to suicidal behavior. 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 phenomena 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 favor 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, 2008; 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).

## 3.2. Beliefs and attitudes as resilience to suicidality

### 3.2.1. Self-related beliefs

#### 3.2.1.1. 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

among individuals with disorders such as schizophrenia and depression (Tarrier, Haddock, Lewis, Drake & Gregg, 2006; Wetzell & 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.

#### 3.2.1.2. 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 favor 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 among 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 among men but not women (Hobbs & McLaren, 2009; Waelde et al., 1994). Interestingly, this does not necessarily contradict the three above studies which found interactions among 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.

**3.2.1.3. 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 behavioral activities concerning problem solving (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 & Febraro, 1994; Clum et al., 1997; Esposito & Clum, 2002; Priester & Clum, 1993a), two reported significant findings (Clum & Febraro, 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.

**3.2.1.4. Reasons for living.** The Reasons for Living Inventory (Linehan, Goodstein, Nielsen, & Chiles, 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 among 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, among 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. Dichotomization 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 among 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).

**3.2.1.5. 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 among both men and women and purpose in life interacted with dysfunctional coping among 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.

### 3.2.2. 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, Gooding, Kapur, Barrowclough, & Tarrier, 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.

**3.2.2.1. 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

**Table 3**

Studies reviewing self-related beliefs and attitudes as potential resilience variables where the outcome was suicidality.

	Participant sample	Self-related moderator variable	Risk factor	Measure of suicidality	Significant interactions	Remarks
Lieberman et al., 2005	Israeli male soldiers, <i>N</i> = 230	Self-esteem measured using the RSES	General health (namely mental distress, perceived functioning, and perceived health) measured using a Hebrew version of the GHQ	Suicide ideation as measured by the GHQ which measures symptoms over the past month.	Self-esteem attenuated the impact of mental distress	Results not plotted
Blankstein et al., 2007 <sup>a</sup>	Undergraduates <i>N</i> = 205 (61 M)	Total self-esteem, social self-esteem and academic self-esteem measured using an extended version of the RSES	Overall perfectionism and three subscales (other-oriented, self-oriented and socially prescribed) measured using the MPS	Suicidal ideation measured using a questionnaire developed specifically for the study	Overall self-esteem interacted with perfectionism in women; Overall self-esteem interacted with socially prescribed perfectionism in men	Results not plotted. Large number of moderations conducted, increasing likelihood of Type I error.
Wilke, 2004	Individuals entering drug and alcohol treatment programmes, <i>N</i> = 2513 (1850 M)	Self-esteem measured using the RSES	Presence or absence of substance use	Presence or absence of suicide ideation in the previous 12 months	Self-esteem interacted with substance use	Results plotted
Kidd & Shahar, 2008 <sup>b</sup>	Homeless young adults, <i>N</i> = 208 (122 M)	Self-esteem measured using the RSES	Physical abuse measured using the Conflict Tactics Scale (Straus & Gelles, 1990); parent neglect measured using a single item; dysfunctional attachment style measured using the Relationship Questionnaire (Bartholomew & Horowitz, 1991)	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)	None	
Hershberger & D'Augelli, 1995	Gay or bisexual youths, <i>N</i> = 165 (123 M)	Self-esteem (composite score including the RSES and a self-acceptance variable)	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	None	
Wilburn & Smith, 2005	Undergraduates, <i>N</i> = 88 (9 M)	RSSE	Life stress measured using the LES	Suicidal ideation measured using the SIQ	None	
De Man & Gutierrez, 2002 <sup>a</sup>	Undergraduates, <i>N</i> = 131 (23 M)	Stability of self-esteem	Self-esteem measured using the RSES	Suicidal ideation measured using the Scale for Suicidal Ideation (De Man & Leduc, 1994)	Stability of self-esteem buffered the impact of low self-esteem	Results not plotted
Nugent & Williams, 2001	Individuals seeking help from family service organisations, <i>N</i> = 394	MPSI Self-esteem	MPSI Depression	MPSI Suicidal Thoughts subscale	Self-esteem interacted with depression	Gender breakdown unclear for the subsample which responded to the suicidality subscale
Slap et al., 2001	Adolescents, <i>N</i> = 6577 (3267 M)	Self-image was measured using a combination of items chosen for the study	Adoptive status	Past year suicide attempts recorded as a dichotomous variable	None	
Walker et al., 2008	Undergraduates, <i>N</i> = 459 (177 M)	Ethnic identity measured using the Multigroup Ethnic Identity Measure (Phinney, 1992)	Depression measured using the BDI	Suicidal ideation measured using the BSS	Ethnic identity attenuated the impact of depression for African-Americans, but not for European Americans	Results not plotted
Wedig & Nock, 2007	Adolescents, <i>N</i> = 36 (9 M)	Adolescent self-criticism was measured using an item from the Self-Rating Scale (Hooley et al., 2002)	Parental criticism measured using a subscale of a parental expressed emotion measure (Magana et al., 1986)	Suicidality measured using the Self-Injurious Thought and Behaviors Interview (Nock et al., 2007)	Self criticism amplified the impact of parental criticism	Results plotted, indicate clear buffering impact
Brown et al., 2009 (Study 1) <sup>a</sup>	Undergraduates, <i>N</i> = 170 (42 M)	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	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	This result not plotted

