BELIEFS ABOUT SUICIDE:

THE IMPACT ON SUICIDE IDEATION AND BEHAVIOUR

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Table of Contents

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Paper	**Word count excluding references and appendices**
1. Do attitudes towards suicide protect against suicide ideation and behaviour? A systematic review.	10875
2. Metacognitive beliefs and suicide ideation: An experience sampling method	8137
3. A critical reflection of the research process	5927
Total:	**24, 939**

LIST OF FIGURES

LIST OF TABLES

LIST OF APPENDICES

Thesis Abstract

Beliefs about suicide: The impact on suicide ideation and behaviour

Vikki. L. Aadahl, University of Manchester, 2017

Suicide is a significant public health problem that is now prioritised in many healthcare agendas in attempts to prevent future suicide. It has a devastating impact not only for the tragic loss of life but also for the bereaved family and friends and professional services. A considerable amount of research has been devoted to understanding the risk and resilience factors for suicide and the mechanisms that lead to both suicide ideation and suicide behaviour. Although significantly advancing understanding of suicide less is known about the cognitive processes involved in the initiation and maintenance of suicide ideation, a known risk factor for suicide behaviour.

In the first paper, models and understanding of suicide are considered alongside current understanding of the attitudes held towards suicide. A systematic literature review was conducted examining the relationship between attitudes held towards suicide and suicide ideation and behaviour with 44 articles identified. A clear association was found between accepting attitudes towards suicide and suicide behaviour. There was some inconsistency in the literature with the relationship between attitudes towards suicide and suicide ideation. Clinical and theoretical implications are discussed with future research suggested. Incorporating an individual's attitude toward suicide into a risk assessment and formulation will allow for a more detailed understanding of an individual's presenting risk of suicide.

The second, empirical paper, provides the first evidence of a relationship between metacognitive beliefs about suicide ideation and suicide ideation. Experience sampling methodology was utilised to examine this relationship. Both positive and negative metacognitive beliefs about suicide ideation are held in those currently experiencing suicide ideation. There is a significant relationship between these beliefs and suicide ideation even when known correlates of suicide are controlled for (defeat, entrapment, negative affect and hopelessness). Stronger metacognitive beliefs about suicide ideation are associated with increased suicide ideation. The results are considered in terms of the clinical and theoretical implications with suggestion that future research continues to develop an understanding of the role of metacognition in both suicide ideation and behaviour.

The final paper provides a critical reflection on the research process overall. A more detailed account of the methodological approach of both papers is provided with consideration of the paper's strengths and weaknesses. Additional theoretical considerations are made with further suggestions for future research with the hope of continuing development of a metacognitive understanding of suicide.

Declaration

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Lastly and most importantly thank you to all those who gave their time and trust in taking part in this study. Meeting and talking with you was the highlight of this research and I sincerely hope you are pleased with the work and that it makes a positive contribution to our understanding of suicide.

Paper I of III

Do attitudes towards suicide protect against suicide ideation and behaviour? A systematic review.

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Declaration of Conflicting Interests

The author declared no potential conflicts of interests with respect to research, publication and/or authorship of this article

Preface

The work for this paper was carried out between June 2016 and April 2017. The initial literature search was completed in July 2016 with an additional search conducted in March 2017. Dr Daniel Pratt provided overall supervision for this paper which included reading drafts of the manuscript.

The author intends to prepare this review for publication in Clinical Psychology Review (see Appendix A for author guidelines). The authors will be Vikki Aadahl and Dr Daniel Pratt.

Abstract

Social and psychological models of suicide aim to explain the causal mechanisms leading to suicide. Some believe that it is morally wrong to end your own life whilst others celebrate our free will to choose suicide. These attitudes vary significantly across different cultures in the world. Contemporary models of suicide do not, however, account for the individual attitudes held towards suicide. How suicidal thoughts and behaviours are experienced and processed is likely to be affected by the global attitude held towards suicide. The current review systematically assessed the relationship between attitudes towards suicide and the occurrence and severity of suicide ideation and behaviour. Overall, lower moral objections to suicide and greater acceptability of suicide were associated with greater self-reporting of suicide ideation and suicide behaviour. It is recommended that clinicians assessing risk of suicide should consider an individual's attitude towards suicide and the impact this may have on their experience of suicide ideation and behaviour. The cross-sectional design of most studies limits conclusions made. Future work should consider longitudinal and experimental approaches to further improve understanding of this relationship.

Keywords

suicide ideation behaviour attitudes beliefs morals

Highlights

- The relationship between attitudes towards suicide and suicide ideation and suicide behaviour was examined.
- A range of attitudes towards suicide were identified.

- Attitudes towards suicide are associated with suicide ideation and behaviour.
- Less moral objections to suicide and greater acceptability of suicide were associated with suicide ideation and behaviour.
- The literature is limited by predominately cross-sectional designs which could be improved with experimental and prospective designs.

Introduction

Suicide

The World Health Organisation (WHO, 2016) estimate nearly 1 million people die on average each year by suicide. In 2012, suicide was the second leading cause of death in 15-29 year olds globally and regarded as a significant public health priority (WHO, 2016). In England, throughout 2004-2014, there was on average 4,479 deaths each year by suicide (Appleby et al., 2016). Nock et al. (2008) found across 17 countries there was a 2.7% prevalence of suicide attempts and a 9.2% prevalence of suicide ideation in the general population. Appleby et al. (2016) in a 20-year review of suicide in the UK reported a rise in suicide following the 2008 economic recession.

Suicide is defined by WHO (2014) as the act of intentionally killing oneself. Not only is suicide a tragedy for the individual who chooses to take their own life but it can also lead to significant emotional difficulty for bereaved family and friends (de Groot et al. 2007; Clark & Goldney, 2008). Death by suicide can also have a significant negative impact on health care staff creating feelings of anger, sadness and guilt and generating doubt in their professional abilities (Gaffney et al. 2009; Gitlin, 2003). There is a significant economic impact of suicide (Shepard, Gurewich, Lwin, Reed & Silverman, 2016) with those attempting suicide often requiring significant medical care following a suicide attempt (Sethi & Uppal, 2006).

There is understood to be a continuum of suicide which includes suicide-related ideation, suicide-related communication and suicide-related behaviours (Silverman et al. 2007). Suicide ideation has been related to suicide attempt (Kessler, Borges & Walters, 1999; Reynolds, 1991; Rudd, Joiner & Rajab, 1996) yet there is only a 29% probability of those who experience suicide ideation ever making a suicide attempt (Nock et al. 2008). 72% of

those who make a suicide plan go on to make a suicide attempt and 26% of ideators without a plan make an unplanned attempt (Nock et al. 2008). Predicting those who will engage in suicide behaviour is a challenging yet essential clinical task which psychological models of suicide have attempted to do.

Models of suicide

The combination of risk factors and psychological processes that lead to death by suicide or those that provide resilience in the presence of known risk factors for suicide is still being determined. It is known that those with a mental health diagnosis (especially major depressive disorder and bi-polar disorder) are at higher risk of suicide (Harris & Barrowclough, 1997). Other known psychological risk factors for suicide include poor self-esteem (Bhar, Gharamanlou-Holloway, Brown & Beck, 2008), poor problem solving ability (Pollock & Williams, 2004), a sense of hopelessness (Beck, Brown & Steer, 1997), negative attributional style (Baumeister, 1990), appraisals of defeat and entrapment (Taylor, Gooding, Wood & Tarrier, 2011) and poor social support (Bolton, Gooding, Kapur, Barrowclough & Tarrier, 2007). Appleby et al. (2016) argued that certain risk factors have recently become more common antecedents of suicide such as isolation, economic adversity, alcohol and drug misuse and recent self-harm. Appleby et al.'s (2016) report also demonstrated that there continue to be gender and age differences in suicide. Men kill themselves more frequently than women. This gender pattern is also seen in countries across the world (WHO, 2016). Between 2004 and 2014, in the UK, younger male groups (25-34 years) experienced a fall in suicide rates but increases were found for older male groups (45-54 years and 55-64 years).

Research has also explored what confers resilience to suicide. Johnson, Wood, Gooding, Taylor and Tarrier (2011) proposed a buffering hypothesis in which resilience factors moderate the likelihood of suicide in the face of known risk factors. Both risk and resilience factors are described as distinct bi-polar constructs. With resilience factors for example, at one extreme a construct may provide resilience to suicide yet at the other extreme it may amplify the impact of risk factors of suicide. Perfectionism, agency, hopelessness and attributional style were all found to moderate the impact of risk factors on suicide.

Although greater understanding of risk and resilience factors of suicide have been developed this has not led to an improved ability to accurately predict who will engage in suicidal behaviour (Bolton, Gooding, Kapur, Barrowclough & Tarrier, 2007; Franklin et al., 2017, Wenzel & Beck, 2008). Franklin et al. (2017) conducted a large meta-analysis including 365 studies and identified that prediction was only slightly better than chance for all outcomes. Risk and resilience factors do not explain the causal mechanisms or complex inter-play between such factors which results in suicide.

Psychological models of suicide have aimed to describe the psychosocial mechanisms involved in suicide (Durkheim, 1951: Baumeister, 1990; Shneidman, 1993; Williams, 1997, 2001; Johnson, Gooding & Tarrier, 2008; Wenzel & Beck, 2008; O'Connor, 2011; Joiner, 2005). Such models describe negative appraisals of one's own situation as essential with appraisals of defeat and entrapment as key factors. A sense of hopelessness for the future and suicide schemas are also understood to significantly contribute. Whilst such models have advanced our understanding of the complex inter-play between risk and resilience factors they are typically focused on the individual's cognitive appraisals of their current situation and behaviours. Although the Integrated

Motivational-Volitional Model (O'Connor, 2011) includes attitudes and social norms this is not specific to attitudes about suicide. Little attention is given to the appraisals of suicide itself or suicide ideation in any of these models. Suicide is a contentious topic drawing on great existential and moral debates. How suicide is viewed in our social and cultural environment is likely to influence our attitudes towards it. This has been demonstrated with the relationship between stigma of mental health and self-stigma. Stigma of mental health held in the broader society is seen to influence individual appraisals leading to self-stigma (Bathje & Pryor, 2011; Corrigan, Rafacz & Rusch, 2011; Hing, Nuske, Gainsbury & Russell, 2015). It is therefore possible that the attitudes held towards suicide could also impact on an individual's personal experience of suicide ideation and behaviours.

Attitudes towards suicide

Attitudes have been described as evaluations we make about the world around us, based upon our beliefs, emotions and behaviours (Myers, 1993; Petty & Cacioppo, 1986). Instead of being understood as stable constructs, attitudes are described as occurring in context and influenced by several elements (Schwarz, 2007; Sommers, 2006). Cognitive dissonance theory (Carver, 2004; McConnell & Brown, 2009; Sherman & Gorkin, 1980) suggests that individuals seek consistency among their cognitions (such as attitudes and opinions) and their behaviours. When there is an inconsistency between cognition and behaviour (dissonance) then individuals change in attempt to eliminate the dissonance. Self-perception theory (Bem, 1972) also suggests that we infer our own attitudes from observing our own behaviour. Although a debated area, there is a consensus that there is

a bi-directional relationship between attitudes and behaviour with both areas believed to be influencing the other (Proctor, 2001; Wallace, Paulson, Lord & Bond, 2005).

Suicide evokes a range of attitudes from understanding and empathy to moral contempt and anger. These attitudes have changed considerably over time with suicide understood as both sinful and acceptable at different points in history (Minois, 1999). The way we develop our attitudes towards suicide has been described by Renberg, Hielmeland and Koposov (2008) as being significantly influenced by self-reported thoughts of suicide earlier in life as well as suicidal behaviours of those around us. The attitudes held towards suicide by a suicidal individual and in those surrounding them can have a significant impact. It can impact on the suicidal individual's suicide ideation and behaviour (Dervic et al., 2006; Joe, Romer & Jamieson, 2007; Stein, Brom, Elizur, & Witztum, 1998). It can also impact on their help-seeking behaviour (Ross, 1980; Walker, Lester & Joe, 2006).

Although many studies have explored the relationship between attitudes towards suicide and suicide ideation and behaviour there are no known reviews systematically examining the literature on this relationship. A recent review (Bakhiyi et al., 2016) has been conducted examining the relationship between the reasons for living inventory (RFLI: Linehan, Goodstein, Nielsen & Chiles, 1983) which incorporates the moral objections to suicide subscale and suicide yet this is only one element of attitudes held towards suicide. When developing the adolescent version of the RFLI researchers interviewed adolescents about suicide to develop items related to reasons for not killing themselves (Osman et al. 1998). The different subscales identified were compared to the adult version of the RFLI and there was an absence of the moral objections to suicide subscale. This could indicate that a certain level maturity or understanding of morality is required

for the development of such attitudes. This would fit with Kohlberg's theory of the stages of moral development (Colby, Kohlberg, Gibbs & Lieberman, 1983; Kohlberg, 1984). Kohlberg (1984) argued that moral judgements change with age as do the reasoning behind them. During childhood and adolescence therefore one's moral judgements may change substantially with development of moral reasoning. As moral reasoning is felt to be more stable in adulthood it was felt that a focus in the review on adults would allow greater confidence in the results of any cross-sectional study.

The relationship between attitudes held towards suicide and suicide is an important relationship to understand given it has the potential to be an additional risk or resilience factor for clinicians to consider when assessing and understanding the level of suicide risk posed by an individual. The current paper therefore aims to systematically review empirical literature examining this relationship and to evaluate the quality of this evidence. This includes considering if differences in this relationship are dependent on the conceptualisation of suicide and attitudes towards suicide and the use of validated measures.

Method

Search strategy

This review followed the PRISMA (Preferred Reporting Items for Systematic Review and Meta-Analysis) statement guidelines (Moher et al. 2015). The review was registered with PROSPERO, international prospective register of systematic reviews available online at http://www.crd.york.ac.uk/PROSPERO/display_record.asp?ID=CRD42016047152. A literature search was conducted using three electronic bibliographic databases: PsycInfo, Ovid Medline and EmBase. The search term suicid* was combined with (attitud* OR belief* OR view* OR opinion*OR cogniti*) AND (survey* OR survey OR questionnaire* OR questionnaire OR instrument* OR instrument OR measurement OR measurement* OR scale* OR scale). No previous systematic reviews of this relationship were found. Studies were included that: (i) were published in a peer reviewed journal in the English language; (ii) included any measure of suicide ideation or behaviour at an individual level and any measure of attitudes towards suicide at any individual level; (iii) investigated the relationship between suicide and attitudes towards suicide. Studies were excluded that: (i) used a qualitative design; (ii) were reviews or meta-analyses (iii) included participants under the age of 16 years old. Although deliberate self-harm is recognised as part of the continuum of suicide and related to suicide behaviour the review maintained a focus on papers with an explicit measure of suicide behaviours. This was due to a potential different function of these of behaviours which could lead to a different relationship with attitudes towards suicide. Authors were contacted when the full-text was not available or for additional analysis of data. Five studies were excluded due to no response from the author. See Figure 1 for flow diagram of systematic search strategy. For each study that

met the inclusion criteria relevant data was extracted using a data extraction table (see Appendix B for an example).

Risk of bias

The risk of bias was assessed to identify methodological strengths and weaknesses in the included studies to supplement the interpretation of results (see Appendix C for an example of the quality assessment). This was done by giving priority to the results of papers which were scoring higher in each of the domains rated. Domain specific ratings are included in Table 1. The Effective Public Health Practice (EPHPP) tool (Thomas, 2003) was used to assess the risk of bias in this review which has good content and construct validity (Thomas, Ciliska, Dobbins & Micucci, 2004) and inter-rater reliability (Armijo-Olivio, Stiles, Hagen, Biondo & Cummings, 2010). The EPHPP assesses six domains although only four were relevant for this review (*Selection bias*, *Study design*, *Confounders* and *Data collection methods*) due to the design of the studies included. Each domain is rated as 'strong,' 'moderate' or 'weak.' Although a global rating is given: strong (no weak ratings), moderate (one weak rating) or weak (two or more weak ratings) more emphasis was placed on domain ratings rather than the global score. Overall composite scores have been criticised for being at risk of bias and having poor reliability (The Cochrane Collaboration, 2011) so each domain was taken as strengths and/or weaknesses to consider. An additional domain of *Analysis* is also assessed but the EPHPP reports this does not contribute to overall quality rating. Given the importance of this domain in describing the relationship between suicide and attitudes toward suicide, analysis rating were completed for the current review and included in the risk of bias assessment, but not within the global rating. The studies were quality assessed by the

first author and an independent researcher to ensure inter-rater reliability. Although there were initially some discrepancies over ratings when discussed these were found to be errors made by one of the raters' rather than disagreement regarding the rating. This process resulted with high levels of agreement (α=1).