(continued on next page)



Table 3 (continued)

	Participant sample	Self-related moderator variable	Risk factor	Measure of suicidality	Significant interactions	Remarks
Brown et al., 2009, (Study 2) <sup>a</sup>	Undergraduates, N = 181 (66 M)	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	None	
Waelde et al., 1994	Undergraduates, N = 537 (237 M)	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	Agency moderated the negative impact of stressful achievement-related events among men but not women	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.
Van Orden et al., 2008 (Study 1) <sup>a</sup>	Undergraduates, N = 309 (82 M)	Burdensomeness measured using the INQ	Belongingness measured using the INQ	Suicidal ideation measured using the BSS	Burdensomeness amplified feelings of low belongingness	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.
Van Orden et al., 2008 (Study 2)	Clients from a psychology clinic, N = 153 (70 M)	Burdensomeness measured using the INQ	Acquired capability for suicide (measured using a scale from an unpublished manuscript)	Clinician ratings of suicide risk	Burdensomeness amplified acquired capability for suicide	Results plotted, demonstrating clear resilience effect
Joiner et al., 2009 (Study 1) <sup>a</sup>	Individuals reporting symptoms of sadness and anhedonia, N = 815 (377 M)	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 scored items	Family support attenuated the impact of burdensomeness	Results plotted, reveal a strong moderating impact of family support
Joiner et al., 2009 (Study 2) <sup>a</sup>	Individuals experiencing suicidality, N = 313 (257 M)	Burdensomeness measured using items from the SPS	Social support measured using items from the SPS	Whether or not the participants' recent suicidal crisis had involved a suicide attempt	none	
Goodwin & Marusic, 2003	Adolescents aged 15–19. Data from the National Comorbidity Survey in the United States, N = 1456	Social inferiority measured as a single item	Psychiatric 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	Two outcomes: Suicidal ideation and suicide attempter status, both measured using the World Health Organization Composite International Diagnostic Interview	Feelings of inferiority interacted with diagnoses of panic attack, social phobia and agoraphobia	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
Hobbs & McLaren, 2009	Older adults, N = 159 (69 M)	Agency measured using the agency subscale from an extended version of the PAQ	Depression measured using the CES-D depression scale (Radloff, 1977)	Suicidal ideation assessed using the 7-item suicide subscale of the GHQ	Agency interacted with depression among men but not women	The interaction was plotted, but the nature of interaction reflected a cross-over effect rather than a buffering impact of agency. Results not plotted.
Holden et al., 1989 (Study 1) <sup>a</sup>	Psychiatric patients, N = 97 (51 M)	Agency measured using the Desirability scale from the Personality Research Form (Jackson, 1984)	Hopelessness measured using the BHS	Three outcomes each measured using the BSS; suicide desire, suicide preparation and overall suicidal ideation.	Agency interacted with hopelessness to predict each of the three suicide outcomes.	
Holden et al., 1989 (Study 2) <sup>a</sup>	Males residing in a correction facility, N = 203	Agency measured using the Desirability scale from the Personality Research Form (Jackson, 1984)	Hopelessness measured using the BHS	Two outcome measures: Suicide attempter status and suicidal intent demonstrated in a past suicide attempt measured using a single item 5-point likert scale	Agency interacted with hopelessness to predict both suicide intent and suicide attempter status	Results not plotted. Only 26 participants form an overall sample of 203 scored above zero on the measure of suicide
Ivanoff & Jang, 1991 <sup>a</sup>	Males residing in a correction facility, N = 130	Agency measured using Edwards Social Desirability Scale (Edwards, 1970)	Hopelessness measured using the BHS	Three suicidality outcomes, current suicide ideation, future possibility of suicide, and past parasuicidal behavior each measured using an interviewer rated version of the SBQ (Linehan & Nielsen, 1981)	Agency interacted with hopelessness to predict each of the three suicide outcomes	Results not plotted

Table 3 (continued)

	Participant sample	Self-related moderator variable	Risk factor	Measure of suicidality	Significant interactions	Remarks
Esposito & Clum, 2002	Adolescents in a juvenile detention centre, <i>N</i> = 200 (141 M)	Problem solving confidence measured using the perceived confidence subscale of the PSI	Experiences of physical and sexual abuse, measured using two items from the Child Maltreatment Survey (Yang & Clum, 2000)	Suicidal ideation measured using the MSSSI	Problem solving confidence attenuated the impact of physical abuse; problem solving confidence attenuated the impact of sexual abuse	
Clum & Febbraro, 1994	Individuals experiencing some degree of suicidal ideation, <i>N</i> = 59 (25 M)	Problem solving confidence measured using the Problem Solving Confidence subscale of the PSI	Life stress measured using the LES	Two outcome measures: Suicidal ideation measured using both the BSS and MSSSI	Problem-solving confidence attenuated the impact of life stress according to the BSS but not the MSSSI	Results not plotted
Clum et al., 1997	Individuals reporting symptoms of depression, <i>N</i> = 132 (47 M)	Problem solving confidence measured using the Problem Solving Confidence subscale of the PSI	Life stress measured using the LES	Two outcome measures; Suicidal ideation measured using both the BSS and MSSSI	None	
Priester & Clum, 1993 <sup>a</sup>	Undergraduates, <i>N</i> = 303	Problem solving confidence measured using the Problem Solving Confidence subscale of the PSI	Exam failure	Suicidal ideation measured using the MSSSI	None	Gender information not provided
Liu et al., 2006	Community sample, <i>N</i> = 2015	Reasons for living measured using a brief version of the RFL	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	Past year ideation measured using a single item dichotomous measure.	Reasons for living attenuated the impact of life stress	Specific gender information not provided. Results plotted, indicating buffering impact of reasons for living
Bonner & Rich, 1988 <sup>a</sup>	Undergraduates, <i>N</i> = 186 (85 M)	Reasons for living measured using the RFL	Two risk variables; Loneliness (UCLA Loneliness Scale; Russell, Peplau, & Cutrona, 1980) and Cognitive distortions (Rational Beliefs Inventory; Shorkey & Whiteman, 1977)	Suicidal ideation measured using a self-report adaptation of the BSS	None	Results not plotted
Bonner & Rich, 1990	Individuals residing in a detention centre, <i>N</i> = 146 (146 M)	Reasons for living measured using the RFL	Jail stress scale designed for use in the study	Self-report adaptation of the BSS	None	Results not plotted
Britton et al., 2008 <sup>a</sup>	Older adults using psychiatric services, <i>N</i> = 125 (58 M)	Responsibility to Family Subscale of the RFL	Hopelessness measured using the BHS	Suicidal ideation measured using the BSS	Responsibility to family amplified the impact of hopelessness	Graph indicates presence of a cross-over effect
Edwards & Holden, 2001 <sup>a</sup>	Undergraduates, <i>N</i> = 298 (147 M)	Meaning in life measured using the Sense of Coherence scale, (Antonovsky, 1987) and Purpose in Life measured using the Purpose in Life Test (Crumbaugh & Maholick, 1969)	Emotion oriented coping and avoidance distraction coping both measured using The Coping Inventory for Stressful Situations (Endler & Parker, 1990)	Three outcomes: Suicidal ideation, suicide attempts and likelihood of future suicidality measured using eight items from the Suicidal Manifestations Questionnaire (Johns & Holden, 1997)	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 where the outcome was suicide attempt or likelihood of suicide 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 likelihood of suicide in women only	In total, 24 regressions were investigated increasing likelihood of Type I error. Results not plotted

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Table 3 (continued)

	Participant sample	Self-related moderator variable	Risk factor	Measure of suicidality	Significant interactions	Remarks
Heisel & Flett, 2004	Psychiatric patients, <i>N</i> = 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

Note. RSES = Rosenberg Self Esteem Scale (Rosenberg, 1965). GHQ = General Health Questionnaire (Goldberg, 1978). MPS = The Multidimensional Perfectionism Scale (Hewitt & Flett, 1991a). LES = Life Experiences Survey (Sarason et al., 1978). SIQ = Suicidal Ideation Questionnaire (Reynolds, 1987). MPSI = Multi Problem Screening Inventory (Nugent & Williams, 2001). BDI = Beck Depression Inventory (Beck, Ward, Mendelson, Mock, & Erbaugh, 1961). PAQ = Personal Attributes Questionnaire (Spence & Helmreich, 1978). INQ = Interpersonal Needs Questionnaire (Van Orden et al., 2008). PSI = Problem-Solving Inventory (Heppner & Petersen, 1982). MSSI = Modified Scales for Suicidal Ideation (Miller et al., 1986). BSS = Beck Suicide Ideation Subscale (Beck & Steer, 1991). RFL = Reasons for Living Questionnaire (Linehan et al., 1983). SPS = Suicide Probability Scale (Cull & Gill, 1988). CES-D = Center for Epidemiologic Studies Depression Scale (Radloff, 1977).

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

<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.

protective, as while 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 favor 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 & Febraro, 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 favor 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 particular 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 & Febraro, 1994; Clum et al., 1997; Yang & Clum, 1994), three reported significant interactions (Bonner & Rich, 1990; Clum & Febraro, 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).

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.

**3.2.2.2. 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).

**3.2.2.3. 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).

**3.2.2.4. 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 favor 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, while

**Table 4**

Studies reviewing other-related beliefs and attitudes as potential resilience variables where the outcome was suicidality.