Table 1

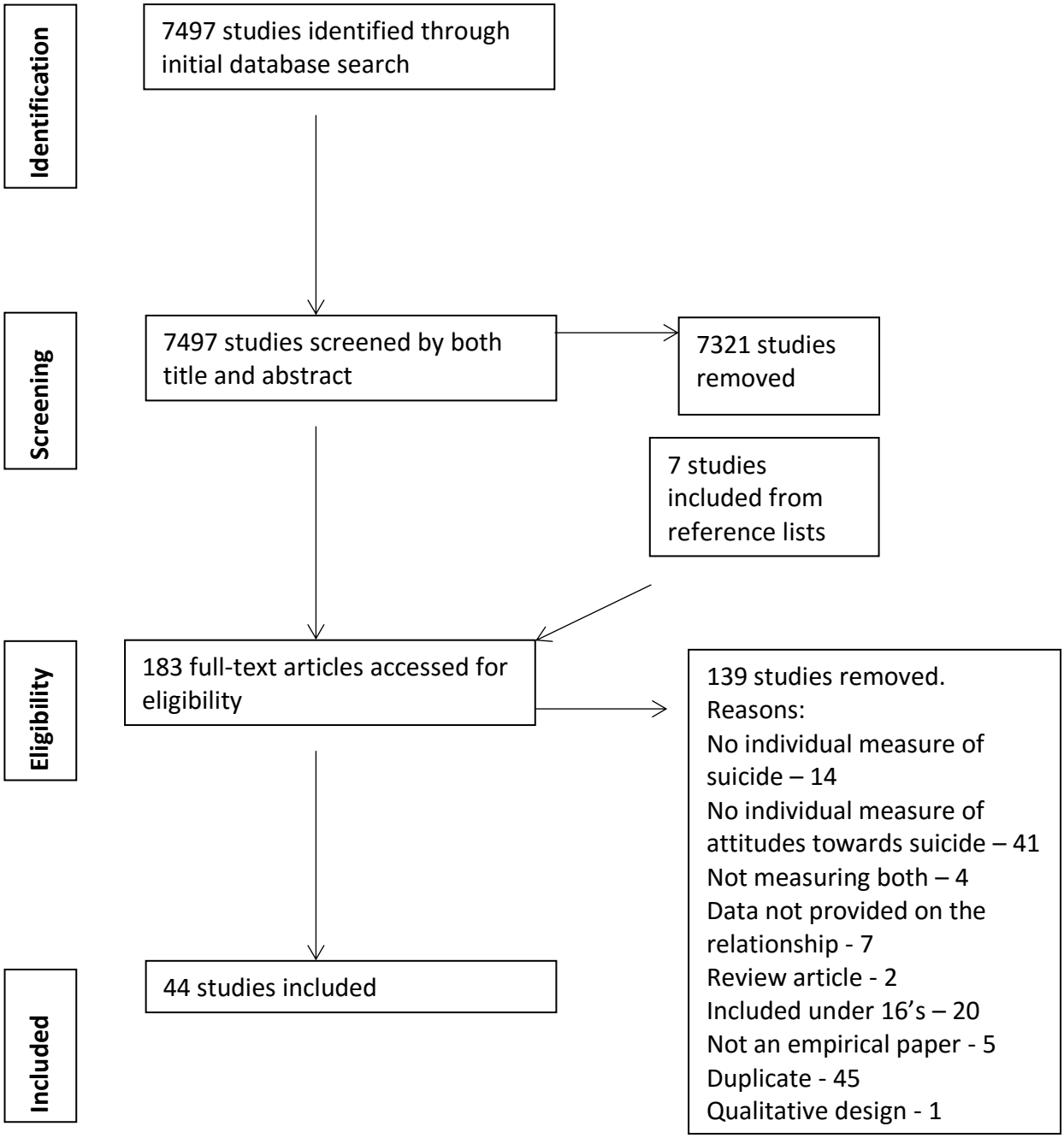
Quality ratings for each EPHPP domain and the overall quality rating for each study included in the review

Study reference (authors)	Selection Bias	Study Design	Confounds	Data collection methods	Analyses	Overall
Arnautovska & Grad (2010)	M	M	M	M	S	S
Bakhiyi et al. (2017)	M	M	S	S	S	S
Beautrais, Horwood & Fergusson (2004)	M	M	W	M	M	M
Beck & Morris (1974)	M	M	M	M	S	M
Britton et al. (2008)	M	M	S	M	S	S
Connell & Meyer (1991)	W	M	M	S	M	M
Cwik et al. (2017)	W	M	S	S	S	M
Dervic et al. (2006)	M	M	S	S	S	S
Eskin et al. (2016)	M	M	M	W	S	M
Eskin, Voracek, Stieger & Altinyazar (2011)	M	M	M	W	S	M
Foo, Alwim, Ismail, Ibrahim & Osman (2014)	S	M	W	S	S	M
Galynker, Yaseen, Briggs & Hayashi (2015)	M	S	S	S	S	M
Garza & Cramer (2011)	M	M	S	S	S	S
Gibb, Andover & Beach (2006)	M	M	S	M	S	S
Hjelmeland et al. (2008)	M	M	W	M	M	W
Ingram & Ellis (1995)	M	M	M	M	S	S
Jeon, Park & Shim (2013)	S	M	S	M	S	S
Knott & Range (2001)	M	M	M	M	S	S
Kocmur & Dernovsek (2003)	M	M	W	M	M	M
Lee & Oh (2012)	M	M	M	S	S	S

Limbacher & Domino (1986)	W	M	M	M	M	M
Linehan, Goodstein, Nielsen & Chiles (1983)	M	M	M	S	S	S
Lizardi et al. 2008	M	M	M	S	S	S
Malone et al. (2000)	M	M	M	S	M	S
McAuliffe, Corcoran, Keeley & Perry (2003)	M	M	M	M	S	M
Minear & Brush (1981)	M	M	W	W	M	W
Mohammadkhani, Khanipour, Azadmehr, Mobramm & Naseri (2015)	M	M	W	S	S	M
Moody & Smith (2013)	M	M	M	S	S	M
Osman et al. (1993)	M	M	M	S	M	S
Oquendo et al. (2005)	M	M	S	S	S	S
Renberg, Hjelmeland & Koposov (2008)	M	M	M	M	S	S
Reynders, Kerkhof, Molenberghs & Van Audenhove (2015)	M	M	M	W	S	M
Richardson-Vejlgaard, Sher, Oquendo, Lizardi & Stanley (2009a)	M	M	W	S	M	M
Richardson-Vejlgaard, Sher, Oquendo, Lizardi & Stanley (2009b)	M	M	S	S	M	S
Saito, Klibert & Langhinrichsen-Rohling (2013)	M	M	M	M	M	M
Sakamoto, Tanaka, Neichi, Sato & Ono (2006)	S	M	W	W	M	W
Scocco, Castriotta, Toffol & Preti (2012)	M	M	W	W	S	W
Scocco, Toffol & Preti (2016)	M	M	M	W	S	M
Stein, Brom, Elizur & Witztum (1998)	M	M	W	W	S	W
Vatan, Gencoz, Walker & Lester (2010)	M	M	W	S	M	M
Villacieros, Bermejo, Magana & Invencio (2016)	M	M	W	M	M	M
Wellman & Wellman (1988)	M	M	W	W	M	W
Zadravec, Grad, Socan (2006)	M	M	M	M	S	S
Zou et al. (2016)	S	M	M	W	M	M

Note. W = weak M = medium S = strong

Figure 1. A flow diagram of the systematic search process



Results

Forty-four studies were reviewed to assess the relationship between attitudes held towards suicide and suicide (table 2). These studies were conducted in countries all over the world including Slovenia, France, New Zealand, United States of America, Germany, Austria, Turkey, Malaysia, Ghana, Norway, Uganda, South Korea, Slovenia, Ireland, Iran, Canada, Sweden, Russia, Belgium, Japan, Italy, Isreal, Spain and China. The % male participants ranged from 9.9 to 100. The number of participants ranged from 40 to 5, 572. The average age of participants ranged from 18.3 to 60.9 years old. The conceptualisation and measurement of attitudes towards suicide and suicide varied. Several studies used the Reasons for Living Inventory (RFLI: Linehan, Goodstein, Nielsen & Chiles, 1983) meaning moral objections to suicide (a specific subscale of the RFLI) and its association with suicide could be examined. Other studies looked at the acceptability and permissibility of suicide or how much they felt mental health problems were responsible for suicide, for example. In measuring suicide, there was a mixture between bespoke items measuring a range of ideation, plans and attempts and validated measures. A large proportion of studies used the Scale of Suicide Ideation (Beck, Kovacs & Weissman, 1979) which measures both suicide ideation and plans. Several studies used the Suicide Behaviours Questionnaire Revised (Osman et al. 2001) which measures historical suicide ideation and attempts. It was felt important to examine whether differences in conceptualisation and measurement influenced the relationship between attitudes towards suicide and suicide to obtain the most accurate understanding of this relationship. The results were therefore examined within subsections dependent on the conceptualisation and measurement.

Overall risk of bias in the literature

Many studies included in this review adopted a cross-sectional study design. Although offering a satisfactory exploration of the relationship, stronger designs (prospective designs) allowed examination of the predictive ability of attitudes held towards suicide on future suicidal behaviour (for example, Galynker, Yaseen, Briggs & Hayashi, 2015). Many studies adopted a self-selection method of recruitment targeting specific groups of individuals. There was a group of studies that adopted a more targeted recruitment strategy to ensure a representative sample that reduced the bias found in utilising a self-selection approach (Foo, Alwin, Ismail, Ibrahim & Osman, 2014; Jeon, Park & Shim, 2013; Sakamoto, Tanaka, Neichik, Sato & Ono, 2006; Zou et al., 2016). Although minimising self-selection bias these studies recruited from the general population rather than specifically those experiencing suicide ideation or behaviour which limits the generalisability of findings to a clinical population.

In examining the relationship between attitudes towards suicide and suicide there are potential demographic and psychological confounds such as age and depression severity. The consideration and inclusion of confounding variables in analyses varied across the studies. Many studies did not account for confounding variables whereas others incorporated both psychological and demographic confounds in their analysis so adding strength to their conclusions (Britton et al., 2008; Dervic et al., 2006; Galynker, Yaseen, Briggs & Hayashi, 2015; Garza & Cramer, 2011; Gibb, Andover & Beach, 2006; Oquendo et al., 2005; Richardson-Vejlgaard, Sher, Oquendo, Lizardi & Stanley, 2009a, 2009b).

As previously discussed, the approach to data collection of these two constructs varied among the studies. Sixteen studies (37%) included reliable and validated measures to measure both constructs and a further 16 (37%) measured at least one construct with a

reliable and valid measure. The remaining studies (26%) did not use reliable and valid measures for either construct which affects the validity and reliability of their findings. As Silverman (2006) outlined there is a range of nomenclature with regards to suicide which is problematic for research. This was evident in this literature with authors not always providing clarity on the specific construct they were measuring and often combining suicide ideation and behaviour into one measure of suicide.

Table 2

Characteristics of included studies.

Author/year	Country	Participant sample	Sample size	Men %	Age (*M*)	Study design	Measure of suicidality	Measure of attitude towards suicide	Key results
Arnautovska & Grad 2010	Slovenia	General population 16-26 year olds	423	25	18.3	Cross-sectional	Bespoke items - suicide ideation, plans and attempts, future likelihood.	ATTS	Participants reporting suicidal behaviour had significantly more permissive attitudes toward suicide than those who did not (z = -2.07, p = .04).
Bakhiyi et al. 2017	France	Participants in hospital with history of suicide attempt	338	35	42.5	Cross-sectional	SSI	RFLI	Those with lower scores on suicide ideation had higher scores on moral objections to suicide (OR = 0.93 95% CI = 0.87-1.00, p = .04).
Beautrais, Horwood & Fergusson 2004	New Zealand	General population (25 year olds)	987	Not available	Not available	Cross-sectional	Bespoke items - historical suicide ideation or attempts.	10 items from SOQ	Participants with a history of suicide ideation (p < .0001) or attempt (p < .0001) had more liberal attitudes than those without such history.
Beck & Morris 1974	US	Participants who had attempted suicide	301	Not available	Not available	Cross-sectional	Suicidal Intent Scale	Participants asked to rate whether suicide is morally wrong	Suicide appraised as never morally wrong associated with higher mean intent score (t= 3.72, p < .001), more preparations before suicide attempt (χ^2 = 9.51, df=2, p < .01), greater regret at the failure (χ^2 = 25.72, df=2, p < .001) and higher number of attempts (χ^2 = 12.46, df=2, p < .01) than those who felt suicide was always morally wrong.
Britton et al. 2008	US	Over 50 years old with suspected mood disorder	125	46	60.9	Cross-sectional	SSI	Moral objections to suicide subscale of RFLI-OA	Moral objections to suicide were negatively associated with suicide ideation (Univariate OR .91 95% CI .86-.96, p < .01) (Multivariate OR .95 95% CI .87-1.03, p > .05).
Connell & Meyer 1991	US	University students	205	47	19.4	Cross-sectional	SBQ	Moral objections to suicide subscale of RFLI	Never experiencing suicide ideation associated with greater moral objections to suicide (*F*(1, 210) = 9.16, p < .00). Brief, non-serious suicide ideation associated with greater moral objection than past serious ideation and

									suicidal behaviours ($F(1, 210) = 10.43$, $p < .00$). Moral objections correlated with past ideation ($r = -.26$, $p < .001$) and likelihood of future attempt ($r = -.26$, $p < .001$).
Cwik et al. 2017	Germany	University students	503	9.9	24.7	Cross-sectional	SBQ-R	Cognitions Concerning Suicide Scale (CCSS)	A positive attitude towards suicide was associated with a greater suicidal risk status (OR = 1.07 95% CI = 1.05-1.10, $p < .001$).
Dervic et al. 2006	US	Depressed patients with/without personality disorder	357	41	37.6	Cross-sectional	SSI Columbia Suicide History Form	Moral objections to suicide subscale of RFLI	Fewer moral objections to suicide were associated with suicide attempt (but not suicide ideation) with no impact of personality disorder diagnosis (OR = 0.92, 95% CI = 0.87 to 0.92, $p = .003$).
Eskin et al. 2016	Cross-national	University students	5,572	44.7	22	Cross-sectional	Five bespoke items - suicide ideation and attempts.	E-ATSS E-SRSPS	History of suicide had greater acceptability of suicide ($F = 91.84$, $p = .000$). Never suicidal scored higher on suicide as a sign of mental illness. No history of suicide ideation/attempt scored higher on social acceptance and disapproval of suicidal disclosure.
Eskin, Voracek, Stieger & Altinyazar 2011	Austria Turkey	Medical students	646	55	21.4	Cross-sectional	Five bespoke items – current/historical suicide ideation and historical attempts.	24 items taken from prior research	Suicidal participants scored higher than non-suicidal on acceptability of suicide and seeing suicide as a solution ($F = 27.36$, $p = .001$).
Foo, Alwim, Ismail, Ibrahim & Osman 2014	Malaysia	University students	139	38	20.2	Cross-sectional	SBQ-R	ATTS	Higher acceptance of suicide was associated with suicide risk, lifetime suicide ideation ($r = .24$, $p < .01$), suicide ideation in past 12 months ($r = .28$, $p < .05$) and likelihood of future suicide ($r = .32$, $p < .01$).
Galynker, Yaseen, Briggs & Hayashi 2015	US	Participants admitted to an inpatient psychiatric hospital	40 at follow-up	44	37.8	Prospective cohort	SSI C-SSRS Assessment of suicidal behaviour	SOQ	Greater acceptability of suicide predicted those who attempted suicide post-discharge from hospital (B = -5.510, SE = 2.603, $p = .034$).

Garza & Cramer 2011	US	General population (Hispanic)	168	24	27	Cross-sectional	SBQ-R Modified Scale for Suicidal Ideation	Moral objections subscale of RFLI Spanish adaptation	Moral objections significantly predicted suicide ideation (F (17,150) = 11.50, η_p^2 = .07, p < .01) with a depression by moral objections interaction (β = -1.02) (F (17,150) = 6.30, η_p^2 = .04, p < .01). High depression/low moral objections resulted in highest suicide ideation.
Gibb, Andover & Beach 2006	US	University students	230	29	19.3	Cross-sectional	Four items taken from the SOQ summed to give suicide ideation composite score.	Right to Die subscale of SOQ	Significant positive relationship between right to die and suicide ideation (r=.26, p < .001). 'Right to die' moderated relationship between hopelessness/depression and suicide ideation for men (t(63) = 2.56, p = .01, β = .37) but not for women (t(159) = 0.05, p = .96, β = .004).
Hjelmeland et al. 2008	Ghana Norway Uganda	University students	1076	44	25	Cross-sectional	Items from ATTS - death wishes, ideation, plans and attempts.	'Suicide as a right' item from ATTS.	In Ghana but not Uganda and Norway right to die correlated positively with own suicide attempt earlier in life (r = 0.17, p < .001).
Ingram & Ellis 1995	US	University students	228	38	21	Cross-sectional	Suicide Ideation Questionnaire	Hypothetical scenarios -people who died by suicide evaluated using Perception Rating Scale (Carrico, 1989).	Suicide 'ideators' rated the male individuals in the scenario significantly higher on 'justification' than 'non-ideators' (F (1, 227) = 5.605, p = .019).
Jeon, Park & Shim 2013	South Korea	General population	1584	46.4	45.2	Cross-sectional	One item from Life and Death Scale regarding suicide likelihood.	14 items based on SUIATT	Permissive attitude towards suicide was the only variable significantly associated with future suicide intent (OR 3.69, 95% CI 1.97-6.89).
Knott & Range 2001	US	Clients of a community mental health team	105	55	41.4	Cross-sectional	SSI	Scenario about attempted suicide and acceptance of this individual.	Non-suicidal group were significantly more accepting of the individual than either the low or high suicidal group (F(2, 101) = 8.33, p = .001).
Kocmur & Dernovsek 2003	Slovenia	General population	594	38	Not available	Cross-sectional	Items from SUIATT – likelihood suicide, previous suicide attempts/ideation.	SUIATT	Those with suicide ideation regarded suicide as more deliberate (X^2 = 28.87, p = .0001), cowardly (X^2 = 14.57, p = .0057)., not associated with mental illness (X^2 = 51.63, p < .0001), did not feel people have the right to kill themselves (X^2 = 19.99, p = .0005).
Lee & Oh 2012	South Korea	University students	289	44	21	Cross-sectional	SSI	Moral objections to suicide subscale of RFLI	Suicide ideation was significantly explained by moral objections to suicide over and above

									variance due to depression and hopelessness (β = -.25, t = -4.362, p < .001).
Limbacher & Domino 1986	US	University students	649	36	Not available	Cross-sectional	Participants classified - attempted suicide, considered attempting and no previous attempt/ideation.	SOQ	'Attempters' and 'contemplators' were more accepting (r = .52, p < .001), more likely to think suicide is impulsive (r = .83, p < .001), believe suicide attempters are not mentally ill. Non-attempters more likely to think attempters do not intend to die (r = .87, p < .001).
Linehan, Goodstein, Nielsen & Chiles 1983	US	General population	197	48	36	Cross-sectional	SBQ	Moral objections to suicide subscale of RFLI	No significant differences on moral objections to suicide and no significant correlation with suicide ideation/behaviour (F(3, 193) = .93).
		Psychiatric in-patients	175	36	31				Those with history of suicide behaviour, current suicide ideation/behaviour had significantly lower moral objections (t^b= -2.23, p = .03). Moral objections negatively related to future projected suicidal behaviour (r = -.28, p < .01).
Lizardi et al. 2008	US	Inpatients with major depressive disorder	265	39.8	36.9	Cross-sectional	Columbia Suicide History Form	Moral objections to suicide subscale of RFLI	Participants with lower moral objections were more often lifetime suicide attempters (t = 16.7, p = .001).
Malone, Oquendo, Haas, Ellis, Li & Mann 2000	US	Psychiatric inpatients with major depressive episode	84	45	34.4	Cross-sectional	SSI Suicide Intent Scale Medical lethality Scale	Moral objections to suicide subscale of RFLI	Depressed patients who had not attempted suicide expressed higher moral objections than those who had attempted (t = -3.79, df = 82, p = .0003). Moral objections significantly higher in those with low-lethality attempts than high-lethality (t = -2.00, p = .05).
McAuliffe, Corcoran, Keeley & Perry 2003	Ireland	University students	328	41	19.6	Cross-sectional	Four bespoke items - historical suicide ideation/planning/behaviour, future likelihood of suicide attempt.	Four subscales of SOQ – mental illness, normality, right to die and cry for help.	'Ideators' agreed more that suicide is normal (F = 82.083 (1, 316), p < .001), people have the right to die (F = 18.074 (1, 316), p < .001) and not associated with mental illness ((F = 4.886 (1, 316), p = .028). Agreeing that suicide is normal was associated with increased risk of being an 'ideator' (OR = 1.385, 95% CI 1.268-1.512).
Minear & Brush 1981	US	College students	394	39	19.9	Cross-sectional	Participants classified - considered/threatened/	29 bespoke items - suicide beliefs/values	Participants who had considered, threatened or attempted suicide had more accepting

							attempted suicide	and belief in afterlife.	suicide beliefs (t = 4.32, df = 377, p <.001).
Mohammadkhani et al. 2015	Iran	Participants with substance abuse in prison/outpatient	348	100	Not available	Cross-sectional	SPS Moral objections to suicide subscale of RFLI		No significant relationship between moral objections to suicide and suicide probability (r = 0.001, p > .05).
Moody & Smith 2013	Canada	Trans adults	133	37.6	36.8	Cross-sectional	SBQ-R	Moral objections to suicide subscale of RFLI	Moral objections to suicide did not significantly correlate with (r = -.10, p > .05) or significantly contribute to suicidal behaviours (β = .07, t = .26, p > .05).
Osman et al. 1993	US	University students	407	31	19.7	Cross-sectional	SPS SBQ	Moral objections to suicide subscale of RFLI	No significant relationship between moral objections and suicide ideation (r = -.09, p > .05). Significant negative correlation with suicide likelihood (r = -.16, p < .01). Moral objections did not predict suicide risk.
Oquendo et al. 2005	US	Participants with major depression, bipolar or schizophrenia	460	46	34	Cross-sectional	SSI Columbia Form Suicide Intent Scale Medical lethality scale	Moral objections to suicide subscale of RFLI	Those who had attempted suicide had significantly lower scores on moral objections (β = -0.5, Wald = 5.60, p = 0.018). Lower scores on moral objections significantly related to lethality of most severe attempt (β = -.27, z = -3.05, p = .003).
Renberg, Hjelmeland & Koposov 2008	Sweden Norway Russia	General population	1601	50	39	Cross-sectional	Items from ATTS which covers suicide ideation, plans and attempts.	ATTS	Suicidal behaviour among significant others and suicidal expressions earlier in life predicted attitudes towards suicide which predicted current suicidal expressions in both women (χ^2 = 843.483, p < .001) and men (χ^2 = 809.811, p < .001).
Reynders et al. 2015	Belgium	General population of Flanders and The Netherlands	2978	40	Not available	Cross-sectional	Three bespoke items - death wish, suicide plan and suicide attempt (items not given).	Six bespoke items - acceptability of suicide, right to suicide and suicide as cowardly/irresponsible.	A suicidal past was associated with more accepting (OR = 2.78, CI 2.10-3.68, p <.001) and less disapproving attitude (OR = 0.43, CI 0.33-0.58, p <.001) towards suicide.
Richardson-Vejlgaard et al. 2009a	US	Participants with major mood or bi-polar disorder classified as 'white' 'black' or 'hispanic'	804	31	38.7	Cross-sectional	SSI C-SSRS	Moral objections to suicide subscale of RFLI	Significant association between moral objections to suicide and suicide ideation (r = 0.15, p= .001). 'Blacks' had significantly higher rate of moral objections, most likely to have made a suicide attempt and highest level of suicide ideation.