	Participant sample	other-related moderator variable	Risk factor	Measure of suicidality	Significant interactions	Remarks
Esposito & Clum, 2002	Young adults in a juvenile correction facility, <i>N</i> = 200 (141 M)	Number of social supports and perceived social support both measured using the Social Support Questionnaire (Sarason, Sarason, Shearin, & Pierce, 1987)	Childhood physical abuse and childhood sexual abuse both measured using a scale modelled on the Child Maltreatment Survey (Yang & Clum, 2000)	Two outcome measures; suicidal ideation measured using the MSSSI and suicidality measured using the SSB	Perceived social support interacted with sexual abuse where the outcome was either suicidal ideation or suicidal behaviors	Results not plotted
Kidd & Shahar, 2008 <sup>a</sup>	Homeless young adults, <i>N</i> = 208 (122 M)	Number of social supports measured using a single item and attachment style (dismissing or fearful) measured using the Relationship Questionnaire (Bartholomew & Horowitz, 1991)	Physical abuse measured using the Conflict Tactics Scale (Straus & Gelles, 1990); parent neglect measured using a single item and attachment style measured using the Relationship Questionnaire (Bartholomew & Horowitz, 1991)	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)	None	
Herba et al., 2008	Children, <i>N</i> = 926 (384 M)	Perceived social well-being measured using two scales based on the Social Production Function Theory (Nieboer, Lindenberg, Boomsma, & Van Bruggen, 2005) and perceived family environment measured using the EMBU-C (Markus, Lindhout, Boer, Hoogendijk, & Arrindell, 2003)	Bullying measured using two items chosen for the study	Suicide ideation measured using two items from the Youth Self-Report questionnaire (Achenbach, 1991)	Perceived family environment interacted with bullying, but not when the bullied children were also bullies themselves	Interaction not plotted
Yang & Clum, 1994	International students, <i>N</i> = 101 (73 M)	Perceived social support measured using the UCLA	Life stress measured using the LES	Suicidal ideation measured using the MSSSI	Social support attenuated the impact of life stress	Results plotted, show strong evidence of interaction
Bonner & Rich, 1990	Males residing in a detention centre, <i>N</i> = 146	Perceived social support measured using the UCLA	Jail stress measured using a scale designed for the study	Self-report adaptation of the BSS	Social support attenuated the impact of life stress	Results not plotted
Chen et al., 2008	Older Taiwanese women, <i>N</i> = 1347	Perceived emotional social support measured using a single dichotomous item	Marital discord measured using a single dichotomous item	Suicidal ideation measured using a single item, responses to which were dichotomized	Emotional social support interacted with marital discord	Results not plotted
Bonner & Rich, 1988 <sup>b</sup>	Undergraduates, <i>N</i> = 186 (85 M)	Perceived social support measured using the UCLA and 'vulnerability', a combination of factors including feelings of social and emotional alienation	Two risk variables: Cognitive distortions (Rational Beliefs Inventory; Shorkey & Whiteman, 1977) and Reasons for living measured using the RFL	Suicidal ideation measured using a self-report adaptation of the BSS	None	Results not plotted
Kaslow et al., 1998	African American women, <i>N</i> = 285	Perceived social support measured using the Perceived Social Support scale (Cohen & Hoberman, 1983) and family support measured using the Family Strengths scale (Olson, Larsen, & McCubbin, 1982))	Physical and non-physical partner abuse measured using the Index of Spouse Abuse (ISA; Hudson & McIntosh, 1981)	Lifetime suicide attempter status	Social support interacted with impact of physical and non-physical partner abuse	Results not plotted
Esposito & Clum, 2003	Young adults, <i>N</i> = 73 (37 M)	Perceived social support measured using the Survey of Children's Social Support—Short Version (Dubow, Edwards, & Ippolito, 1997)	Diagnosis of a comorbid disorder and diagnosis of internalizing disorder	Suicidal ideation measured using the MSSSI	Social support interacted with diagnosis of a comorbid disorder	Results not plotted
Blankstein et al., 2007 <sup>b</sup>	Undergraduates, <i>N</i> = 205 (61 M)	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)	Overall perfectionism and three subscales (other-oriented, self-oriented and socially prescribed)	Suicidal ideation measured using a questionnaire developed specifically for the study	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 among women but not men	Results not plotted

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Table 4 (continued)

	Participant sample	other-related moderator variable	Risk factor	Measure of suicidality	Significant interactions	Remarks
Clum & Febbraro, 1994	Individuals reporting high levels of suicide ideation $N = 59$ (25 M)	Perceived social support measured using the UCLA	Life stress measured using the LES	Two outcome measures: Suicidal ideation measured using both the BSS and MSSSI	Perceived social support interacted with life stress where the outcome was the MSSSI but not when it was the BSS	Results not plotted
Banyard & Cross, 2008	Young adults, $N = 2101$ (1025 M)	Perceived neighbourhood support and family support each assessed using three items chosen for the study	Sexual abuse and physical abuse each measured using a single item	Suicidal ideation in the past month measured using a single item with a 5-point likert scale	Neighbourhood support interacted with sexual abuse and physical abuse among females but not males; family support interacted with sexual abuse among females but not males	Results not plotted
Van Orden et al., 2008 (Study 1) <sup>b</sup>	Undergraduates, $N = 309$ (82 M)	Belongingness measured using the INQ	Burdensomeness measured using the INQ	Suicidal ideation measured using the BSS	Burdensomeness interacted with feelings of belongingness	The INQ was developed for the purposes of the study was not factor analysed. Skewness was found in the data but not transformed. Results plotted and demonstrate evidence of buffering impact
Lieberman et al., 2005	Israeli male soldiers, $N = 230$	Perceived social support (Avizur, 1987)	Three subscales of general health (namely mental distress, perceived functioning, and perceived health) measured using a Hebrew version of the GHQ	Suicide ideation as measured by the GHQ which measures symptoms over the past month.	None	
Clum et al., 1997	Individuals with depressive symptoms, $N = 132$ (47 M)	Perceived social support measured using the UCLA	Life stress measured using the LES	Two outcome measures: Suicidal Ideation measured using both the BSS and MSSSI	None	
Kidd et al., 2006	Young adults, $N = 9142$ (4400 M)	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	Presence of absence of suicide attempt in the past year.	None	
Schutt et al., 1994	Homeless adults, $N = 218$ (174 M)	Perceived social support measured using the Interpersonal Support Evaluation Checklist (Cohen & Syme, 1985)	Childhood trauma, legal problems and experiences of being robbed or assaulted, each measured using a single item	Suicidal thoughts in the past month measured using a single item with a 6-point likert scale response	None	
Luster & Small, 1997	Young adults, $N = 42, 568$	Parental monitoring and parental support each measured using a single item for which scores were dichotomized	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
Hershberger & D'Augelli, 1995	Gay or bisexual youths, $N = 165$ (123 M)	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	None	
Slap et al., 2001	Adolescents, $N = 6577$ (3267 M)	Family support measured using 13 items from the Add Health Study	Adoptive status	Presence or absence of suicide attempts in the past year	None	
Demi et al., 1998	Women with HIV, $N = 214$	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 measured using the Brief Symptom Inventory (Derogatis, 1993)	Presence or absence of suicidal ideation measured using a single item.	Family cohesion interacted with HIV-related symptoms	Results plotted, but as suicidal thoughts are plotted as the moderator interpretation is difficult
Kwok & Shek, 2009 <sup>b</sup>	Secondary school students, $N = 5557$ (2950 M)	Perceived family functioning measured using the using the Chinese Family Assessment Instrument (Shek, 2000)	Problem solving measured using the Chinese version of the Social Problem Solving Inventory in a short form (Siu & Shek, 2005)	Suicidal ideation assessed using the suicidal ideation subscale of the Suicidal Risk Scale for Hong Kong students (Tse & Bagley, 2002)	Perceived family functioning attenuated the impact of problem solving among men but not women	Results plotted