Richardson-Vejlgaard et al. 2009b	US	Participants with major depression or bi-polar disorder	521	50	37	Cross-sectional	SSI C-SSRS	Moral objections to suicide subscale of RFLI	Moral objections correlated significantly with suicide ideation ($r = 0.18$, $p < .001$). Individuals with alcohol use histories had higher incidence of historical suicide attempt (X^2 (df = 1) = 15.5 $p < .001$) and fewer moral objections to suicide ($F(1, 519) = 5.6$ $p = .02$).
Saito, Klibert & Langhinrichsen-Rohling 2013	US Japan	American and Japanese university students	813	35	19.8	Cross-sectional	LAS-SF	Acceptability subscale of SOQ	Suicide proneness positively associated with suicide acceptability (American: $r = .38$, $p < .01$, Japanese: $r = .36$, $p < .01$). Suicide acceptability predicted 22% (American) and 14% (Japanese) of variance of suicide proneness.
Sakamoto, Tanaka, Neichi, Sato & Ono 2006	Japan	General population 40-79 year olds	450	44	58	Cross-sectional	Bespoke items - naturalness of suicide ideation, historical suicide ideation or future likelihood.	Five bespoke items - acceptability of suicide, understanding suicidal individuals and burdening family.	Significant positive relationship between suicide ideation and believing suicide can be forgiven ($\phi = .327$, $p = .000$). Significant positive relationship between suicide ideation and not understanding people who commit suicide ($\phi = -.227$, $p = .000$).
Scocco, Castriotta, Toffol & Preti 2012	Italy	i) General population ii) Mental health diagnosis iii) Attempted suicide iv) Suicide bereaved	527	41	43.5	Cross-sectional	Patients admitted to hospital due to suicide attempt classified as 'suicidal group'	STOSA	Participants from the general population reported lower perceived stigma about suicide (Kruskall-Wallis = 6.93, Gaussian approximation $p = .03$) than the clinical population (Dunn post hoc $p < .05$) but not suicide attempters (Dunn post hoc $p > .05$).
Scocco, Toffol, & Preti 2016	Italy	Participants admitted to inpatient psychiatric hospital	67	42	45.4	Cross-sectional	Interview regarding historical suicide attempts (items not given).	STOSA	History of suicide attempt meant higher levels of distress were related to greater perceived stigma towards suicide ($\beta = 0.37$, $t = 2.36$, $p = 0.024$). In those with no history, no link between distress and stigma ($\beta = 0.03$, $t = 0.19$, $p = 0.85$).
Stein, Brom, Elizur & Witztum 1998	Isreal	16-17 year olds who registered at military recruitment centres	525	48	Not available	Cross-sectional	Four bespoke items covering historical suicide ideation and attempts.	Bespoke items that the authors report had been validated in previous studies.	Suicide ideation associated with belief that it should not be prevented, can be justified and does not reflect mental disturbance (χ^2(df = 2) = 41.7, $p < .001$).

Vatan, Gencoz, Walker & Lester 2010	US Turkey	University students	749	36	21	Cross-sectional	SIQ	Attribution of causes to suicide scale (Lester & Bean, 1992). Social distance scale (Lester, 1988)	For Turkish participants, stigmatising attitudes towards suicide were positively correlated with suicide ideation ($r = 0.11$, $p < .05$). For American participants, there was a negative correlation ($r = -0.20$, $p < .001$).
Villacieros et al. 2016	Spain	Participants accessing workshop on grief	277	18.8	39.95	Cross-sectional	Three bespoke items alongside Predictive Suicidal Ideation Risk Index (IRIS)	Attitudinal Beliefs Questionnaire about Suicidal Behaviour (CCCS - 18)	Significant differences between those who had thought of, planned and attempted suicide on factors of legitimization/terminal disease, moral dimension and suicide itself. Positive, significant correlation between attitudes and risk of suicide score ($r = .26$, $p = .001$).
Wellman & Wellman 1988	US	University students	968	19	Median = 20	Cross-sectional	Bespoke items - suicide ideation and behaviour.	Bespoke items - attitudes and feelings of suicide.	Participants reporting more serious suicide ideation/behaviours were more accepting of suicide than those reporting transitory/no suicide ideation ($\chi^2 = 21.71$, $df = 9$, $p = .001$).
Zadravec, Grad & Socan 2006	Slovenia	General population, GPs, psychiatrists and suicide attempters	619	41	44	Cross-sectional	Admission to hospital following suicide attempt	55 bespoke items - origins, treatment, prevention and stigma of suicide and ATTS	Suicide attempters were more likely to believe suicide is reaction to severe distress ($F = 9.24$, $p < .000$) and due to societal pressure ($F = 29.49$, $p < .000$).
Zou et al. 2016	China	General population	983	38	Not available	Cross-sectional	One bespoke item measuring historical suicide ideation.	SPAS	Suicide ideation associated with greater stigmatizing attitudes towards suicide ($p = < .01$) and less empathy for suicidal ($p = < .01$).

See Appendix D for questionnaire references

Suicide ideation

Suicide ideation and moral objections to suicide.

Around half of the studies examining this relationship found that holding less moral objections to suicide was associated with greater self-reported suicide ideation (Bakhiyi et al., 2017; Connell & Meyer, 1991; Garza & Cramer, 2011; Lee & Oh, 2012; Richardson-Vejlgaard, Sher, Oquendo, Lizardi & Stanley, 2009a, 2009b).

In a clinical sample when sex, depression, abuse and neglect, suicide attempt and impulsivity were all controlled for those with current suicide ideation had significantly less moral objections to suicide than those without suicide ideation (OR 0.93, 95% CI 0.87-1.00, p=.04) (Bakhiyi et al. 2017). This finding was replicated by Garza and Cramer (2011) although the sample used was exclusively Hispanic (general population) affecting the generalisability of findings. Lee and Oh (2012) also replicated this predictive finding when controlling for depression and hopelessness. Again, this was limited to a Psychology Undergraduate population in South Korea. In other large clinical samples, small effects have been reported (r = -0.15, p=.001) (r = -0.18, p=.001) (Richardson-Vejlgaard Sher, Oquendo, Lizardi & Stanley, 2009a, 2009b).

The other half of studies examining this relationship did not find the same result (Dervic et al. 2006; Linehan, Goodstein, Nielsen & Chiles, 1983; Mohammadkhani, Khanipour, Azadmehr, Mobramm & Naseri, 2015; Moody et al., 2013; Osman et al., 1993; Oquendo et al., 2005). Those that measured suicide ideation using the Scale for Suicidal Ideation (Beck, Kovacs & Weissman, 1979) found evidence of this relationship (apart from Oquendo et al., 2005) whereas those studies who did not find evidence of this relationship measured suicide ideation using either the Suicide Probability Scale (Cull & Gill, 1988) or the Suicidal Behaviours Questionnaire (Linehan & Nielsen, 1981). The

Suicide Probability Scale (Cull & Gill, 1988) loads onto six factors with one being suicide ideation and other factors being hopelessness, positive outlook, inter-personal closeness, hostility and angry impulsivity. This may account for the difference in results. The Suicidal Behaviours Questionnaire measures both suicide ideation and behaviour. Differences in results could not be accounted for in terms of whether the sample was clinical or general population or with regards to risk of bias in the study. Mohammadkhani, Khanipour, Azadmehr, Mobramm and Naseri (2015) and Moody et al. (2013) recruited very specific samples (males with substance misuse disorders in prison and outpatient settings and trans adults respectively) which may also account for these differences.

Suicide ideation and attitudes towards suicide (validated measures).

Renberg, Hjelmeland and Koposov (2008) examined the development and influence of attitudes towards suicide on suicide ideation. The models that were developed varied in terms of sex and culture with some overarching themes. Early life expressions of suicide and expressions of suicide in significant others led to the development of an individual's attitude toward suicide (specifically in relation to acceptance, condemnation and preventability). An individual's attitude towards suicide then predicted their self-reported suicidal expressions in the past year. This understanding was developed using large samples from the general population in Sweden, Norway and Russia and highlights the importance of the consideration of differences in sex and culture.

Those with suicide ideation in rural China held higher levels of stigmatizing views towards suicide, were less understanding and empathic towards suicide and had higher scores on thinking it was an important social problem than those without suicide ideation (Zou at al., 2016). This relationship with stigmatizing views was replicated with Turkish

participants ($r = 0.11$, $p<.05$) but the opposite was found with American participants ($rs = -0.20$, $p<.001$) (Vatan, Gencoz, Walker & Lester, 2010) although there were small effects in both groups of participants. Contrasting results were also reported by McAuliffe, Corcoran, Keeley & Perry (2003) who found that among those experiencing higher levels of suicide ideation they agreed less that suicide is related to mental illness and that those engaging in suicide behaviour do not wish to die. Limbacher and Domino (1986) and Kocmur and Dernovsek (2003) also found the same regarding mental illness. The differences in these results could be accounted for by the Eastern and Western samples used in the respective studies (China and Turkey compared with the UK, America and Slovenia). Different cultural influences were also observed by Renberg, Hjelmeland and Koposov's (2008) who found that different relationships exist between attitudes towards suicide and suicide for different cultures.

Evidence was found of a significant positive moderate relationship between the belief 'we have the right to die' and levels of suicide ideation ($r=.26$, $p<.001$) (Gibb, Andover & Beach, 2006). 'Right to die' attitude moderated the relationship between hopelessness and depression with suicide ideation for men but not for women. Significantly more permissive attitudes towards suicide were also found in those with suicide ideation and suicide plans compared to those who did not report suicide ideation or did not have suicide plans (Arnautovska & Grad, 2010). These results were replicated by Beautrais, Horwood and Fergusson (2004), Saito, Kilbert and Langhinrichsen-Rohling (2013), Foo, Alwim, Ismail, Ibrahim and Osman (2014), Villacieros, Bermejo, Magana and Invencio (2016) and Cwik et al. (2017).

Suicide ideation and attitude towards suicide (bespoke items measuring attitudes).

There were three studies in this review that developed bespoke items measuring attitudes held towards suicide. Given these measures were not validated or found to be reliable there may be bias in the results. Jeon, Park and Shim (2013) based items on the Suicide Attitude Questionnaire (Diekstra & Kerkof, 1988). This study specifically focused on future suicide intent although how this was measured was not explicit. Permissive attitudes held towards suicide predicted self-reported future suicidal intent even when both demographic and psychological confounds were accounted for in both those with and without depression (adjusted OR 3.69; 95% CI, 1.97-6.89 p<.001). Permissive attitudes were measured with items such as, 'one has the right to commit suicide,' 'there may be situations where the only reasonable resolution is suicide.' Those holding more approving and permissive attitudes towards suicide were also associated with greater suicide ideation (Sakamoto, Tanaka, Neichi, Sato & Ono, 2006; Stein, Brom, Elizur & Witztum, 1998).

Suicide ideation and other measures of attitudes towards suicide.

When using alternative measures of attitudes towards suicide (both studies asked participants to rate an individual who was suicidal) contradictory results were obtained. Knott and Range (2001) found the non-suicidal group were more accepting of a suicidal individual compared to suicidal groups whereas Ingram and Ellis (1995) found those with suicide ideation were more likely to rate the male individual (but not the female) as 'justified' in their actions. Knott and Range (2001) recruited a clinical sample and

adjusted for the covariate of depression whereas Ingram and Ellis (1995) recruited a University student sample and did not account for confounding variables.

This method of assessing attitudes towards suicide was argued to have strengths in not directly asking participants about their attitudes towards suicide to reduce the influence of stigma of suicide on reporting. This approach has not been found to be a valid or reliable assessment of an individual's attitude towards suicide. Although a participant may feel accepting towards a suicidal individual this could be confounded by personal traits (such as empathy) rather than reflecting their attitude towards suicide.

Summary

Overall, those who have fewer moral objections to suicide and hold a less stigmatizing, more accepting attitude towards suicide scored higher on measures of self-reported suicide ideation. There were a number of studies however that did not find evidence of this relationship so not a universal finding. Differences in studies that could account for this were both the measurement of suicide and cultural background of participants.

Suicide behaviours

Suicide behaviours and moral objections to suicide.

A clear relationship between moral objections to suicide and suicide behaviour was demonstrated in all nine studies examining this relationship. Fewer moral objections to suicide are more likely in those who have attempted suicide historically (Connell & Meyer, 1991; Dervic et al., 2006; Linehan, Goodstein, Nielsen & Chiles, 1983; Lizardi et al., 2008; Malone et al., 2000; Oquendo et al., 2005; Richardson-Vejlgaard, Sher, Oquendo, Lizardi & Stanley, 2009). Fewer moral objections to suicide were found to

predict lifetime suicide attempts even when age, religious affiliation, survival and coping beliefs, aggression and diagnosis of personality disorder were controlled for (OR = 0.92, 95% CI=0.87 – 0.92, p=.003) (Dervic et al., 2006). Linehan, Goodstein, Nielsen and Chiles (1983) found those with a history of suicide behaviour scored significantly lower on moral objections to suicide ($F(1, 156)=4.16$, $p<.05$) as well as those with current suicide behaviour ($t(172)=-2.23$, $p=.03$). Fewer moral objections to suicide were related to recent suicide behaviour ($r=-.40$, $p<.01$) and future projected suicide behaviour ($r=-.28$, $p<.01$). Moral objections towards suicide was also related to the lethality of attempts with greater moral objections associated with lower lethality of historical attempts (Malone et al., 2000; Oquendo et al., 2005). A strong effect was found by Malone et al. (2000) for this relationship (Cohens $d = .71$). This could perhaps represent the ambivalence in those who wish to kill themselves who hold moral objections to suicide (they may begin to act and then change their mind).

Suicide behaviours and attitude towards suicide (validated measures).

As with the relationship between moral attitudes towards suicide and suicide behaviours, there was a unanimous positive relationship between those who had previously attempted suicide holding liberal and permissive attitudes towards suicide (such as that people have the right to take their own life, whether suicide is a sin, that suicide is understandable in some situations) in all the included studies (Arnautovska & Grad, 2010; Beautrais, Horwood & Fergusson, 2004; Hjelmeland et al., 2008; Limbacher & Domino, 1986). Galynker, Yaseen, Briggs and Hayashi (2015) recruited a clinical sample with a good representation across a range of psychiatric diagnoses, genders and ethnic groups. The sample were assessed as at high risk of suicide and were being discharged

from psychiatric hospital. Attitudes towards suicide was measured using the Suicide Opinion Questionnaire and suicide attempt assessed using the Columbia Severity Rating Scale. Suicide attempt was also assessed in a follow-up after discharge from hospital to identify if the participant had made a suicide attempt since being discharged. A significant difference was found in attitudes towards suicide between those who did and did not attempt suicide post-discharge from hospital. Those who had attempted suicide at admission, post-discharge and reported a lifetime suicide attempt had greater acceptability of suicide. Those who had attempted suicide at admission and reported a lifetime suicide attempt had less disapproval of suicide. A linear discriminant analysis demonstrated the predictive power of attitudes held towards suicide. Using the scores on the two factors of acceptability and disapproval they could correctly classify whether someone would attempt suicide in 86% of cases. The discriminant function remained a statistically significant predictor in logistic regression with post-discharge suicide attempt as the outcome variable when age, sex, substance abuse, severity of suicidal intentions at admission and diagnostic category were controlled for (β=-5.510, SE=2.603, Wald=4.479, df=1, p=.034). This was the only study to utilise a prospective design allowing a more detailed understanding of the relationship between attitudes towards suicide and suicide attempt.

Suicide behaviours and attitude towards suicide (bespoke items measuring attitudes).

There was evidence that those with experience of suicide behaviours believed in biological and genetic origins to suicide (Stein, Brom, Elizur & Witztum 1998; Zadravec, Grad & Socan, 2006). Zadravec, Grad and Socan (2006) also demonstrated a belief in

crisis and sociological explanations of suicide behaviour for those with experience of suicide behaviour. Caution should be observed however due to the use of measures that have not been validated.

Summary

Overall, there was a unanimous finding of the relationship between suicide behaviours and attitudes towards suicide. Those who had engaged in suicide behaviour in the past or currently had fewer moral objections to suicide and held a more accepting attitude towards suicide. An accepting attitude towards suicide could predict those who would attempt suicide following discharge from hospital following suicide attempt in 86% of cases. The prospective design of this study meant the potential predictive ability of measuring attitudes towards suicide could be demonstrated.

Discussion

The act of killing oneself evokes a range of strong reactions from heroic glorification to moral condemnation. Attitudes towards suicide vary significantly in different cultures, ages and genders. The present review aimed to systematically examine the relationship between the attitudes an individual may hold about suicide and their experience of suicide ideation or behaviour. The review examined whether this relationship differed depending on the conceptualisation and measurement of these two constructs.

Summary of main findings

Suicide ideation.

Overall, it was found that the fewer moral objections to suicide an individual held, the more likely they are to self-report suicide ideation. The results were mixed with some studies not finding this relationship. Although it was speculated that the measure of suicide ideation could account for these differences, in other studies looking at more global attitudes towards suicide, different measures of suicide between the studies did not result in different findings. The moral objections to suicide subscale of the RFLI includes four items, three of which are based on religious opposition to suicide: 'Only God has the right to end life'; 'I am afraid of going to Hell'; 'My religion forbids it'. The fourth item is a moral, arguably more secular, belief, 'I consider it morally wrong.' It could be that some individuals find suicide morally wrong yet hold no firm religious beliefs so affecting their overall subscale score. Richardson-Vejgaard, Sher, Oquendo, Lizardi & Stanley (2009b) did however find that this subscale does tap a unitary factor which all four items load highly.