Table 4 (continued)

	Participant sample	other-related moderator variable	Risk factor	Measure of suicidality	Significant interactions	Remarks
Joiner et al., 2009 (Study 1) <sup>b</sup>	Individuals reporting symptoms of sadness and anhedonia, N = 815 (377 M)	Family support measured using a shortened version of the Provision of Social Relations Scale (Turner et al., 1983)	Burdensomeness measured using Rosenberg's General Mattering Scale (DeForge & Barclay, 1997)	Suicide ideation in the past month measured using the sum of three dichotomously scored items	Family support attenuated the impact of burdensomeness	Results plotted, reveal a strong moderating impact of family support
Joiner et al., 2009 (Study 2) <sup>b</sup>	Individuals experiencing suicidality, N = 313 (257 M)	Social support measured using items from the SPS	Burdensomeness measured using items from the SPS	Whether or not the participants' recent suicidal crisis had involved a suicide attempt	None	
Brown et al., 2009 (Study 1) <sup>b</sup>	Undergraduates, N = 170 (42 M)	Romantic relationship satisfaction 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	Romantic relationship satisfaction attenuated the impact of feelings of burdensomeness when the outcome was suicidal ideation but not when it was suicide attempter status	Graph reveals strong moderating impact of relationship satisfaction
Brown et al., 2009 (Study 2) <sup>b</sup>	Undergraduates, N = 181 (66 M)	Romantic relationship satisfaction 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	Romantic relationship satisfaction attenuated the impact of feelings of burdensomeness when the outcome was suicidal ideation but not when it was suicide attempter status	Results not plotted
Rodell et al., 2003	Homeless veterans, N = 188 (178 M)	Attachment to male caregivers and attachment to female caregivers each measured using the MPSI	Length of drug use, intensity of drug use, length of alcohol use and intensity of alcohol use each measured using the MPSI	Suicidal ideation measured using the MPSI	Attachment to male and female caregivers moderated each risk factor, including length and intensity of alcohol use and length and intensity of drug use	Results not plotted
Salzinger et al., 2007	Physically abused and non-abused children, N = 200 (130 M)	Attachment to parents measured using the Inventory of Parent and Peer Attachment (Armsden & Greenberg, 1987)	Presence or absence of physical abuse measured as a single item	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, & Vincent, 1993)	None	Results not plotted
Greening & Stoppelbein, 2002	Young adults, N = 1098 (520 M)	Religious beliefs measured using the Doctrinal Orthodoxy Scale (Batson et al., 1993)	Depression measured using the Children's Depression Inventory (Kovacs, 2000)	Perceived suicide risk measured using the Perceived suicide risk scale (Greening & Dollinger, 1993)	Religious beliefs interacted with depression	Results not plotted. Furthermore, it is interesting to know that it is self-rated suicide risk and not suicidal thoughts per se which religiosity appears to buffer against

Note. MSSS = Modified Scales for Suicidal Ideation (Miller et al., 1986). SSB = Scale for Suicidal Behavior (Yang & Clum, 2000). LES = Life Experiences Survey (Sarason et al., 1978). UCLA = UCLA Loneliness scale (Russell et al., 1980). SPS = Suicide Probability Scale (Cull & Gill, 1988). MPSI = Multi Problem Screening Inventory (Hudson, 1990). RFL = Reasons for Living Questionnaire (Linehan et al., 1983). INQ = Interpersonal Needs Questionnaire = Interpersonal Needs Questionnaire (Van Orden et al., 2008). BSS = Beck Scale for Suicide Ideation (Beck & Steer, 1991).

<sup>a</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.

<sup>b</sup> The resilience and risk factor for this study can be regarded as interchangeable, as both are internal psychological constructs.

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.

### 3.2.3. Religious beliefs

One study investigated the buffering impact of religious beliefs using the Christian Orthodoxy Scale (Batson, Schoenrade, & Ven-Durant, 1993) which measures beliefs in traditional Christian teachings (Greening & Stoppelbein, 2002). Among 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.

### 3.2.4. 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 recognized 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.

**3.2.4.1. 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, Weissman, Lester, & Trexler, 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 among 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, Duberstein, et al., 2007; 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 among a wide range of populations again distinguishes hopelessness from a range of the other moderators reviewed, which have mainly been researched among general population samples and students. Furthermore, it suggests that hopelessness may be a relevant moderator to focus on among those groups who are at highest risk of suicidality.

Related to this is the third point, hopelessness has not only been found to act as an amplifier among 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 among 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, Duberstein, et al., 2007). Potentially, an alternative explanation may lie in the risk factor examined, as while 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, Duberstein, et al., 2007) or race (Durant et al., 2006).

Overall, these studies suggest that hopelessness may represent a moderator of some of the most deleterious risk factors among 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.

**3.2.4.2. 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 favor 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, 2007). 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, Wolford, et al., 2007). 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.

### 3.2.5. 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 behavior (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 while 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.

## 4. 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 summarize 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

**Table 5**

Studies reviewing future-related beliefs and attitudes as potential resilience variables where the outcome was suicidality.

	Participant sample	Future-related moderator variable	Risk factor	Measure of suicidality	Significant interactions	Remarks
Mendonca & Holden, 1998	Clinical outpatient sample with suicidal ideation, $N=97$ (51 men)	Hopelessness measured using the BHS	Unusual thinking measured using a subscale from the SCL-90	Two outcomes: Suicide desire and suicide preparation, each measured using the BSS.	Hopelessness and unusual thinking interacted to predict both suicide desire and suicide preparation	Results not plotted
Uncapher et al., 1998	Older institutionalized males, residing either in a psychiatric facility, $N=30$ , or a nursing home, $N=30$ .	Hopelessness measured using the Geriatric Hopelessness Scale (Fry, 1984)	Depression measured using the Geriatric Depression Scale (Abraham, 1991)	Suicidal ideation measured using the BSS	Hopelessness interacted with depression	Results plotted, but as depression is plotted as the moderator this is difficult to interpret
Young et al., 1994	Individuals with mania and depression, $N=955$ ( $M=345$ )	Hopelessness at study intake as measured using a single item scored dichotomously	Lifetime prevalence of substance misuse	Completed suicide over the 10 years the study was taking place	Hopelessness interacted with substance misuse	Results not plotted
Durant et al., 2006	Suicide attempters and controls, $N=500$ ( $M=229$ )	Hopelessness measured using the BHS	Race (black or white)	Suicide attempter status	None	The interaction approached significance, $p=.059$
Mills & Kroner, 2008 (study 1) <sup>a</sup>	Males residing in a medium security prison ( $N=422$ )	Hopelessness measured using items from the DHS	Past suicide behavior and suicidogenic beliefs, both measured using items from the DHS	Suicide ideation measured using items from the DHS	Hopelessness interacted with past suicide behavior; hopelessness interacted with suicidogenic cognitions	Results not plotted
Mills & Kroner, 2008 (study 2) <sup>a</sup>	Males residing in a medium security prison ( $N=138$ )	Hopelessness measured using items from the DHS	Past suicide behavior; and suicidogenic beliefs, both measured using items from the DHS	Suicide ideation measured using items from the DHS	Hopelessness interacted with past suicide behavior; hopelessness interacted with suicidogenic cognitions	Results not plotted
Beck et al., 1993	Psychiatric outpatients, $N=1784$ (769 M)	Hopelessness measured using the BHS	Depressive symptoms measured using the BDI; diagnosis of mood disorder	Suicidal ideation measured using the BSS	Hopelessness interacted with depressive symptoms	A square root transformation was applied to the BSS. Results not plotted
Blankstein et al., 2007 <sup>a</sup>	Undergraduates, $N=205$ (61 M)	Achievement hopelessness, interpersonal hopelessness, and overall hopelessness measured using an extended version of the BHS; Optimism measured using the LOT	Overall perfectionism and three subscales (other-oriented, self-oriented and socially prescribed) measured using the MPS	Suicidal ideation measured using a questionnaire developed specifically for the study	Overall hopelessness interacted with overall perfectionism among men only; interpersonal hopelessness interacted with other-oriented perfectionism among men only; optimism interacted with socially prescribed perfectionism among men only; optimism interacted with overall perfectionism in men only	A large number of moderations were investigated, increasing likelihood of Type I error. Results not plotted
Hirsch, Duberstein, et al., 2007	Depressed older adults, $N=136$ (57 M)	Hopelessness measured using two scales: Future orientation Scale, 6 items from the Reasons for Living Older Adults Version (Edelstein et al., 2000); and the BHS	Functional impairment. Functional impairment. Instrumental Activities of Daily Living (Lawton & Brody, 1969)	Suicidal ideation measured using the BSS	Future orientation buffered functional impairment	Results plotted, revealing a resilience effect of future orientation
Liu et al., 2006	Community sample, $N=2015$	Hopelessness measured using the BHS	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	Past year ideation measured using a single item dichotomous measure	None	Gender breakdown unclear
Holden et al., 1989 (study 1) <sup>a</sup>	Psychiatric patients, $N=97$ (51 M)	Hopelessness measured using the BHS	Agency measured using the Desirability scale from the PRF	Three outcomes each measured using the BSS; suicide desire, suicide preparation and overall suicidal ideation	Hopelessness interacted with agency to predict each of the three suicide outcomes	Results not plotted.
Holden et al., 1989 (study 2) <sup>a</sup>	Males residing in a correction facility, $N=203$	Hopelessness measured using the BHS	Agency measured using the Desirability scale from the PRF	Two outcome measures: Suicide attempter status and suicidal intent demonstrated in a past suicide attempt measured using a single item 5-point likert scale	Hopelessness interacted with agency to predict both suicide intent and suicide attempter status	Results not plotted. Only 26 participants form an overall sample of 203 scored above zero on the measure of suicide