It is important to consider that those with greater moral objections to suicide may not want to disclose suicide ideation given their moral stance on suicide. It may be distressing for them to experience suicide ideation and research has found that those who are distressed by suicide ideation try to avoid or repress such thoughts (Williams, Duggan, Crane & Hepburn, 2011; Bradvik & Berglund, 2011). Galynker, Yaseen, Briggs and Hayashi (2015) have also argued that those considering suicide are acutely aware they are being assessed for suicide and may conceal their thoughts of suicide rendering self-report assessment tools invalid. It is difficult to establish whether moral objections to suicide are protective in terms of experiencing suicide ideation or whether holding moral objections to suicide inhibits disclosure of such thoughts. The inhibition of sharing these thoughts could be leading to further distress and restrict opportunity for help-seeking which could increase an individual's risk of suicide behaviours. We should be cautious with conclusions generated about this relationship as the literature suggests this relationship is not clear.

A more detailed account of the relationship between suicide ideation and attitudes held towards suicide more generally was offered by Renberg, Hjelmeland and Koposov (2008). Although differences were observed in different genders and cultures, early life expressions of suicide and suicide behaviour and expressions in significant others led to the development of an individual's attitude toward suicide. An individual's attitude towards suicide then predicted their self-reported suicidal expressions in the past year. This supports the Schematic Appraisal Model of Suicide (SAMS: Johnson, Gooding & Tarrier, 2008) which suggests a contributing factor to suicide behaviour is that of a suicide schema. This model describes the suicide schema as a network of interconnecting stimulus, response and emotionally stored information that when activated will trigger

suicide ideation. The early life experiences of suicide as identified by Renberg, Hjelmeland and Koposov (2008) could contribute to the development of a suicide schema that incorporates an individual's attitude towards suicide and is triggered by relevant experiences later in life.

Many studies found that those reporting suicide ideation also reported more permissive attitudes towards suicide (Arnautovska & Grad, 2010; Beautrais, Horwood & Fergusson, 2004; Foo, Alwim, Ismail, Ibrahim & Osman, 2014; Saito, Kilbert & Langhinrichsen-Rohling, 2013). This is consistent with some of the findings regarding the relationship with moral objections to suicide and suicide ideation. The same difficulties occur in the interpretation of these results in that if an individual believes that suicide is not permissible then it could inhibit their disclosure of suicide ideation. It did not affect these results whether the measurement of attitudes towards suicide was a validated and reliable measure or if the authors developed a bespoke assessment for their study.

Suicide behaviours.

The results in terms of suicide behaviours and attitudes held towards suicide were unanimous. The evidence suggests that those who have historically or who are currently engaging in suicide behaviour report less moral objections to suicide and report a more permissible attitude towards suicide (Arnautovska & Grad, 2010; Beautrais, Horwood & Fergusson, 2004; Connell & Meyer, 1991; Dervic et al., 2006; Hjelmeland et al., 2008; Limbacher & Domino, 1986; Linehan, Goodstein, Nielsen & Chiles, 1983; Lizardi et al., 2008; Malone et al., 2000; Oquendo et al., 2005; Richardson-Vejlgaard, Sher, Oquendo, Lizardi & Stanley, 2009a). This was found in studies that used clinical samples, general population samples, those using reliable and valid measures and those using more

bespoke measures thus generating a confidence in the relationship observed. The direction of this relationship was not established in most of the studies included in this review. One study did demonstrate the predictive ability of attitudes held towards suicide in terms of suicide attempt post-discharge from psychiatric hospital in a longitudinal design (Galynker, Yaseen, Briggs & Hayashi, 2015). Not only were attitudes towards suicide significantly different in those who had previously attempted suicide but the attitude an individual held could correctly classify an individual in terms of whether they made a suicide attempt post-discharge from hospital. This was a small clinical sample and so further replication in larger samples would be recommended yet this is an important finding. Clinicians conducting psychosocial assessments when an individual is discharged from hospital could incorporate an individual's attitude held towards suicide.

It is important to note that the relationship between attitudes and behaviour has been greatly debated with a consensus view being that this is a bi-directional relationship (Proctor, 2001; Wallace, Paulson, Lord & Bond, 2005). As suggested by cognitive dissonance theory (Carver, 2004; McConnell & Brown, 2009; Sherman & Gorkin, 1980) and self perception theory (Bem, 1972) it could be that engaging in suicide behaviour changes an individual's attitude to one that is more accepting of suicide given their personal experiences. None of the outlined studies attempted to address the potentially bi-directional nature of this relationship and so further work would be recommended to establish the exact nature of this relationship, especially using longitudinal designs. For example, attitudes towards suicide and suicide could be measured at different time points throughout an individual's life. It could then be identified if attitudes change if an individual engages in suicide ideation or behaviour.

Influence of sex and culture on the relationship between attitudes and suicide.

When establishing how an individual develops an attitude towards suicide and the influence of this attitude on suicide ideation, Renberg, Hjelmeland and Koposov (2008) found differences in these relationships dependent on sex and culture. They recruited samples from Sweden, Norway and Russia and in the Russian sample they found that for men non-condemning attitudes towards suicide predicted suicide expressions in the past year but for women it was accepting attitudes that predicted suicide expressions. For the Swedish sample, they found that for women non-condemning attitudes towards suicide predicted earlier suicide expressions but this relationship was not observed in men. Hjelmeland et al. (2008) found a small significant positive relationship between the item 'people should have a right to take their own lives' and own suicide attempt earlier in the year in Ghana but not in Uganda and Norway. Zou et al. (2016) and Vatan, Gencoz, Walker and Lester (2010) recruited individuals from China and Turkey which can be understood as having an Eastern culture. They both found consistent results with these two samples. Vatan, Gencoz, Walker and Lester (2010) found differing results with an American sample which were consistent with other studies using a more Western sample. This same pattern of results was also found by Richardson-Vejlgaard, Sher, Oquendo, Lizardi & Stanley (2009a). They found that overall less moral objections to suicide was correlated with greater self-reported suicide ideation yet for the 'Black' participants the opposite was found in that they had the highest reports of suicide ideation and the greatest moral objections to suicide.

It would be important to consider in future work that both sex and culture may influence differences in this relationship. This could be due to the collectivist versus individualist cultures in that for a collectivist culture where emphasis is placed on family and group

goals, an individual may consider suicide unacceptable due to the impact on family/society even though they experience suicide ideation themselves. The context of a collectivist culture may in turn exacerbate suicide ideation as someone may then experience self-stigma due to experiencing thoughts of suicide. Attitudes to suicide vary significantly in different cultures and it appears the relationship with suicide may also vary as a product of different cultures. Further work could explore these hypotheses by investigating why there are differences in this relationship across cultures. Qualitative work may allow for a more in-depth exploration from an individual's perspective. Other future work on this relationship is recommended to measure gender and culture and consider this as an important confounding variable.

Limitations of the review

Significant collaboration between the two authors helped to ensure the review was systematic and thorough such that all relevant papers were included and reviewed systematically. This involved thorough discussion of potential search terms, identification of resources to search and papers to be included and excluded when uncertainty arose regarding eligibility. Inter-rater reliability with an independent researcher for the assessment of bias was 100% (α=1 based on 25% of included studies) so establishing an accurate assessment of the risk of bias in the included studies. Improvements to this could have been the assessment of the reliability of data extraction and a second opinion of search terms used to identify relevant studies. The decision was made to not search the grey literature due to the risk of bias given the absence of the peer review process. There is the potential however of publication bias in that studies with non-significant results are less likely to be published. Non-significant results were observed in several

studies included in the review however offering some assurance against this. Due to pragmatic reasons, only studies reported in the English language were included. The same risk of bias occurs in that it is more likely that significant results are only published in English language journals (Boland, Cherry & Dickson, 2014).

As discussed in the risk of bias assessment, many studies included a cross-sectional design. Although offering a description of the relationship between constructs they are limited in offering a causal explanation so the results of the review should be taken with this limitation in mind. Only one study utilised a prospective design and none developed an experimental approach to test the impact of the manipulation of attitudes towards suicide on suicide.

Research implications

Further research should aim to advance this field of knowledge from descriptions of the relationships between these two constructs to more robust study designs that offer an understanding of the potentially complex relationship between attitudes held towards suicide and suicide. Important in design is the incorporation of both demographic and psychological confounds to analysis. This review has demonstrated that there are cultural and sex differences in this relationship which future research could explore further or at least incorporate as an important confounding variable. Further research should aim to establish if there is a relationship between the reporting of suicide ideation in those that hold moral objections to suicide. Alternative approaches are those of implicit tests of suicide (Nock et al., 2010) which do not directly ask an individual if they are thinking of suicide but instead test how much they associate themselves with death. Experimental studies manipulating attitudes towards suicide could usefully consider the research done

within public health to attempt to change attitudes towards mental illness. The 'Time to Change' campaign conducted in England between 2011 and 2015 generated mixed outcomes (Smith, 2013). A small reduction in discrimination was reported by service users yet no improvement in knowledge or behaviour among the general public nor in service user reports of discrimination by mental health professionals. There was an increase in discrimination reported by those with most exposure to the programme but it was not clear whether this was due to greater discrimination or if the programme had encouraged greater reporting of discrimination. Smith (2013) argued that further campaigns aimed at changing public opinions about mental health need to fully understand both the perspectives of those feeling stigmatised and those experienced as stigmatizing. This is to avoid 'stigmatising the stigmatiser' for behaviours that could be quite complex (the role of transference and counter-transference were considered).

Researchers should continue to establish clear specification and measurement of the construct of suicide given the ranging nomenclature, definitions and measurement tools. Some studies merged measurements of suicide ideation and behaviour yet as the results of this review demonstrate there could potentially be differing relationships dependent on the measure of suicide.

There is a current lack of importance placed on an individual's attitude and appraisal of both suicide and suicide ideation in current psychological models of suicide. How an individual appraises suicide broadly could impact on how they appraise suicide ideation. For example, if an individual begins to experience thoughts of suicide yet they find suicide to be morally wrong the mere experience of suicidal thoughts could result in negative metacognitive beliefs about suicide ideation and increase an individual's distress. There is little literature examining this relationship in those experiencing suicidal

thoughts. The S-REF model of psychological disorders (Wells and Matthews, 1994, 1996) is a metacognitive, information processing model that could offer a theoretical framework to consider in relation to the cognitive process of suicide ideation. There is significant evidence supporting the metacognitive model across a range of emotional and psychological disorders (Papageorgiou & Wells, 2003; Sadeghi, Mokhber, Mahmoudi, Asgharipour & Seyfi, 2015; Wells & Papageorgiou, 1998; Gkika & Wells, 2015; Melli, Carraresi, Poli & Bailey, 2016; Wells, 1995) yet has not been considered in relation to suicide ideation. This theoretical model could add value to the already understood key psychological mechanisms that initiate and maintain both suicide ideation and behaviour.

Clinical implications

The attitude someone holds, or moral stance they take towards suicide may offer a resilience factor for suicide. It may also present as an additional risk factor. The review demonstrated an association between approving/permissive attitudes towards suicide and suicide behaviour. Clinicians assessing those at risk of suicide are therefore encouraged to incorporate an assessment of the attitude an individual holds towards suicide as part of the psychosocial assessment of risk as recommended by the National Institute for Health and Care Excellence (2011). Understanding how an individual appraises suicide broadly may allow for a more idiosyncratic consideration of how they experience suicide ideation and/or behaviour. Such information could supplement a formulation of an individual's suicide risk or be incorporated into a broader formulation of their difficulties if appropriate. In developing such a formulation, the impact of an individual's attitude towards suicide on their thoughts, feelings and behaviours could be

examined. Such hypotheses could be tested as part of a psychological intervention. This could be as part of an individual's psychological therapy specifically targeting the prevention of suicide behaviour. This could be tested by either challenging an individual's attitude towards suicide or by reducing the distress caused by thoughts of suicide. Several therapeutic techniques and models offer ways to reduce distress experience by thoughts including metacognitive therapy (Wells, 2000), mindfulness based cognitive therapy (Segal, Williams & Teasdale, 2013) and acceptance and commitment therapy (Hayes, Strosahl & Wilson, 2011).

Conclusions

The aim of this review was to systematically examine the relationship between attitudes towards suicide and suicide. There was significant evidence to demonstrate that those who engage in suicidal behaviour hold accepting attitudes towards suicide. This attitude has been found to predict those who will engage in suicidal behaviour post-discharge from hospital. It is therefore recommended that clinicians assessing those at risk of suicide incorporate assessment of the attitude an individual holds towards suicide into their assessment of suicide risk. The literature could now advance understanding of this relationship with more robust methodologies such as those with longitudinal or experimental designs. A clear conceptualisation and measurement of the constructs would allow for greater clarity on the specifics of this relationship. Implicit tests of suicide such as those described by Nock et al. (2010) may also offer solutions to the challenges of measuring suicide ideation in those holding moral objections to suicide.

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Paper II of III

Metacognitive beliefs and suicide ideation:

An experience sampling study

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The author declared no potential conflicts of interests with respect to research, publication and/or authorship of this article.

Preface

The work for this paper was carried out between September 2015 and April 2017. Recruitment of participants was between May 2016 and January 2017. Dr Daniel Pratt and Professor Adrian Wells provided overall supervision for this paper which included reading drafts of the manuscript. Dr Richard Emsley provided support with the statistical analysis.

The author intends to prepare this review for publication in Behaviour Research and Therapy (see Appendix A for author guidelines). The authors will be Vikki Aadahl, Professor Adrian Wells, Robert Hallard and Dr Daniel Pratt.

Abstract

Almost one million people each year die by suicide across the world. Psychological models have advanced understanding of why people choose suicide. The cognitive processes that initiate and maintain suicide ideation and links with suicide behaviour have received less attention. Suicide ideation has been described as repetitive, intrusive and negative of which parallels have been drawn with worry and rumination. Metacognitive beliefs explain why people engage in and are distressed by worry and rumination. Metacognition has not yet been considered in relation to suicide yet this could advance understanding of the cognitive processes involved in suicide ideation and behaviour so improving effectiveness of intervention. The current study examined the relationship between metacognitive beliefs about suicide ideation and the process of suicide ideation. An Experience Sampling Method (ESM) meant participants completed an online diary up to seven times a day for six days which measured suicide ideation, negative affect, defeat, hopelessness, entrapment and metacognitive beliefs. Positive and negative metacognitive beliefs were positively associated with concurrent suicide ideation even when known cognitive correlates of suicide were controlled for. This has important clinical implications for the assessment and formulation of suicide. Future research is recommended to advance understanding of metacognition and suicide.

Key words: suicide ideation cognitive metacognitive beliefs

Key findings:

- First examination of the relationship between metacognitive beliefs and suicide ideation.

- Experience Sampling Methodology (ESM) was utilised.
- 24 individuals experiencing suicide ideation completed an online diary seven times per day for 6 days.
- Positive and negative metacognitive beliefs about suicide ideation were positively associated with suicide ideation even when known correlates of suicide (negative affect, hopelessness, defeat and entrapment) were controlled for.

Introduction

Suicide continues to be described by the World Health Organisation as a significant public health issue with over 800,000 people dying each year by suicide (WHO, 2016). In 2015, 6,188 people died by suicide in the UK (ONS, 2016) with the female rate increasing to its highest rate in a decade. Not only can suicide be a tragedy for the individual loss of life but significant impacts are also experienced by those bereaved by suicide leading to a longer and more complex grieving process sometimes requiring professional support (Clark & Goldney, 2008; de Groot at al., 2007). Suicide of patients can have a significant impact on health care staff leading to feelings of anger, sadness, guilt and professional self-doubt (Gaffney et al., 2009). Shepard, Gurewich, Lwin, Reed and Silverman (2016) also demonstrated evidence of the significant economic impact of suicide to professional services. In 2013, the total medical cost of both suicide and nonfatal suicide attempts in the US was $1.7 billion. Despite decades of research, suicide continues to be a significant problem affecting many individuals and professional services. Improving our understanding of this complex phenomenon is imperative to continue efforts of reducing death by suicide (House of Commons Health Committee, 2017).

The World Health Organisation (2014) defines suicide as the act of intentionally killing oneself yet Silverman (2006) identified more than 27 definitions of suicide used in research literature. This highlights the wide range of thoughts and behaviours that are associated with suicide. Such thoughts and behaviours are understood as existing on a continuum ranging from suicide ideation to suicide-related behaviours and death by suicide (Carter, Reith, Whyte & McPherson, 2005; Funahashi et al., 2000). Kessler, Borges and Walters (1999) found the transition from ideation to suicide plan occurred in 34% of participants and from plan to suicide attempt in 72%. Tarrier, Gooding, Pratt, Awenat and

Maxwell (2013) argue that as suicide is preceded by suicidal thoughts and that attempts at understanding and intervening with these antecedents is important in the prevention of suicide. The current study focused on suicide ideation.

Suicide ideation

Many years of research have developed understanding of specific risk (Hawton & van Heeringen, 2009) and resilience factors (Johnson, Wood, Gooding, Taylor & Tarrier, 2011) of suicide. Psychological models of suicide have attempted to explain the causal mechanisms between these factors which lead to suicide (Baumeister, 1990; Durkheim, 1951; Johnson, Gooding & Tarrier, 2008; Joiner, 2005; O'Connor, 2011; Shniedman, 1993; Williams; 1997, 2001). Although advancing our understanding of suicide what these models do not explain is the development, maintenance and impact of suicide ideation. If suicide ideation is causing an individual distress (as often reported in clinical practice) these models do not explain why they would not stop this process. Klonsky and May (2015) have recently suggested that any robust model of suicide should explain the mechanisms that account for the development of suicide ideation and the progression from suicide ideation to behaviour. These two processes are argued to be distinct with distinct explanations so showing the importance of understanding the processes involved in suicide ideation.

Kerkhof and van Spijker (2011) have argued that the experience and process of suicide ideation is akin to that of worry and rumination recommending conceptualisations of suicidal worry and suicidal rumination. Rumination has been described as a series of connected thoughts about one's own negative feelings, as well as thoughts about the consequences of such feelings (Nolen- Hoeksema, 2004). Worry has been described as a

series of thoughts and images that are negative in nature and experienced as uncontrollable typically beginning as, 'what if…' (Borkovec, Robinson, Pruzinsky & DePree, 1983). Worry and rumination have been conceptualised as coping strategies that can have paradoxical effects of maintaining emotional difficulties through affecting the processes required for developing effective self-regulation (Wells & Matthews, 1994, 1996). Wells and Matthews (1994, 1996) developed the Self-Regulatory Executive Function (S-REF) model which suggests that such styles of thinking are associated with an individual's metacognitive beliefs. Whilst this model has gained status in explaining psychological disorders such as anxiety and depression, it has not been applied to understanding the process of suicide ideation. However, to the extent that suicidal ideation represents a subtype of worry and rumination, it should draw on the same set of underlying metacognitions as specified in the Wells and Matthews model.

Self-Regulatory Executive Function (S-REF) model of psychological disorders (Wells & Matthews, 1994, 1996)

Wells and Matthews (1994, 1996) argued that traditional cognitive models of emotional and psychological disorders neglect factors that modulate and control thinking itself. They suggested a theoretical framework that conceptualises cognitive processes in the onset and maintenance of emotional disorders. The S-REF model of psychological disorders (Wells & Matthews, 1994, 1996) is a metacognitive, information processing model. The S-REF model proposes that a 'cognitive-attentional syndrome (CAS)' consisting of heightened self-focus, repetitive and difficult to control negative thinking (worry and rumination), maladaptive coping behaviour and threat monitoring contribute

to the maintenance of emotional and psychological difficulties.

The engagement of the CAS is influenced by metacognition. Metacognition is described as the element of information processing involved in monitoring, interpreting, evaluating and regulating cognition (Flavell, 1979; Wells, 2000). Metacognition incorporates both metacognitive knowledge and metacognitive regulation. Metacognitive knowledge is information individuals have about their own thinking (including metacognitive beliefs) and knowledge about the strategies affecting thinking. Metacognitive regulation refers to the strategies used to change the status of thinking. In the S-REF model, positive and negative metacognitive beliefs have been distinguished and their influences on the CAS elucidated (Wells, 2000) with negative metacognitions being posited as the more important influence. These different domains of metacognition can be measured with the metacognitions questionnaire (Cartwright-Hatton & Wells, 1997).

A substantial body of evidence has now developed in support of the metacognitive model across a range of emotional and psychological disorders such as depression (Papageorgiou & Wells, 2001; 2003; 2009) and anxiety disorders (Sadeghi, Mokhber, Mahmoudi, Asgharipour & Seyfi, 2015) including obsessive compulsive disorder (Wells & Papageorgiou, 1998), social anxiety (Gkika & Wells, 2015), post-traumatic stress disorder (Holeva, Tarrier & Wells, 2001; Wells & Sembi, 2004), health anxiety (Melli, Carraresi, Poli & Bailey, 2016) and generalised anxiety disorder (Wells, 1995). There is some preliminary empirical evidence linking key concepts of the S-REF model with suicide. Morrison and O'Connor (2008) found in a systematic review that in 10 out of the 11 studies higher levels of rumination were associated with increased suicide ideation and behaviours. Following this review Surrence, Miranda, Marroquin and Chan (2009) compared young adults with a history of attempted suicide with controls with no such history. 'Brooding'

was associated with higher suicide ideation whereas 'reflection' was not. Verwey et al. (2007) found that individuals in hospital following a suicide attempt showed scores on the Penn State Worry Questionnaire that were significantly higher than scores deemed to be 'normal.'

Metacognitive beliefs

Higher levels of negative metacognitive beliefs (for example, 'my worrying is dangerous for me') have been associated with anxiety (Davis & Valentier, 2000; McEvoy & Mahoney, 2013), depression (Papageorgiou & Wells, 2001) and obsessive compulsive disorder (Wells & Papageorgiou, 1998). There is now emerging evidence to suggest that metacognitive beliefs may be a general vulnerability factor for psychological distress regardless of psychiatric diagnosis as predicted by the S-REF model (Hill, Varese, Jackson & Linden, 2012; Sellers, Varese, Wells & Morrison, 2016; Varese & Bentall, 2011). Metacognitive beliefs are part of the metacognitive knowledge that is responsible for the activation of the CAS. Metacognitive beliefs have also been found in prospective cohort studies to predict subsequent anxiety and depression (Hjemdal, Stiles & Wells, 2013; Papageorgiou & Wells, 2009; Yilmaz, Gencoz & Wells, 2011). They have been found to mediate the relationship between so called symptoms of psychological disorders and the distress experienced due to them (Dragan & Dragan, 2014; Irak & Tosun, 2008).

Metacognitive beliefs about suicide ideation

There is some evidence that people hold both positive and negative metacognitive beliefs about suicide ideation. Bradvik and Berglund (2011) reported that participants experienced suicide ideation as 'unwanted,' 'beyond their own will' and 'ego-dystonic',

which they tried to suppress and avoid. Bradvik and Berglund (2000) found that ego-dystonic suicide ideation was related to death by suicide in depression with psychotic features for men and bipolar disorder for men and women. Lester (1998) has also reported feelings of shame in those experiencing suicide ideation. 'My thoughts were so unbearable that I could not endure them any longer' is argued to be one of the most frequently cited reasons for attempted suicide (Hjelmeland et al., 2002; Hjelmeland & Hawton, 2004). Kerkhof and van Spijker (2011) reported that suicidal individuals often experience ruminative, repetitive thoughts about suicide many times a day, for many hours, and that the desire to end such repetitive thoughts is one of the driving forces behind suicide behaviour. Williams, Duggan, Crane and Hepburn (2011) have also found evidence that individuals try and supress suicidal thoughts and that the more severe an individual's suicide ideation has been in the past is associated with the suppression of suicidal thoughts when low in mood.

Conversely, Vatne and Naden (2011) found participants held positive metacognitive beliefs about suicide ideation, 'the thought of suicide can provide consolation and comfort to go on living.' Crane et al. (2014) measured comfort from suicide ideation in participants experiencing depression and reported 15% of the sample scored higher than the mid-point for experiencing suicide ideation as comforting, and a significant positive correlation between comfort from suicide ideation and worst ever suicide ideation.

Positive and negative beliefs in relation to suicide imagery have also been examined. Hales Deeprose, Goodwin and Holmes (2011) requested participants with a diagnosis of bipolar disorder and/or unipolar depression to describe appraisals of their most vivid suicidal imagery. Participants reported both positive appraisals ('the images mean that I will be released from this, all these thoughts') and negative appraisals ('something must

be badly wrong,' 'the imagery makes me feel like I am going to die'). They also found that individuals with a diagnosis of bipolar disorder experienced flash-forwards to suicide (vivid, affect-laden images of suicide or the aftermath of death). Participants reported greater preoccupation with this imagery than with verbal thoughts related to suicide. Participants with a diagnosis of bipolar were more than twice as likely to report that the images made them want to engage in suicide behaviour than those with a diagnosis of unipolar depression. Holmes, Crane, Fennell and Williams (2007) also found two thirds of participants found suicidal imagery at least moderately comforting. Crane, Shah, Barnhofer and Holmes (2012) also found mean comfort ratings of suicidal imagery to be just under moderately comforting.

A limitation of these studies is that the important distinction is not made between positive beliefs about suicide as an event and positive beliefs about suicide ideation as a process. Although individuals have appraised suicide ideation as comforting it is not clear the reason why it is comforting which would identify a more specific positive metacognitive belief. Furthermore, the relative contributions of positive beliefs about suicidal ideation and the role of negative metacognitive beliefs has not been evaluated.

Experience sampling methodology (ESM)

It has been accepted that retrospective accounts of psychological states can be affected by memory distortions and recall accuracy (Hufford, 2007) alongside current affective state affecting memory recall (Rholes, Riskind & Lane, 1987). A method that has sought to address these problems is ESM (Csikszentmihalyi & Larson, 1987). ESM is a structured diary technique that requires in-the-moment assessment of a given phenomenon, which can generate a large and rich quantitative dataset that allows detailed examination of the

predictive value of key variables. It offers the additional advantage of high ecological validity (Nock, Prinstein & Sterba, 2009; Trull & Ebner-Priemer, 2013). Spangenberg, Forkmann and Glaesmer (2015) reviewed the use of ESM in suicidal participants finding good compliance rates and an absence of reactive effect. The authors concluded from their review that repeated assessment of suicide ideation does not lead to increased burden or risk for participants. They also demonstrated the transient nature of suicide ideation adding further support for the use of ESM when researching suicide ideation. Within ESM methodology a distinction is made between measurement at the trait level with self-report questionnaires and measurement at the state level with diary items. An ESM design was used in the current study.

Aims and hypotheses

Given the research demonstrating the varied appraisals of suicide ideation and the evidence base of the S-REF model in many psychological and emotional disorders, the primary aim of the current study was to examine the relationship between metacognitive beliefs about suicide ideation and suicide ideation. More specifically, the aim was to test metacognitive beliefs about suicide ideation as a predictor of suicide ideation, when known risk factors for suicide (such as thoughts and feelings related to depression, defeat, entrapment and hopelessness) were controlled for. The hypotheses were:

(H1): Trait level measures of suicide ideation, metacognitive beliefs, defeat, entrapment, depression and hopelessness will be significantly associated with equivalent state level scores (to 'validate' state measures).

(H2): State level scores of negative affect, defeat, entrapment and hopelessness will be significantly associated with state level scores of suicide ideation.

(H3): State level scores of metacognitive beliefs will be significantly associated with state level scores of suicide ideation.

(H4): State level scores of metacognitive beliefs will remain significantly associated with state levels of suicide ideation, when negative affect, hopelessness, defeat and entrapment are controlled for.

Method

Participants

Participants were recruited from both the National Health Service (NHS) (inpatient wards) and a third sector organisation providing a primary care mental health service in the North West of England. Inclusion criteria were self-reported suicide ideation in the past two months, 18 years old or over, have capacity to provide consent and sufficient comprehension/production of the English language to be able to engage in the ratings of diary items in English. The exclusion criteria were those who had a primary organic disorder or excessive alcohol or drug use that would affect participation.

Twenty-seven participants agreed to take part (18 female) with a mean age of 34.2 years (range = 18-63, SD = 13.9). 58 individuals consented to take part but only 27 (44%) went on to complete the study. Twenty-one participants had previously attempted suicide in their lifetime. All participants identified as 'White British' except two participants identifying as 'White Other.' In terms of psychiatric diagnoses; 1 participant reported no diagnosis, 7 depression, 2 depression and anxiety, 2 bipolar affective disorder, 6 borderline personality disorder, 2 personality disorder not otherwise specified, 2 psychosis, 1 schizoaffective disorder, 1 anorexia nervosa and 1 asperger's syndrome. Ten participants reported their highest academic qualification was in higher education, 4 in A levels, 5 in GCSE's and 5 reported no qualifications.

Measurement

Experience sampling measurement.

Pilot diary items (Appendix E) were developed by all authors and a service user representative. The items measuring cognitive constructs were developed based on

existing psychological models of suicide such as Williams' Cry of Pain model (1997, 2001) and Joiner's interpersonal theory of suicide (2005) which emphasise constructs of defeat, entrapment and hopelessness. Validated measures of these constructs including the Beck Hopelessness Scale (Beck & Steer, 1988), the Defeat scale (Gilbert & Allan, 1998) and Entrapment scale (Gilbert & Allan, 1998) were used as important guides to ensure diary items were measuring these constructs accurately. The S-REF model of psychological disorders (Wells & Matthews, 1994, 1996) informed development of the metacognitive belief items. In particular, metacognitive items about suicide were informed by the Metacognitions Questionnaire-30 (MCQ-30: Wells & Cartwright Hatton, 2004) which is a validated measure of metacognition. Item wording was changed to reflect metacognitive beliefs about suicide ideation. Expert opinion was also sought in liaison with the other authors who have significant expertise in both suicide and metacognition. All items were developed with the ESM structure in mind so ensuring the items were easy to understand and clear so could be rated instantly in the moment. The initial items were trialled with five pilot participants following the same procedure for the main study. Following participation, debriefing sessions were held with pilot participants where feedback was sought on the process, wording and nature of items. Participant feedback alongside consideration of skewness, variability and item-total correlation statistics (Appendix F) resulted in the removal of 12 items leaving a final set of 35 ESM diary items (thought control strategies were also assessed in these 35 items but not considered within the current study). For each predictor, outcome and confounding variable there was a minimum of two items in the ESM diary. A summary of the final ESM diary items and the corresponding construct can be seen in table 1. Each item was scored on a 7 point Likert scale ranging from 1 = 'not at all' to 7 = 'very much'.

Table 1

ESM diary items and related psychological construct

Diary instruction	Diary item	Construct
Right now…	I want to die	Suicide ideation
	I feel unhappy	Negative affect
	I feel anxious	Negative affect
	I feel powerless	Defeat
Just before the text…	I was thinking about killing myself	Suicide ideation
Right now, how much do you agree with the following…	It is bad to have thoughts of killing myself	MCB: Need to control thoughts
	My suicidal thoughts persist, no matter how I try to stop them	Negative MCB: Uncontrollability
	I have no control over my suicidal thoughts	Negative MCB: Uncontrollability
	Thinking about suicide is dangerous for me	Negative MCB: Harm
	If I don't stop my suicidal thoughts I will go mad	Negative MCB: Harm
	Thinking about suicide helps me cope	Positive MCB
	Thinking of ending it all gives me peace of mind	Positive MCB
	I have a poor memory	Cognitive Confidence
	I think a lot about my suicidal thoughts	Cognitive Self-consciousness
	I am constantly aware of my suicidal thoughts	Cognitive Self-consciousness
	I look forward to the future	Hopelessness
	Things don't work out the way I want	Hopelessness
	I am one of life's losers	Defeat
	I am trapped in my situation	Entrapment
	There are things in my life I want to escape	Entrapment

MCB = metacognitive beliefs

Trait level self-report questionnaire measures.

The following measures were taken to be able to describe the participant characteristics and to also validate the state level items within the ESM diary:

1. Beck Depression Inventory – II (BDI-II) has 21 items that assess the symptoms of depression (Beck, Steer & Brown, 1996). Items are rated on a scale from 0 to 3 with higher scores reflecting greater symptoms of depression (range 0-63). The BDI-II has high test retest reliability (r=.93; Beck, Steer & Brown, 1996) and high internal reliability in clinical samples (α=.91; Beck, Steer, Ball & Ranieri, 1996). Cronbach's alpha for the current sample was .92.
2. Beck Scale for Suicidal Ideation (BSS; Beck, Kovacs & Weissman, 1979) has 21 items that measure suicidal thoughts and behaviours, only items 1-19 are used to calculate suicide ideation. It has moderate test retest reliability (r=.88; Pinninti, Steer, Rissmiller, Nelson & Beck, 2001) and high internal reliability in clinical samples (α =.84; Beck, Brown & Steer, 1997). Cronbach's alpha for the current sample was .97.
3. Beck Hopelessness Scale (BHS: Beck & Steer, 1988) has 20 items that are used to measure pessimistic beliefs about the future. It has high test retest reliability (r=.85; Holden & Fekken, 1988) and high internal reliability in clinical samples (Kuder-Richardson reliabilities ranging from .87 to .93; Beck & Steer, 1988). Cronbach's alpha for the current sample was .92.
4. The Defeat scale (Gilbert & Allan, 1998) has 16 items assessing an individual's failed struggle, powerlessness and perceived low social status. It has high internal consistency in clinical samples (α=.93; Gilbert & Allan, 1998). Cronbach's alpha for the current sample was .95.

5. The Entrapment scale (Gilbert & Allan, 1998) has 16 items assessing an individual's feeling of being trapped and wishing to escape. It has high internal consistency in clinical samples (α=.86; Gilbert & Allan, 1998). Cronbach's alpha for the current sample was .94.
6. Metacognitions questionnaire-30 (MCQ-30: Wells & Cartwright Hatton, 2004) has 30 items including five subscales which assess various aspects of metacognition associated with psychological disorder. Wells and Cartwright-Hatton (2004) reported α ranging from .72-.93 for the various subscales. The five subscales and corresponding α for the current sample are:

   i) positive beliefs about worry (.79)

   ii) negative beliefs concerning uncontrollability and danger (.81)

   iii) cognitive confidence (.89)

   iv) negative beliefs concerning the consequences of not controlling thoughts (.69)

   v) cognitive self-consciousness (.86).

As the aims of the current study were to investigate the role of metacognitive beliefs, the cognitive self-consciousness subscale was not included in the analysis. The following measures were also taken but for analysis in a separate study: The Thought Control Questionnaire (TCQ: Wells & Davies, 1994), Meta-Worry Questionnaire (Wells, 2005).

Procedure

Referrers were briefed about the study and then provided written information to all those who met the study criteria (see Appendix G). Interested individuals consented to be contacted and were then approached by the researchers who took written informed consent (see Appendix H). Demographic details were taken (see Appendix I) alongside

the above self-report questionnaire measures (the order of completion was randomised across participants to prevent any systematic bias). The participants accessed the online ESM diary items via a web-link embedded within a text message sent to their mobile telephone. Participants could borrow a mobile phone for the purposes of the study if they did not have access to one. They had 30 minutes from the arrival of the text message to complete the diary items. The web-link to the diary items closed within 30 minutes of a participant receiving a text message meaning systematic bias in terms of time of response could be reduced. This was cross-checked with the time stamp on the computer software to ensure all participants' data were obtained within 30 minutes of the text message. The computer software also allowed for a prompt to be given to participants should they not answer one of the questions in the diary items and so helped minimise missing data. Participants could over-ride this however should they not wish to answer a particular question. Participants completed the ESM diary for 6 consecutive days. Participants were presented with the diary items 7 times per day at pseudo-random intervals with entries completed at least every two hours between the hours of 08:00 and 22:00. The range of diary entries for participants was between 1 and 40 with 42 entries being the maximum. For each diary entry, the ordering of the instructions remained the same. Items within each instruction were randomised to prevent any practice effect. A protocol was followed to manage risks identified whilst participants were taking part in the study (see Appendix J) and participant's GP's were informed that they were taking part (see Appendix K). Each participant was reimbursed £5 for expenses incurred whilst taking part in the study.

Statistical analysis

The design of the study allowed for both cross-sectional and longitudinal analyses (across 7 days) allowing a more detailed examination of the relationships between metacognitive beliefs and suicide ideation. Descriptive and correlational analysis of the trait level self-report questionnaires was completed using SPSS version 22.0 for Windows (SPSS, Version 22. SPSS Inc., Chicago Ill). Non-parametric analysis (Spearman's correlation co-efficient) was performed for trait level data, due to the distribution characteristics of suicide ideation as measured by the BSS.

Data from participants who completed at least one diary entry were included in the multi-level modelling analysis. Although some have suggested a minimum number of diary entries to be included in analysis (Palmier-Claus et al. 2012) there is no theoretical basis to this argument. A sensitivity analysis was conducted (Appendix M) finding very similar results when all participants compared to only those with a minimum number of completed entries were included. To examine the effect of the state level predictor variables on the state level outcome variables, a multilevel modelling approach, estimated by maximum likelihood, was used. Multilevel modelling is required for the analysis of ESM data, since it consists of multiple observations within a participant (diary item responses nested within days nested within participants) and so each observation is not independent. Both participant and day were entered as random intercepts in models and intra-class correlation coefficients (ICCs) were estimated to assess the variability in measures associated within the three levels of data, and so allow for the random variation between subjects to change over time. P values less than or equal to .05 were considered significant. Multilevel modelling was undertaken with STATA Intercooled software version 14.0 (STATA, 2012).

Across all analyses missing data was found to be missing at random. Due to the impact of missing data on total scores for trait level self-report questionnaire measures, data was imputed using expectation maximisation. For the state level diary items, an average score was taken from across the two item scores on each variable.

Ethical approval

This study was granted ethical approval by the National Health Service Health Research Authority, North West – Lancaster Research Ethics Committee (16/NW/0094) (see Appendix L)

Results

Descriptive statistics

Twenty-seven participants completed the trait level self-report questionnaire measures. Table 2 presents general descriptive statistics and a correlation matrix of the questionnaires used in the current study. Sixteen (59%) participants scored 24 or above on the BSS indicating serious risk of suicide (Beck, Kovacs & Weissman, 1979). Twenty-three (85%) participants scored 9 or above on the BHS that indicate an individual is at high risk for suicide (Beck & Steer, 1988). Eighteen (67%) participants scored above 31 described as indicating 'severe depression' on the BDI-II (Beck, Steer & Brown, 1996).