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Table 5 (continued)

	Participant sample	Future-related moderator variable	Risk factor	Measure of suicidality	Significant interactions	Remarks
Hirsch & Conner, 2006 <sup>a</sup>	Undergraduates, N = 284 (99 M)	Hopelessness measured using the BHS	Optimism measured using a revised version of the LOT; Explanatory style measured using the ASQ	Suicidal ideation measured using the BSS	Hopelessness interacted with explanatory style	Results plotted
Ivanoff & Jang, 1991 <sup>a</sup>	Males residing in a correction facility, N = 130	Hopelessness measured using the BHS	Agency measured using Edwards Social Desirability Scale (Edwards, 1970)	Three suicidality outcomes, each measured using an interviewer rated version of the SBQ: Current Suicide Ideation, Future Possibility of Suicide, and Past Parasuicidal Behavior	Hopelessness interacted with agency to predict each of the three suicide outcomes.	Results not plotted
Britton et al., 2008 <sup>a</sup>	Older adults using psychiatric services, N = 125 (58 M)	Hopelessness measured using the BHS	Responsibility to Family Subscale of the RFL	Suicidal ideation measured using the BSS	Hopelessness interacted with responsibility to family, such that suicidality was highest at high levels of hopelessness and high levels of responsibility to family	Graph indicates presence of a cross-over effect
Gibb et al., 2006	Undergraduates, N = 230 (163 F)	Hopelessness measured using the BHS	Right to Die subscale of the SOQ	Suicidal ideation measured using the SOQ	Hopelessness interacted with suicide related beliefs among men only	Results plotted
Hirsch, Wolford, et al., 2007 <sup>b</sup>	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, suggests the presence of a cross-over effect whereby individuals high on optimism are at highest levels of suicide risk at high levels of trauma

Note. BHS = Beck Hopelessness Scale (Beck et al., 1974). SCL-90 = Symptom Checklist-90 (Derogatis, Lipman, & Covi, 1973). BSS = Beck Suicide Ideation Subscale (Beck, Steer, & Ranieri, 1988). DHS = Depression, Hopelessness and Suicide Screening Form (Mills & Kroner, 2002). BDI = Beck Depression Inventory (Beck et al., 1961). MPS = The Multidimensional Perfectionism Scale (Hewitt & Flett, 1991b). LOT = Life Orientation Test (Scheier & Carver, 1985). ASQ = Attributional Style Questionnaire (Peterson et al., 1982). PRF = Personality Research Form (Jackson, 1984). RFL = Reasons for Living Questionnaire (Linehan et al., 1983). SOQ = Suicide Opinion Questionnaire, (Domino, Moore, Westlake, & Gibson, 1982). SBQ = Suicidal Behaviors Questionnaire (Linehan & Nielsen, 1981).

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

<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.

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.

#### 4.1. Summary of findings

The review found overwhelming evidence for 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 to assess which constructs can be viewed as conferring resilience. The findings from the review suggest that several factors act as moderators, with the most consistent evidence supporting a buffering or attenuating role for overall positivity of attributional style and high level 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.

#### 4.2. 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 impact of risk. Of the factors which were supported by the strongest evidence, namely overall positivity of 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 any concept of resilience should account for a wide range of abilities and beliefs. One particularly interesting possibility is that these abilities and beliefs may be associated, such that individuals who demonstrate one of may be more likely to hold another, although this has yet to be investigated. 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 & Febraro, 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



**Table 6**

Studies reviewing suicide-related beliefs and attitudes as potential resilience variables where the outcome was suicidality.