Table 2

Descriptive statistics and Spearman's correlation co-efficients for trait level self-report questionnaire measures (N = 27)

Self-report measure	Mean	SD	1.	2.	3.	4.	5.	6.	7.	8.
1. Suicide ideation (BSS)	20.98	11.89								
2. Depression (BDI)	37.24	13.01	.566**							
3. Hopelessness (BHS)	15.22	5.22	.582**	.702***						
4. Defeat (Defeat scale)	46.78	14.00	.543**	.926***	.659***					
5. Entrapment (Entrapment scale)	41.93	15.17	.477*	.759***	.611**	.809***				
Metacognitions (MCQ-30):										
6. Cognitive confidence	14.23	5.31	.014	.296	.039	.315	.323			
7. Positive metacognitive beliefs	9.91	3.43	-.065	.068	.108	.037	.212	-.151		
8. Negative metacognitive beliefs	17.67	4.31	-.060	.342	-.021	.259	.205	.156	-.248	
9. Need to control thoughts	14.78	4.19	.294	.338	.064	.251	.336	.070	-.001	.568**

Note: BSS = Beck Scale of Suicidal Ideation; BDI = Beck Depression Inventory; BHS = Beck Hopelessness Scale; MCQ-30 = Metacognitions Questionnaire-30. *** p<.001 ** *p*<.01 * *p*<.05 (2 tailed)

Correlation analyses of trait level self-report measures found that depression, hopelessness, defeat and entrapment were all significantly and positively correlated with

suicide ideation (see table 2). No significant correlations were found for trait level self-report measures of metacognition and suicide ideation.

Diary protocol

Twenty-four participants completed at least one state level diary entry. Four hundred and ninety-three diary entries (each entry represents a single time point that was completed) were completed in total which was an average of 21 entries per participant. This represents an average compliance rate of 49%. This rate is lower than in samples reported in a review evaluating the use of ESM in suicidal participants with compliance rates ranging from 58% to 86% (Spangenberg, Forkmann & Glaesmer, 2015) and in a separate study exploring affect variability in suicide reporting a compliance rate of 58% (Palmier-Claus, Taylor, Gooding, Dunn & Lewis, 2012). These studies mainly recruited individuals accessing community services rather than inpatient wards and higher levels of suicide ideation in the current sample could account for differences in compliance rates. Although another study recruiting from an inpatient ward had higher compliance rates (73.8%) (Husky et al. 2014) yet these participants had already taken part in another study hence showing a high level of commitment to the research process. Husky et al. (2014) also had five rather than seven prompts per day.

Multilevel modelling

Data from 24 participants who completed at least one diary entry were included in the multi-level modelling analysis. For all hypotheses, a concurrent analysis was conducted which included between 486-493 data points.

Hypothesis 1: Trait level measures of suicide ideation, metacognitive beliefs, defeat, entrapment, negative affect and hopelessness will be significantly associated with equivalent state level scores.

All ESM state level measures (diary items) of the range of constructs examined were significantly correlated with the equivalent trait level self-report questionnaire as demonstrated in table 3. The relationship was weaker for measures of metacognition, which could be due to that fact that the MCQ-30 is a measure of metacognition about worry rather than a direct measure of metacognition about suicide ideation.

Table 3

Spearman's correlation co-efficient between trait and state level measures

Construct	**Correlation co-efficient**
Suicide ideation	.700***
Depression	.650***
Hopelessness	.797***
Defeat	.673***
Entrapment	.790***
Metacognitions	
Cognitive confidence	.857***
Positive metacognitive beliefs	.164***
Negative metacognitive beliefs	.186***
Need to control thoughts	.369***

*** p<.001 (2 tailed)

Hypothesis 2: State level scores of negative affect, hopelessness and entrapment will be significantly associated with state level scores of suicide ideation.

Each state level predictor was entered into a multilevel model individually and only those predictors that were significantly associated with scores of suicide ideation at the univariate level were then selected for entry into the multivariate model. Negative affect (β=0.477, p<.001), hopelessness (β=0.204, p<.001) and defeat (β=0.280, p<.001) were all significantly and independently associated with suicide ideation even when all other variables were controlled for. This means that for every one unit increase in negative affect, hopelessness and defeat (on a likert scale of 0-7) there was a 6.8%, 2.9% and 4% increase in suicide ideation respectively. When considered independently in a univariate model, entrapment was significantly associated with suicide ideation (β=0.531, p<.001) yet when all other variables were controlled for in a multivariate model, entrapment was no longer significantly associated with suicide ideation (β=0.023, p=.651).

Hypothesis 3: State level scores of metacognitive beliefs will be significantly associated with state scores of suicide ideation.

Each state level metacognitive predictor (cognitive confidence, negative metacognitive beliefs, positive metacognitive beliefs and need to control thoughts) was entered into a multilevel model individually and only significant univariate predictors were selected for entry into the multivariate model. Cognitive confidence (β=0.309, p<.001), positive metacognitive beliefs (β=0.567, p<.001) and negative metacognitive beliefs (β=0.621, p<.001) were all found to be significantly associated with suicide ideation and thus entered into the multivariate model (see table 4). Only positive (β=0.468, p<.001) and negative (β=0.504, p<.001) metacognitive beliefs were independently and significantly

associated with suicide ideation. This means that for every one unit increase in positive and negative metacognitive beliefs there was a 6.7% and 7.2% increase in suicide ideation respectively.

Table 4

Concurrent associations between metacognitive beliefs and suicide ideation (dependent variable) when all variables entered simultaneously (n = 487)

Model 1					
				CI	
Predictor variables	***β***	***SE***	***p***	***Lower***	***Upper***
Cognitive confidence	0.056	0.060	.350	-0.062	0.175
Positive metacognitive beliefs	0.468	0.052	<.001	0.365	0.570
Negative metacognitive beliefs	0.504	0.054	<.001	0.399	0.609

Hypothesis 4: State level scores of metacognition will remain significantly associated with state level scores of suicide ideation when negative affect, hopelessness, defeat and entrapment are controlled for.

To test hypothesis 4, the metacognition variables that were found to be significantly associated with suicide ideation (positive and negative metacognitive beliefs) were independently entered into a model for suicide ideation whilst also controlling for negative affect, hopelessness and defeat (see table 5). Entrapment was not found to be significantly associated with suicide ideation so was not included as a confounder. Positive (β=0.241, p=<.001) and negative (β=0.167, p=<.001) metacognitive beliefs remained significantly associated with suicide ideation when negative affect, hopelessness and defeat were controlled for. This means that a one unit increase in positive and negative metacognitive beliefs about suicide predicts a 3.4% and 2.4%

increase in suicide ideation respectively even when the contribution of negative affect, hopelessness and defeat are controlled for.

Table 5

Concurrent associations between positive and negative metacognitive beliefs about suicide and suicide ideation (dependent variable) when all variables entered simultaneously and the effects of negative affect, hopelessness and defeat were controlled for (n = 486)

Model 1					
				CI	
Predictor variables	***β***	***SE***	***p***	***Lower***	***Upper***
Positive metacognitive beliefs	0.241	0.041	<.001	0.160	0.323
Negative metacognitive beliefs	0.167	0.045	<.001	0.079	0.255
Confounder variables					
Negative affect	0.417	0.040	<.001	0.339	0.494
Hopelessness	0.176	0.047	<.001	0.083	0.269
Defeat	0.208	0.049	<.001	0.111	0.305

Intra-class coefficients (ICC)

Higher values of ICC were obtained at the person level rather than the day level for all variables which demonstrates that predominately it is the differences between people that accounts for the variance in suicide ideation and metacognitive beliefs within this sample (see table 6). The ICC demonstrates however that both suicide ideation and negative metacognitive beliefs about suicide varied to a similar amount within a person throughout the week. Need to control thoughts and suicide ideation varied more within a day than between days.

Table 6

Intra-class coefficients for the suicide ideation and metacognitive belief variables at each level of analysis (person, day and text)

	Suicide ideation	Positive metacognitive beliefs about suicide	Negative metacognitive beliefs about suicide	Need to control thoughts	Cognitive confidence
Level					
Person	0.75	0.86	0.77	0.69	0.91
Day	0.11	0.06	0.11	0.03	0.05
Text	0.14	0.08	0.12	0.28	0.04

Discussion

Main findings

To the authors' knowledge, this study was the first to examine whether metacognitive beliefs about suicide ideation were significantly associated with suicide ideation. ESM was utilised due to its ecological validity with participants who were currently experiencing suicide ideation. A multilevel model was used to examine whether metacognitive beliefs about suicide ideation were significantly associated with suicide ideation at the state level and whether this association remained when known cognitive correlates of suicide were controlled for (negative affect, hopelessness, defeat and entrapment). All hypotheses were supported. Specifically, positive metacognitive beliefs ('thinking of suicide helps me cope') and negative metacognitive beliefs concerning harm and uncontrollability ('thinking about suicide is dangerous for me') were significantly associated with state level scores of suicide ideation when known confounding variables were controlled for. All state level measures of the constructs incorporated into the multilevel models were significantly correlated with established trait level measures so providing validation of the state level measurement.

At the trait level, the MCQ-30 was used as a proxy measure of metacognitive beliefs about suicide due to no valid and reliable measure of metacognitive beliefs about suicide ideation being available. Although the correlations between the trait level subscales of the MCQ-30 and state level measures of metacognitive beliefs about suicide ideation were significant, this was only a small effect. This is understood in the context that there will be some overlap between metacognitions measured in the MCQ-30 and metacognitive beliefs related to suicide ideation but that they are subtly different constructs. No significant relationships were observed at the trait level between the

MCQ-30 subscales and suicide ideation (as measured by the BSS) although the sample size means this analysis was underpowered to detect a significant result.

Comparison with other research/theoretical implications

The findings from this study provide further validation and support for the S-REF model of psychological disorders (Wells & Matthews, 1994, 1996). It is evidenced in this study that positive metacognitive beliefs regarding suicide ideation and negative metacognitive beliefs regarding the harm and uncontrollability of suicide ideation are significantly associated with suicide ideation, above the established correlates of suicide of negative affect (Harris & Barrowclough, 1997), hopelessness (Beck, Brown & Steer, 1989; Johnson, Wood, Gooding, Taylor & Tarrier, 2011) defeat and entrapment (Williams, 1997, 2001). This provides further evidence of the theoretical underpinnings of the S-REF model that argues we hold metacognitive knowledge which is made up of both explicit and implicit knowledge and beliefs. Explicit beliefs are those verbally accessible to us and include positive and negative metacognitive beliefs. The S-REF model argues that metacognitive beliefs are the driving force behind the perseverative cognitive process (the CAS) that leads to prolonged emotional suffering (Wells, 2009). This study further evidenced not only the presence of the metacognitive beliefs in specific relation to suicide ideation but also their association with suicide ideation. Suicide ideation could be viewed as a perseverative cognitive process and part of the CAS in a similar way that worry and rumination are conceptualised in anxiety and depression, respectively. The explicit metacognitive beliefs were found to be engaging an individual in suicide ideation as the S-REF model would suggest.

Evidence of the association between these known correlates of suicide (negative affect, hopelessness, defeat and entrapment) was also provided. Interestingly, although entrapment was found to be significantly associated with suicide ideation in a univariate model, when entered into a multivariate model with negative affect, hopelessness and defeat there was no longer a significant association. There has been some suggestion that defeat and entrapment are best defined as a single construct (Taylor, Wood, Gooding, Johnson & Tarrier, 2009) which could account for this finding. The entrapment items may not have offered anything additional to the variance already accounted for by the defeat items.

These findings also support the work of Bradvik and Berglund (2011) who identified individual's holding both ego-syntonic and ego-dystonic ('beyond one's own will) suicidal ideation. This study retrospectively assessed clinical notes of those who had killed themselves who had previously sought treatment from one Psychiatry department over a 26-year period. They compared the occurrence of both ego-dystonic and ego-syntonic suicidal ideation when receiving adequate anti-depressant therapy with matched controls. For men but not women they found an association between ego-dystonic suicide ideation and death by suicide. Although identifying a potential role of ego-dystonic suicide ideation and death by suicide this study does have some limitations. A small sample size was used limiting the generalisability of findings. The measure of ego-dystonic suicide ideation was based on ratings of historical clinical notes which could affect the validity of this measure. In the description provided of ego-dystonic suicide ideation it is slightly ambiguous whether this is a measure of a cognitive appraisal of suicide as an event or a metacognitive belief about suicide ideation. As indicated by the S-REF model (Wells & Matthews, 1994, 1996) there is an important theoretical

distinction between cognitive and metacognitive appraisals which is not clear in this study.

The results of this study support other ESM studies examining thoughts regarding suicide (Spangenberg, Forkmann & Glaesmer, 2015) and non-suicidal self-injury (NSSI) (Nock, Prinstein & Sterba, 2009) in demonstrating the transient and infrequent nature of such thoughts. This adds further argument for the need to consider alternative approaches to self-report measures when researching suicide ideation. Nock, Prinstein & Sterba (2009) demonstrated the strategies used by young people to manage thoughts of NSSI through ESM data which would be of benefit to explore in thoughts of suicide.

Methodological strengths and limitations

ESM is a relatively novel methodology that allows for an ecologically valid examination of the relationships between variables. Due to the nature of ESM data, a multilevel modelling analysis is required which has been argued to be a more precise statistical approach to research (Rabe-Hesketh & Skrondal, 2008) given its ability to account for the fact that many variables measured in social sciences are not independent. Multilevel modelling allows for this violation of independence which underpins a typical regression model. The combination of a more ecologically valid approach with a more precise statistical analysis allows for a greater confidence in the results and conclusions drawn.

Using advances in mobile phone and computer technology have allowed the shortfalls of original pen and paper ESM studies to be overcome. Twenty-two (92%) of the participants owned their own smartphone meaning there were less technical difficulties for participants and diary entries could be given a time stamp. Although the technology brought benefits it did mean that those individuals who were not confident with

technology may have been less willing or unable to take part in this study. To ensure no bias has occurred due to use of technology it is recommended further studies replicate the current study using a pen and paper approach to examine any differences in results.

Some clinical staff reported reservations about recruiting some clients due to perceived level of suicide risk with an individual or anticipated ability to take part. It is difficult to ascertain if this was a significant bias in recruitment. Scores on the trait level self-report questionnaire measures of suicide ideation, depression and hopelessness do however show a wide range of clinical presentations taking part including many individuals who would be deemed to be at high risk of suicide.

It could be argued that due to the stigma associated with disclosing suicidal thoughts (Farina, 1998; Talseth, Lindseth, Jacobsson & Norberg, 1997; 1999) and the potential impact on discharge/leave from an inpatient hospital there could have been a bias in reporting suicide ideation which influenced who volunteered to take part. Participants were informed in the initial meeting with the researcher that information disclosed in the study was confidential unless they shared something additional to what the clinical team already knew in terms of risk. They were informed that diary entries were not monitored throughout the week of taking part and so a robust risk management plan was developed to ensure participants could access appropriate support should their risk change whilst taking part. The aim was to enable participants to report honestly during the state level diary entries whilst ensuring their safety taking part. The fluctuation in scores of suicide ideation for many participants in the state level diary entries demonstrate they felt able to report suicide ideation whilst completing diary entries.

Although many data points were obtained from the state level diary entries there was a limited range of participants who took part so generalising to the whole population of

individuals who experience suicide ideation is limited. The sample had a high proportion of those identifying as White British and only those accessing services were recruited. Although the range of recruitment sites was varied spanning inpatient hospitals, home treatment teams, community mental health teams and third sector support services, all participants who took part were actively seeking care and treatment. It appeared participants had a range of psychiatric diagnoses yet these were not validated diagnoses and based on self-report. Diagnoses were not validated due to the need to prioritise time and resources to other aspects of the research. Psychiatric diagnoses were not part of hypothesis testing given the S-REF model is a trans-diagnostic model and were only taken to help give some description of the participant sample. The sample size also means caution should be observed with any conclusions drawn from the correlation analyses of trait level self-report measures, although this data was presented primarily for descriptive purposes.

It has been recognised in previous research that completing diaries about one's own mood state (Broder, 2000; Swinkels & Giuliano, 1995) including taking part in ESM studies (Zembylas and Schutz, 2016) can have a positive impact on mood. During feedback sessions, some of the participants commented on having a positive experience taking part in the study. The impact on mood was not monitored during the study as it was felt that the additional burden of this measurement would not significantly contribute to the results as negative affect was already being controlled for in the main model. Husky et al. (2014) examined the reactive effect of completing diary entries on suicide ideation and found there was no impact on ratings of suicide ideation.

Clinical implications

The results from this study demonstrate that individuals hold both positive and negative metacognitive beliefs about suicide ideation and such metacognitive beliefs are associated with suicide ideation. Thinking of suicide is appraised as both a coping strategy and a process that individuals feel becomes uncontrollable and harmful. It could be that holding both positive and negative beliefs leads to a maintenance of suicide ideation and also a maintenance of significant distress when experiencing suicide ideation. This suggests that both further studies and clinical practice should examine these beliefs in more detail.

The National Institute for Health and Care Excellence (NICE) guidelines (2011) recommend that an integrated and comprehensive psychosocial assessment of needs and risks is completed to understand and engage people who self-harm. It is recommended that clinicians incorporate into a risk assessment an assessment of the metacognitive beliefs held about suicide ideation. The information gained is then recommended to be incorporated into a psychological formulation of an individual's risk so this information is made sense of, with an individual, in terms of the maintenance of such thoughts and the associated distress. By supporting an individual to understand the maintaining factors in their distress this could generate opportunity for alternative ways of coping. For clinical staff to have the necessary skills and knowledge required it is recommended that they receive appropriate training in risk assessment and psychological formulation. This training should be embedded with regular psychological supervision and appropriate risk management pathways to ensure staff are supported to work within their competencies.

Based on this evidence and combined with potential future research developing a theoretical account of the relationship between metacognition and suicide ideation, a specific metacognitive treatment approach could be developed that targets the metacognitive beliefs individuals hold about suicide ideation. Metacognitive treatment has demonstrated considerable efficacy for psychological disorder (Normann, van Emmerik & Morina, 2014; Sadeghi, Mokhber, Mahmoudi, Asgharipour & Seyfi, 2009) so could potentially offer a life-saving treatment to those thinking of suicide.

Directions for further research

Given that no previous research has explored the relationship between metacognitive beliefs and suicide ideation it would be important to replicate these findings in a broader range of participants. It would be important to show the maintenance of the results in individuals from a range of cultural backgrounds and if possible in those not actively seeking support (although there could be recruitment barriers to this).

It would be important to understand further the positive and negative metacognitive beliefs that individuals hold toward suicide ideation. Due to the exploratory nature of this study, diary items used to measure metacognitive beliefs about suicide at a state level were adapted from the MCQ-30 and limited to two items per metacognitive construct within the ESM diary. Although significant correlations were observed between the MCQ-30 subscales and the respective state level items, only a small effect was demonstrated. Although there is a potential relationship between metacognitive beliefs about worry and rumination and suicide ideation, they are potentially a different set of metacognitive beliefs to those specific to suicide ideation. Qualitative work to explore, from the suicidal individual's perspective, the metacognitive beliefs they hold could contribute to a better

understanding of metacognitive beliefs about suicide ideation. This work could also supplement the development of a self-report measure of metacognitions specific to suicide ideation. A more valid and reliable measure would allow for greater accuracy for both future research but also in the evaluation of therapeutic interventions. A valid and reliable measure could also be used in clinical practice as part of a holistic psychosocial assessment of suicide risk in those expressing suicide ideation and behaviours.

It would be important to develop an understanding of the causal mechanism and processes involved between metacognitive beliefs, other potential metacognitive processes such as thought control strategies and the transition from suicide ideation to behaviour. Williams, Duggan, Crane and Hepburn (2011) have demonstrated that individual's do supress suicidal thoughts and that there is a positive relationship between suppression of suicide ideation and perceived severity of historical suicide ideation. It would therefore be recommended that future research considers the relationship between metacognitive beliefs about suicide ideation and thought control strategies.