	Participant sample	Suicide belief moderator variable	Risk factor	Measure of suicidality	Significant interactions	Remarks
Gibb et al., 2006 <sup>a</sup>	Undergraduates, N = 230 (163 F)	Right to die subscale of the SOQ	Gender, depression measured using the CES-D and hopelessness measured using the BHS	Suicidal ideation measured using the SOQ	Suicide related beliefs interacted with gender; Suicide related beliefs interacted with depression and hopelessness among men only	Results plotted
Mills & Kroner, 2008 (Study 1) <sup>b</sup>	Males residing in a medium security prison, N = 422	Suicidogenic beliefs measured using two items from the DHS	Hopelessness measured using items from the DHS and past suicide behavior	Suicide ideation measured using items from the DHS	Suicidogenic beliefs interacted with hopelessness	Results not plotted
Mills & Kroner, 2008 (Study 2) <sup>b</sup>	Males residing in a medium security prison, N = 138	Suicidogenic beliefs measured using items from the DHS	Hopelessness measured using items from the DHS and past suicide behavior	Suicide ideation measured using items from the DHS	Suicidogenic beliefs interacted with hopelessness	Results not plotted

Note. CES-D = Center for Epidemiologic Studies Depression Scale (Radloff, 1977). BHS = Beck Hopelessness Scale (Beck et al., 1974). SOQ = Suicide Opinion Questionnaire, (Domino et al., 1982). DHS = Depression, Hopelessness and Suicide Screening Form (Mills & Kroner, 2002).

<sup>a</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.

<sup>b</sup> The resilience and risk factor for this study can be regarded as interchangeable, as both are internal psychological constructs.

on risk. For example, optimism has been found to be negatively correlated with suicidal ideation (Hirsch, Wolford, et al., 2007), but it did not appear to be a resilience factor (Blankstein et al., 2007; Hirsch & Conner, 2006; Hirsch, Wolford, et al., 2007). 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, 1989) was found to amplify the impact of hopelessness among 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.

And 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 behaviors, rather than the factors which buffer these effects (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 Schematic Appraisals Model of Suicide (SAMS; Johnson, Gooding, & Tarrier, 2008) 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 suggesting that positive self-appraisals buffer the impact of stressful events (Johnson, Gooding, Wood, & Tarrier, 2010) and hopelessness (Johnson, Gooding, Wood, Taylor, et al., 2010) on the development of suicidality. 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, Gooding, Wood, & Tarrier, 2010; Johnson, Gooding, Wood, Taylor, et al., 2010). 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 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, 2007).

#### 4.3. Implications for research into resilience to suicidality

##### 4.3.1. Developing a systematic approach

4.3.1.1. Systematizing the investigation of the resilience factor. Some 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, many 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 existing evidence base by focusing on the manner in which particular protective factors are conceptualised and measured.

**4.3.1.2. Systematizing 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 prioritizing those risk factors which are the strongest predictors of suicidality, the most prevalent or the least changeable. 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 psychological 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).

**4.3.1.3. 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). In the current review, the result of this has been that resilience factors have often been studied among student and community samples, perhaps because these are most easily accessible. This can be viewed as a limitation of the current research, and an area which will need to be addressed. Despite this, the current research can be viewed as representing an important starting point which has provided firm evidence in favor of some resilience factors, such as perfectionism (Blankstein et al., 2007; Hewitt et al., 1994) and overall positivity of attributional style (Hirsch & Conner, 2006; Joiner & Rudd, 1995). Future research will need to expand upon this by investigating resilience factors among 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 among both psychiatric and forensic populations (Holden et al., 1989; Uncapher et al., 1998). Future research could focus on expanding the 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 be most appropriate to incorporate into suicide interventions.

**4.3.1.4. Expanding the range of suicide 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).

#### 4.4. Methodological suggestions

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

One way in which to improve 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 behavior. 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 a 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 behaviors 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, Gooding, Wood, & Tarrier, 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 dichotomize 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 comparing suicide attempters to non-attempters. However, it has been suggested that the practice of dichotomizing 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.

##### 4.4.1. Ascertaining resilience

In addition to increasing 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 Fig. 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 studies 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 minimal number of studies have taken this approach (e.g., Young et al., 1994).

#### 4.5. Clinical implications

##### 4.5.1. Implications for the 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. While a large number of factors are known to confer risk for suicide, these findings suggest that there are psychological constructs which may attenuate or amplify the impact of these risk factors. In particular, overall positivity of attributional style, perfectionistic tendencies, sense of agency and perceptions of hopelessness appear to alter the impact of other relevant factors. For example, attributional style was found to moderate the impact of stressful life events (e.g., Hirsch et al., 2009). This would suggest that clients who are reporting high levels of stressful life events are unlikely to experience suicidality if they have a positive attributional style, but may be at high risk if they have low levels of a positive attributional style. In order to improve specificity and sensitivity, clinical risk assessment should assess and account for the presence of these intervening variables.

##### 4.5.2. 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 development of psychological resilience could be of key importance. Often, clinicians focus on the stressors and vulnerabilities that clients are struggling with, which may act to increase suicide risk. However, the current findings indicate that in addition to reducing risk factors, a 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 psychological, 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 seem to be relevant for high-risk populations, such as those suffering from mental health disorders or those who are incarcerated. People considered at high risk are not only able to develop these resilience factors, but they to have the same buffering impact among these samples as would be predicted from studies among 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, 2007). 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. Techniques such as assertiveness training may be useful for this. In assertiveness training clients learn to verbalize their needs and requirements (Mruk, 2006), which may enable them to more effectively control their environment and provide them with a sense of competence.

#### 4.6. 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 overall positive attributional style and high lever 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.

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