As Klonsky and May (2015) have argued, any robust model of suicide needs to explain mechanisms leading to both suicide ideation and suicide behaviour. It is hypothesised, considering the S-REF model, that the stronger the metacognitive beliefs, the more someone attends to and is distressed by suicide ideation. If we are to understand suicide ideation in a similar way to worry and rumination in that people engage in this cognitive process to find solutions to their problems then the paradoxical nature of the process in maintaining a lack of solutions could further contribute to an individual's distress. If this distress is then combined with appraisals of the repetitive, negative nature of suicidal rumination, in that the individual has lost control of their minds, this may then give rise to a sense of cognitive hopelessness and further significant distress. This combined with

other important factors such as access to methods of suicide could lead to an individual choosing to attempt suicide to escape cognitive distress as has already been demonstrated by Hjelmeland et al. (2002) and Hjelmeland and Hawton (2004). It is important this theoretical understanding is developed prior to any clinical interventions to ensure scientific and theoretical integrity (and therefore efficiency of any intervention).

Conclusion

Positive and negative metacognitive beliefs have been found to be significantly associated with suicide ideation when known correlates of suicide ideation are controlled for. This is in support of the S-REF model of psychological disorders (Wells & Matthews, 1994, 1996). This result challenges existing cognitive models of suicide that limit the focus on cognitive appraisals of one's own situation as key factors in an individual engaging in suicide ideation and behaviour. These models do not account for metacognitive beliefs that are contributing to and possibly maintaining suicide ideation and the potential influence of metacognitive processes. Further research is required to establish a better understanding of the metacognitive mechanisms involved in both suicide ideation and behaviours with the aim of leading to effective therapeutic interventions for those experiencing suicide ideation.

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Paper III of III

A critical reflection of the research process

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Introduction

Many suicides are impulsive and upon reflection individuals report feeling relieved to have survived (Gvion & Apter, 2011). Experience of this in clinical practice alongside working those very distressed by suicidal thoughts contributed to a desire to contribute to knowledge about suicide. This was alongside personal experience of the devastating impact suicide can have for the tragic loss of life and for the bereaved friends, family and professional services. Although many years of research have advanced understanding of suicide there is less known about the appraisals of suicide and suicide ideation from the suicidal individual's perspective. This thesis makes a valuable contribution to understanding the experience of suicide and some of the cognitive processes that may be involved in suicide ideation.

The attempts to further examine some of the cognitive processes involved in suicide do not wish to conceptualise suicide in isolation from personal contexts. Studies included in paper one were from many different cultural contexts with participants holding differing attitudes dependent on their cultural background. Renberg, Hjelmeland and Koposov (2008) provided evidence that an influencing factor on our attitudes towards suicide is expressions of suicide in those around us when younger. How we conceptualise, understand and appraise suicide is developed based on our social environment. Although paper one specifically looked at the relationship on an individual level this is not intended to dismiss the social context and relational nature of experiencing and appraising suicide. Further understanding at an individual level is however important as research has shown that attitudes towards suicide can impact on help-seeking (Ross, 1980).

Although it is acknowledged that there are broader societal factors contributing to suicide which all provide opportunities for interventions at a public health/community

level it also felt it important that research is conducted examining the individual experience of suicide. 28% of those who killed themselves between 2004 and 2014 were accessing mental health services (Appleby et al. 2016) so being able to assess and intervene at an individual level as a mental health professional is essential. Being able to improve assessment of suicide risk and considering potential future interventions at an individual level feels essential.

The systematic review (paper 1) provides a comprehensive overview of the relationship between attitudes towards suicide and suicide ideation and behaviour. It is hoped that the examination of this relationship will allow a better understanding of the impact of how we appraise suicide more broadly on the experience of suicide ideation and behaviour. The empirical paper moved to consider how an individual appraises suicide ideation as a process rather than a global concept. The empirical findings present a novel contribution to the evidence base examining the relationship between metacognitive beliefs about suicide ideation and suicide ideation. Positive and negative metacognitive beliefs about suicide ideation were found to be independently and significantly associated with suicide ideation even when known correlates of suicide were controlled for (negative affect, hopelessness, defeat and entrapment). No previous work has examined an application of the S-REF model (Wells & Matthews, 1994, 1996) to suicide and so theoretical and clinical implications are discussed alongside recommendations for further research.

These issues are considered in further detail throughout this critical reflection paper. The strengths and limitations of the research and general reflections are discussed alongside additional considerations for future research.

Systematic review (paper 1)

Rationale for topic area and research methodology.

In reviewing existing models of suicide it was noticed that they do not account for how suicide as an event or suicide ideation as a process is appraised by individuals yet suicide provokes a wide range of opinion and debate (Cholbi, 2011; Cosculluela, 1994; Feddon, 1938; Kupfer, 1990; Minois, 1999). Stigma encompasses a negative reaction towards a group of people because of their characteristics or their behaviour (Rusch, Angermeyer & Corrigan, 2005). Self-stigma occurs when individuals who are stigmatized internalise the attitudes of others resulting in loss of self-efficacy, self-esteem and non-participation in society (Holmes & River, 1998). All of which in themselves constitute risk factors for suicide (Bhar, Ghahramanlou-Holloway, Brown & Beck, 2008; Durkheim, 1951; Hobbs & McLaren, 2009; Johnson, Wood, Gooding, Taylor & Tarrier, 2011). Those who attempt suicide can be regarded as shameful and to be avoided (Calear, Batterham & Christensen, 2014; Park, Kim, Cho & Lee, 2015; Yamanaka, 2015). Reynders, Kerkhof, Molenberghs and Van Audenhove (2014) found that in geographical regions where suicide rates were low, more positive attitudes towards help-seeking were observed and there was less self-stigma compared to regions of high suicide rates. Perceived stigma was found to be negatively associated with help-seeking behaviour. Schomerus, Evans-Lacko, Rusch, Mojitabai and Angermeyer (2015) found that stigma towards mental health problems was correlated with national suicide rates in 25 European countries.

Although research has started to consider the stigma of suicide including the development of the stigma of suicide attempt scale (Scocco, Castriotta, Toffol & Preti, 2012), there was not enough literature that examined the relationship with suicide to be

systematically reviewed. A significant amount of research has however been conducted on attitudes held towards suicide which can contribute towards stigma.

A systematic review was conducted as it is considered one of the most effective ways to identify, appraise and synthesise existing literature (The Cochrane Collaboration, 2011). The process of a systematic review aims to be transparent to minimise bias and produce reliable findings to give the reader an accurate account of the current understanding of a topic area. The review outlines the pre-selected eligibility criteria and search process meaning others can replicate the search. As part of this process the decision was made not to include the grey literature and instead to only include literature that was published in a peer-reviewed journal. It is acknowledged that inclusion of the grey literature can reduce some of the publication bias found in published studies (Boland, Cherry & Dickson, 2014) yet the desire for high quality research was prioritised (Jesson, Matheson & Lacey, 2011) alongside time and resource constraints of the current work.

It was decided that the relationship to be reviewed was between suicide and attitudes towards suicide. In the results section this is broken down, for example, suicide ideation versus suicide behaviours, moral objections versus more general attitudes. The review could have focused on one of these areas yet it was felt that encompassing all together would offer the reader a greater understanding of this relationship. This left many papers to review however. The integration and synthesis of the papers in a concise manner proved difficult and time consuming. To offer the reader enough context behind the papers, consideration of their strengths and weaknesses whilst ensuring a concise summary, the risk of bias assessment informed decisions of which papers to elaborate on. Those with particularly strong designs or many of the specific domains rated as strong were explained in more detail. The decision was made to include studies with *any*

measure at an individual level of suicide or attitudes towards suicide. This meant the inclusion of measures that did not have evidence of being reliable or valid. Although this can affect the interpretation of the findings it was felt that if similar results were found with a range of assessment measures, more confidence could be taken in the findings of the review.

Risk of bias assessment.

Deeks, Dinnes, D'Amico and Sowden (2003) critically appraised several quality assessment tools and identified six which they deemed suitable for use in systematic reviews. Of the six identified, the Effective Public Health Practice (EPHPP) tool (Thomas, 2003) was used to evaluate studies in the current review as it provided flexibility to assess a range of study designs and provided clear instructions on how to do this. This tool has good content and construct validity (Thomas, Ciliska, Dobbins & Micucci, 2004) and inter-rater reliability (Armigo-Olivio, Stiles, Hagen, Biondo & Cummings, 2010). The EPHPP assesses six domains although only four were relevant for this review (selection bias, study design, confounders and data collection methods) due to the design of the studies included. A downside to this tool was that it seemed more tailored to randomised control trials or intervention studies so some adaptations were made to ensure it offered the optimum assessment for this review. To ensure systematic rating, criteria were developed specific to this review and discussed with the second author to ensure appropriateness of criteria (see Appendix M). This allowed for greater clarity on domain ratings and could be shared with a colleague who rated 25% of papers to assess inter-rater reliability. Overall quality scores were included in the paper yet in considering the quality of studies, scores on each domain were taken as strengths and weaknesses rather

than overall composite scores as overall scores have been criticised for being at risk of bias and having poor reliability (The Cochrane Collaboration, 2011). Those studies that had many domains rated as strong or were rated as strong overall were emphasised in terms of the results found. If contradictory findings were found between studies, the risk of bias assessment was consulted to offer a reason for why conflicting results were obtained. The results from studies with an overall strong rating or having many domains that were rated as strong were emphasised over those with a greater amount of weaknesses.

Summary.

Overall the process of conducting the systematic review allowed for a significant development of skills and knowledge in the research process broadly as well as in the systematic review of literature. The risk of bias assessment enhanced knowledge about the strengths and weaknesses of study designs for example being mindful of the limitations of many studies for having a cross-sectional design. This developed an appreciation for a range of research designs (experimental, prospective) to fully understand a research question. Again, considering the conclusions that could be made from many of the studies understanding what the different statistical analysis can offer in terms of conclusions that can be drawn (rather than just knowledge of how to conduct them) was enhanced. More broadly synthesising many studies whilst considering their strengths and weaknesses demonstrated the importance of nuanced understanding that systematic reviews can offer. The thoroughness of the search strategy and decision making that led to the search strategy allowed an appreciation of the bias that can occur if a thorough search is not conducted. Although resource and time demanding, reviewing

many studies felt useful in offering a more detailed understanding of this relationship. This is felt to be important as the more detailed understanding, the more effective and efficient any clinical interventions can be.

The empirical study (paper 2)

Rationale for topic area and research methodology.

As the review paper identified a relationship between attitudes towards suicide and suicide it was then considered how a suicidal may appraise experiencing suicide ideation. The initial task was to define suicide as an outcome given the range of thoughts and behaviours that this construct encompasses. As suicide is understood as existing on a continuum (Carter, Reith, Whyte & McPherson, 2005; Funahashi et al., 2000) an important first intervention stage is when individuals are experiencing suicide ideation. For the target population, a non-clinical population was considered yet concerns were raised with regards to the numbers required for recruitment to ensure enough participants with experience of suicide ideation. When considering a clinical population, although difficulties with recruitment were anticipated, it was felt it would offer a more representative sample. As a clinical population was the target sample, when considering measures of metacognition and suicide, concerns were considered with regards to the impact of an individual's mood on their memory if using self-report measures (Fritsche et al., 2010; Lepage, Sergerie, Pelletier & Harvey, 2007). Experience sampling method (ESM) was considered as a preferable approach as it assesses in the moment self-report measures of any given construct. This adds ecological validity as a strength to the study and means it does not rely as much on an individual's memory. As suicide ideation can be an infrequent, fleeting event ESM also had the added benefit of multiple assessments at

different time points. This provided greater opportunity of participants rating experiences of suicide ideation and metacognition whilst experiencing suicide ideation (and so not rating retrospectively). Stone et al. (1998) found that when using both retrospective (questionnaire) and diary (experience sampling) assessments there was a poor correspondence between the two measures. This combined with the evidence that those with mental health difficulties are more likely to recall emotionally negative rather than positive material (Fritsche et al., 2010; Lepage, Sergerie, Pelletier & Harvey, 2007) has led to the recommendation that ESM is a more accurate measure of emotions and cognitive states (Palmier-Claus et al., 2011). The downside to ESM however is that it can be experienced as labour intensive for participants. A staff member fed back that those meeting the criteria were already under significant strain from their life circumstances that taking part in this research added greater burden. Previous research has demonstrated that those experiencing suicide ideation find ESM an acceptable methodology (Spangenber, Forkmann & Glaesmer, 2015). Although participating was not found to be a burden in the current study there is the potential that perceived burden may have inhibited some individuals from taking part. It has also been considered that the very nature of observing and rating suicide ideation could have inhibited some taking part. If the hypotheses were correct and that some individuals hold strong negative metacognitive beliefs about the uncontrollability and dangerousness of suicide ideation this may have inhibited their participation. The results of paper two show however that those with strong negative metacognitive beliefs did still take part.

Diary items.

An integral part of this project was the items used in the electronic diary to measure the constructs at a state level. The initial decisions centred around which constructs to measure. Suicide ideation was essential as the outcome variable and items were generated taking ideas from established measures of suicide ideation such as the Beck Scale for Suicidal Ideation (Beck, Kovacs & Weissman, 1979). There are no current measures of metacognition about suicide ideation. Given the MCQ-30 (Wells & Cartwright Hatton, 2004) is a valid and reliable measure of metacognition based theoretically on the S-REF model (Wells, 1994, 1996), items were developed specific to suicide using this measure. It was felt important to ensure these items were specific to suicide as although there was expected to be overlap, there could be differences in the metacognitive beliefs people hold about suicide ideation versus worry and rumination. Again, given the novelty of this research it was unclear if metacognitive beliefs about suicide would be trait like and vary little within participants over the week or if there would be variance within these beliefs. Intra-class coefficients offer a way of assessing variability of constructs throughout the week of taking part. They are calculated for each level of data meaning variance between participant, day and moment can be calculated. The intra-class coefficients for this sample (table 1) showed that generally suicide ideation and metacognitive beliefs varied to a similar degree within the participants throughout the week. The only difference being 'beliefs about the need to control thoughts' which varied more than the other metacognitive beliefs within each participant within each day.

Table 1

Intra-class coefficients for the suicide ideation and metacognitive belief variables at each level of analysis (person, day and beep).

	Suicide ideation	Positive metacognitive beliefs about suicide	Negative metacognitive beliefs about suicide	Need to control thoughts	Cognitive confidence
Level					
Person	0.75	0.86	0.77	0.69	0.91
Day	0.11	0.06	0.11	0.03	0.05
Text	0.14	0.08	0.12	0.28	0.04

A balance was then sought with regards to which confounding variables to incorporate at the state level to ensure known psychological correlates of suicide ideation were controlled for. Although wanting to include as many as possible, it was also imperative that the number of state level items was kept to a minimum to minimise participant burden. Psychological constructs of defeat, entrapment, depression and hopelessness were felt to be the most established correlates in the literature (Durkheim, 1951; Harris & Barrowclough, 1997; Johnson, Gooding & Tarrier, 2008; O'Connor, 2011; Williams, 1997; 2001; Wenzel & Beck, 2008). Although depression is used to describe feelings and emotions, the diagnosis of depression encompasses a range of feelings, thoughts, behaviours and physical changes (American Psychiatric Association, 2013). Assessing depression as a disorder would be difficult at the state level and so it was decided to instead measure negative affect as an important component of depression.

It is acknowledged that additional diary items could have assessed if completing the diary had affected participant's mood or suicide ideation. There is evidence that self-monitoring can be therapeutic (Nelson & Hayes, 1981). Zembylas and Schutz (2016) have suggested that completing diary entries, as part of ESM, can have a positive impact on

participant's mood. Zirkel, Garcia and Murphy (2015) also reflected on participants becoming more self-aware due to taking part in ESM research which they suggested has the potential for changing behaviour. Although some participants reported it had been a positive experience taking part in the empirical study, none reported it had a positive impact on their mood. As part of the de-brief sessions participants were asked if taking part had impacted on suicide ideation and none felt it had. This supports the work of Husky et al. (2014) who examined the reactive effect of completing diary entries on suicide ideation and found there was no impact on ratings of suicide ideation. Although this would have been a useful additional consideration, again, the importance of keeping the diary items to a minimum was prioritised. Negative affect was controlled for in the multivariate model which offers some assurance that participant's mood was controlled for in the main analysis.

As part of the development of state level items, they were discussed with a member of a community liaison group who had personal experience of suicide. This feedback was taken and incorporated with a trial of the whole procedure with five participants. From this trial, verbal feedback on diary items was again obtained alongside descriptive statistics of items. All areas of feedback were considered to ensure a balance of statistical integrity of diary items with appropriateness for participants to be able to rate in the moment. Such decisions were made in collaboration with the two authors who are both experts in the field of suicide and metacognition. A total number of 35 items were included which is on the lower side of the 30-60 recommended (Palmier-Claus et al., 2011). The validity of state level diary items was provided with strong correlations between trait and state level measurements in the full data set. A decision was made to complete trait level measures in the initial meeting with participants rather than in the

debrief session. This was due to concerns about drop-out rates given the clinical presentation of participants (likely to be in high levels of distress) and potential burden of taking part. However, this does mean that the trait level measures represented a slightly different time frame to the state level items.

It was interesting to observe that the relationships observed at the trait level were the same at the state level with regards to cognitive constructs but not metacognitive constructs. No significant correlation was observed between the MCQ-30 and suicide ideation at the trait level. One possible reason is that there was not sufficient power due to low participant numbers at the trait level. A post-hoc power calculation identified that for r = .06 (the r between negative metacognitive beliefs and suicide ideation), β = .80 and α = .05 the required number of participants to detect a significant relationship would be 350. Another possible explanation is that the MCQ-30 was not directly measuring metacognitive beliefs about suicide hence the differences observed when using the MCQ-30.

Recruitment and the sample.

Recruitment was conducted with a colleague who was researching the use of thought control strategies in suicide ideation. An NHS and third sector organisation was selected for recruitment due to offering a breadth of potential participants. The researcher had worked previously at the third sector organisation which was hoped to facilitate recruitment. Following agreement with senior management, attendance at team meetings and the provision of information sessions for staff began. To build positive relationships with staff information sessions incorporated basic training on suicide as well as information on recruitment. Time was spent getting to know staff with the

researcher basing themselves in the department at least one day per week. Posters and participant information sheets were displayed and reminders were offered to staff in their morning 'huddle.' Regular emails were sent to the whole organisation and information was regularly provided in the organisation's newsletter. Despite best efforts, some clinical members of staff remained apprehensive about approaching eligible participants (due to concerns about increasing suicide risk) raising concerns of a bias in recruitment. Staff were reassured with regards to increasing risk and encouraged to provide the information to all eligible participants. To ensure as many eligible participants as possible received the information, when individuals signed into the building, a brief amount of information was provided with the researcher's photograph asking interested individuals to provide their details. Despite continued efforts insufficient numbers were being recruited (by the mid-point two participants had completed taking part out of an aim of eleven participants for the mid-point) so it was decided that the researcher would change recruitment sites. This strategy was more successful but time was then limited. Therefore, the total number of participants who took part was less than hoped for affecting the generalisability of findings.

A self-selection process was utilised in this study meaning it could be that only those with a reasonable degree of motivation would choose to take part. Although random sampling could have allowed for a more representative sample this could have been met with resistance by clinical staff. To give the reader an understanding of the participant sample a demographics form was completed by all participants. This included a self-report of diagnosis which was not corroborated by clinical interview or with clinical records as this was felt to be too labour intensive for the researcher and clinical staff. Given this was not an essential part of the hypothesis or felt to be a sufficiently important confounding

variable, this was felt to be an adequate way of offering the reader some description of the sample yet the limits to this are appreciated.

As mentioned previously, concerns were raised in seeking ethical approval and in recruitment that asking people about their experiences of suicide ideation would increase the risk of them killing themselves. Previous research has demonstrated taking part in research about suicide does not increase the risk of suicide (Dazzi, Gribble, Wesseley & Fear, 2014) yet this concern was still held by health care and research professionals which presents a significant barrier to this area of research. This, alongside other factors, such as a smaller population and the impact of mood on motivation to engage in research may impact on research in this area. Such barriers are important to attempt to overcome though as previous work has identified that the attitudes suicidal individuals hold themselves can impact on help-seeking behaviour (Ross, 1980). It is therefore important to continue to share research evidence with both research and clinical professionals about those assessed as at risk of suicide taking part in suicide research. It may also be helpful to take time to understand staff's concerns to help contain the fear and anxiety they may be experiencing. If feeling too anxious research evidence may not offer any assurance for them.

From recruiting those experiencing very low mood and at high risk of suicide it felt important to be patient and flexible. An individual may not want to engage on a particularly bad day and so asking if it would be helpful to return on a different day seemed to be useful in facilitating recruitment. Tailoring the day and time of recruitment to suit an individual was also imperative. Clinical skills in building relationships (and trust) seemed helpful so being warm and approachable made people feel at ease to be able to ask more questions and clarify when they did not understand. It seemed this helped

participants to have a go of taking part in the research safe in the knowledge it would be acceptable to withdraw should they change their mind.

Ethical considerations.

Recruitment from an organisation within which the researcher had previously worked clinically presented some ethical dilemmas. Some staff would ask for clinical opinions or the researcher would be in a team meeting for example when a psychological perspective was being sought. It was important that appropriate boundaries were monitored and maintained to ensure the researchers presence was understood and used appropriately.

As previously described, some staff felt concern at asking those to take part in the research who were experiencing thoughts of suicide. Although many participants did not feel any negative impact there was one participant who did have a negative experience. The participant felt taking part exacerbated their rumination which in turn impacted negatively on their mood (but did not feel a change in level of suicide risk). The participant acknowledged they could have stopped taking part at any point but had wanted to continue as it was important to them that they finished taking part. It was agreed this information would be shared with their therapist who could support them with this. It was difficult to consider that taking part had a negative impact on this participant's mood. This was especially difficult given this was early in recruitment and the researcher was having to offer reassurance to staff regarding the research.

Further implications of both studies

Implications for theory and other research.

The systematic review provided evidence that suicide behaviour is linked with attitudes towards suicide yet no current models of suicide incorporate this. It is important in considering the results of the systematic review to consider the literature regarding the relationship between attitudes and behaviours. Although generating much debate, many believe there is a bi-directional relationship with both areas believed to be influencing the other (Proctor, 2001; Wallace, Paulson, Lord & Bond, 2005). None of the included studies considered the potential bi-directional nature of the relationship between attitudes and suicide. It could be that due to personal experience of suicide an individual changes their attitude. They may become more understanding or accepting of suicide the more they think about or act on their suicidal thoughts. Future research should be considerate of this suggestion to allow for a clearer understanding.

The empirical paper also provided evidence of relationship between metacognitive beliefs about suicide ideation and level of suicide ideation adding further evidence for the S-REF model (Wells & Matthew, 1994, 1996). The results provided further evidence and challenged some of the existing models of suicide. Evidence was found that hopelessness, negative affect and defeat are all significantly and independently associated with suicide ideation thus supporting the Cry of Pain Model (CoP: Williams, 1997, 2001), the Schematic Appraisal Model of Suicide (Johnson, Gooding & Tarrier, 2008) and the Integrated Motivational Volitional model of suicide (O'Connor, 2011). However, when negative affect, defeat and hopelessness were controlled for, entrapment was no longer significantly associated with suicide ideation. This challenges the CoP and the Integrated Motivational Volitional model as both argue that both defeat

and entrapment are necessary for suicide. There was a significant moderate correlation between entrapment and suicide ideation at the trait level (r=.48, p<.05) and a significant strong correlation between trait and state level measures of entrapment (r=.79, p<.001). This suggests it was not the measure of entrapment that could account for this discrepancy. Taylor, Wood, Gooding, Johnson and Tarrier (2009) questioned the suggestions in the CoP that defeat and entrapment are distinct constructs. They demonstrated that a single latent variable underlies items pertaining to defeat and entrapment. The finding in the current study could be accounted for by the suggestion that the entrapment items did not offer any additional variance above that already accounted for by the defeat items. In correlation analyses, there was a large effect observed between trait level measures of defeat and entrapment (r=.81 p<.001) which further adds to the suggestion that a single variable may underlie both constructs.

The mostly positive experience of participants taking part in this study supports the suggestion by Spangenberg, Forkmann and Glaesmer (2015) and Palmier-Claus et al. (2011) that ESM is both an acceptable methodology to utilise with populations who are experiencing suicide ideation and long-term mental health difficulties. The variability of suicide ideation throughout the observed period was coherent with previous studies alongside the association between suicide ideation and negative affect at the state level (Spangenberg, Forkmann & Glaesmer, 2015).

Implications for clinical practice.

The National Institute for Health and Care Excellence (NICE) guidelines for the long-term management of self-harm in over 8's (2011) recommend that an integrated and comprehensive psychosocial assessment of needs and risks is completed to understand

self-harm (regardless of the motivation of self-harm). When conducting a risk assessment, it is recommended that specific risk and protective factors that may increase or decrease risk are identified. The results from both papers suggest an additional consideration to be included in such assessments. It is recommended that during an assessment of an individual's risk they are asked about their attitudes towards suicide and metacognitive beliefs about suicide ideation. The information gained from assessment with regards to attitudes and metacognitive beliefs is recommended to be incorporated into a psychological formulation of an individual's risk. In addition, given the further evidence provided in the empirical paper of the fluctuation of suicide ideation throughout the week, assessment of suicide ideation should be repeated frequently.

If further evidence is obtained and a metacognitive theory of suicide is developed, specific metacognitive interventions could then be developed. The NICE guidelines (2011) suggest offering psychological interventions that are specifically structured to reduce self-harm. If future research demonstrates the efficacy of a metacognitive intervention it is hoped this approach will become part of such recommendations. At this stage, however, even if simply incorporated into a risk formulation, the hope is that allowing an individual to understand the maintaining factors in their distress this could generate opportunity for alternative ways of coping. Making sense of an individuals' wish to die could help contain feelings of fear and anxiety for both an individual and for staff members. When feeling contained and less overwhelmed this can free an individual's cognitive ability to help generate alternative solutions (Bion, 1959; Garland, 1998; Waddell, 1998).

Reflections on the recruitment process highlighted that for some staff (by no means all) there was anxiety held with regards to the risk of suicide. It is important that all staff

working with those experiencing suicide ideation and behaviour receive appropriate training to fully understand the risk factors associated with suicide, to develop skills in formulations of risk and to understand evidence based interventions. It is important that staff feel confident in talking about suicide so to improve the likelihood of help-seeking behaviour in their clients. To be able to do this staff need regular clinical supervision, training and support of senior colleagues to support decision making.

Suggestions for future research and broader implications.

Based on the S-REF model (Wells & Matthew, 1994, 1996) and with evidence of the association between metacognitive beliefs and suicide ideation several hypotheses could now be tested to develop a theoretical, metacognitive model of suicide. The S-REF model indicates the role of thought control strategies (TCS) in the maintenance of emotional disorders. Wells & Davies (1994) demonstrated that individual differences in the use of TCS to cope with distressing thoughts were associated with emotional vulnerability (Wells & Davies, 1994). The Thought Control Questionnaire (TCQ: Wells & Davies, 1994) measures five different TCS; distraction, social control, worry, punishment and reappraisal. It is hypothesised that TCS will also be associated with suicide ideation and so empirical research examining this relationship would be recommended. This would be important as Reynolds and Wells (1999) demonstrated that TCS could distinguish 'recovered' and 'non-recovered' individuals with major depression and/or post-traumatic stress disorder. Importantly, they found that change in TCS was associated with recovery. Another consideration is that metacognitive beliefs about suicide ideation may moderate the distress experienced by suicide ideation. It is recommended to empirically investigate whether this is the case. As Klonsky and May (2015) have argued it is important that

models of suicide offer understanding of the development and maintenance of both suicide ideation and behaviour. The links with suicide behaviour should therefore be examined in relation to metacognition. It could be that positive metacognitive beliefs about suicide ideation initiate the process of suicide ideation. Due to this process being ineffective in offering effective solutions, negative metacognitive beliefs regarding the harm and uncontrollability of suicide ideation may occur. An individual may therefore want to try and stop/control suicide ideation so engages in TCS. Again, due to being ineffective TCS may paradoxically maintain an individual in engaging in suicide ideation and maintain negative metacognitive beliefs about suicide ideation. The resulting increased distress experienced due to suicide ideation may lead to a sense of cognitive hopelessness which could lead to suicide behaviour (as the ultimate thought control strategy). Empirical research would be recommended to test these hypotheses to develop a reliable and testable model of both suicide ideation and its links with suicide behaviour.

Whilst conducting the systematic review many papers considered the most reliable and accurate assessment of suicide ideation. Galynker, Yaseen, Briggs and Hayashi (2015) suggested that one of the challenges in the assessment of suicide ideation is that individuals are often acutely aware that they are being assessed for their suicidal risk. They suggested assessing implicit measures of cognitive functioning and attitudes with regards to suicide. A six-fold increase in the chances of a suicide attempt following testing was observed when using a test of implicit association of self with death/suicide in a suicidal Stroop test (Cha, Najmi, Park, Finn & Nock, 2010) and the implicit association task (Nock et al., 2010). The systematic review paper suggests that future research should continue exploring prospective study designs that allow the examination of the

predictive ability of attitudes held towards suicide on suicide behaviour. If this relationship is established, measuring attitudes held towards suicide could contribute to more implicit and potentially more accurate assessments of suicide risk.

In a broader sense, there are considerations raised from this work with regards to how suicide is viewed in our society and the need for continued public health campaigns to encourage help-seeking behaviour when experiencing thoughts of suicide. Shaffer's statement as quoted in Sudak et al. (2008) was that, 'we need to destigmatize mental illness and its treatment but we do not want to destigmatize suicide and suicide attempts.' The concern was that the destigmatization of suicide could lead to more suicides. Scocco, Castriotta, Toffol and Preti (2012) disagreed believing that destigmatization (which they argued does not mean trivialization or glorification) could instead improve communication which would lead to greater ability to prevent suicide. It appears there is a delicate balance to strike between reducing the stigma around suicide to encourage help-seeking behaviour and normalising so that attitudes become accepting of suicide which paper one demonstrated is positively associated with suicide ideation and behaviour.

Concluding comments

This critical reflection has provided an evaluation of the research conducted, suggesting additional ideas for future research whilst acknowledging the areas that could have been done differently. While consideration of the limitations of the research have been offered, the learning taken from the research process has been invaluable and the resulting research is thought to constitute an important contribution to the literature.

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APPENDICES

Appendix A: Author submission guidelines

Behaviour Research and Therapy

Article structure

Subdivision - unnumbered sections
Divide your article into clearly defined sections. Each subsection is given a brief heading. Each heading should appear on its own separate line. Subsections should be used as much as possible when cross-referencing text: refer to the subsection by heading as opposed to simply 'the text'.

Appendices
If there is more than one appendix, they should be identified as A, B, etc. Formulae and equations in appendices should be given separate numbering: Eq. (A.1), Eq. (A.2), etc.; in a subsequent appendix, Eq. (B.1) and so on. Similarly, for tables and figures: Table A.1; Fig. A.1, etc.

Essential title page information

• ***Title.*** Concise and informative. Titles are often used in information-retrieval systems. Avoid abbreviations and formulae where possible.

• ***Author names and affiliations.*** Please clearly indicate the given name(s) and family name(s) of each author and check that all names are accurately spelled. Present the authors' affiliation addresses (where the actual work was done) below the names. Indicate all affiliations with a lower-case superscript letter immediately after the author's name and in front of the appropriate address. Provide the full postal address of each affiliation, including the country name and, if available, the e-mail address of each author.

• ***Corresponding author.*** Clearly indicate who will handle correspondence at all stages of refereeing and publication, also post-publication. **Ensure that the e-mail address is given and that contact details are kept up to date by the corresponding author.**

• ***Present/permanent address.*** If an author has moved since the work described in the article was done, or was visiting at the time, a 'Present address' (or 'Permanent address') may be indicated as a footnote to that author's name. The address at which the author actually did the work must be retained as the main, affiliation address. Superscript Arabic numerals are used for such footnotes.

Abstract
A concise and factual abstract is required with a maximum length of 200 words. The abstract should state briefly the purpose of the research, the principal results and major conclusions. An abstract is often presented separately from the article, so it must be able to stand alone. For this reason, References should be avoided, but if essential, then cite the author(s) and year(s). Also, non-standard or uncommon abbreviations should be avoided, but if essential they must be defined at their first mention in the abstract itself.

Highlights
Highlights are mandatory for this journal. They consist of a short collection of bullet points that convey the core findings of the article and should be submitted in a separate editable file in the online submission system. Please use 'Highlights' in the file name and include 3 to 5 bullet points (maximum 85 characters, including spaces, per bullet point). You can view example Highlights on our information site.

Keywords
Immediately after the abstract, provide a maximum of 6 keywords, to be chosen from the APA list of index descriptors. These keywords will be used for indexing purposes.

Abbreviations
Define abbreviations that are not standard in this field in a footnote to be placed on the first page of the article. Such abbreviations that are unavoidable in the abstract must be defined at their first mention there, as well as in the footnote. Ensure consistency of abbreviations throughout the article.

Acknowledgements
Collate acknowledgements in a separate section at the end of the article before the references and do not, therefore, include them on the title page, as a footnote to the title or otherwise. List here those individuals who provided help during the research (e.g., providing language help, writing assistance or proof reading the article, etc.).

Tables

Please submit tables as editable text and not as images. Tables can be placed either next to the relevant text in the article, or on separate page(s) at the end. Number tables consecutively in accordance with their appearance in the text and place any table notes below the table body. Be sparing in the use of tables and ensure that the data presented in them do not duplicate results described elsewhere in the article. Please avoid using vertical rules and shading in table cells.

References

Citation in text
Please ensure that every reference cited in the text is also present in the reference list (and vice versa). Any references cited in the abstract must be given in full. Unpublished results and personal communications are not recommended in the reference list, but may be mentioned in the text. If these references are included in the reference list they should follow the standard reference style of the journal and should include a substitution of the publication date with either 'Unpublished results' or 'Personal communication'. Citation of a reference as 'in press' implies that the item has been accepted for publication.

Web references
As a minimum, the full URL should be given and the date when the reference was last accessed. Any further information, if known (DOI, author names, dates, reference to a source publication, etc.), should also be given. Web references can be listed separately (e.g., after the reference list) under a different heading if desired, or can be included in the reference list.
.

Reference style
Text: Citations in the text should follow the referencing style used by the American Psychological Association. You are referred to the Publication Manual of the American Psychological Association, Sixth Edition, ISBN 978-1-4338-0561-5, copies of which may be ordered online or APA Order Dept., P.O.B. 2710, Hyattsville, MD 20784, USA or APA, 3 Henrietta Street, London, WC3E 8LU, UK.

List: references should be arranged first alphabetically and then further sorted chronologically if necessary. More than one reference from the same author(s) in the same year must be identified by the letters 'a', 'b', 'c', etc., placed after the year of publication.

Clinical Psychology Review

Article structure

Manuscripts should be prepared according to the guidelines set forth in the Publication Manual of the American Psychological Association (6th ed., 2009). Of note, section headings should not be numbered.
Manuscripts should ordinarily not exceed 50 pages, *including* references and tabular material. Exceptions may be made with prior approval of the Editor in Chief. Manuscript length can often be managed through the judicious use of appendices. In general the References section should be limited to citations actually discussed in the text. References to articles solely included in meta-analyses should be included in an appendix, which will appear in the on line version of the paper but not in the print copy. Similarly, extensive Tables describing study characteristics, containing material published elsewhere, or presenting formulas and other technical material should also be included in an appendix. Authors can direct readers to the appendices in appropriate places in the text.
It is authors' responsibility to ensure their reviews are comprehensive and as up to date as possible (at least through the prior calendar year) so the data are still current at the time of publication. Authors are referred to the PRISMA Guidelines (http://www.prisma-statement.org/statement.htm) for guidance in conducting reviews and preparing manuscripts. Adherence to the Guidelines is not required, but is recommended to enhance quality of submissions and impact of published papers on the field.

Appendices
If there is more than one appendix, they should be identified as A, B, etc. Formulae and equations in appendices should be given separate numbering: Eq. (A.1), Eq. (A.2), etc.; in a subsequent appendix, Eq. (B.1) and so on. Similarly for tables and figures: Table A.1; Fig. A.1, etc.

Essential title page information

Title. Concise and informative. Titles are often used in information-retrieval systems. Avoid abbreviations and formulae where possible. **Note: The title page should be the first page of the manuscript document indicating the author's names and affiliations and the corresponding author's complete contact information.**

Author names and affiliations. Where the family name may be ambiguous (e.g., a double name), please indicate this clearly. Present the authors' affiliation addresses (where the actual work was done) below the names. Indicate all affiliations with a lower-case superscript letter immediately after the author's name and in front of the appropriate address. Provide the full postal address of each affiliation, including the country name, and, if available, the e-mail address of each author within the cover letter.

Corresponding author. Clearly indicate who is willing to handle correspondence at all stages of refereeing and publication, also post-publication. **Ensure that telephone and fax numbers (with country and area code) are provided in addition to the e-mail address and the complete postal address.**

Present/permanent address. If an author has moved since the work described in the article was done, or was visiting at the time, a "Present address"' (or "Permanent address") may be indicated as a footnote to that author's name. The address at which the author actually did the work must be retained as the main, affiliation address. Superscript Arabic numerals are used for such footnotes.

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Keywords

Immediately after the abstract, provide a maximum of 6 keywords, using American spelling and avoiding general and plural terms and multiple concepts (avoid, for example, 'and', 'of'). Be sparing with abbreviations: only abbreviations firmly established in the field may be eligible. These keywords will be used for indexing purposes.

Abbreviations

Define abbreviations that are not standard in this field in a footnote to be placed on the first page of the article. Such abbreviations that are unavoidable in the abstract must be defined at their first mention there, as well as in the footnote. Ensure consistency of abbreviations throughout the article.

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Tables

Please submit tables as editable text and not as images. Tables can be placed either next to the relevant text in the article, or on separate page(s) at the end. Number tables consecutively in accordance with their appearance in the text and place any table notes below the table body. Be sparing in the use of tables and ensure that the data presented in them do not duplicate results described elsewhere in the article. Please avoid using vertical rules and shading in table cells.

References

Citations in the text should follow the referencing style used by the American Psychological Association. You are referred to the Publication Manual of the American Psychological Association, Sixth Edition, ISBN 1-4338-0559-6, copies of which may be ordered from http://books.apa.org/books.cfm?id=4200067 or APA Order Dept., P.O.B. 2710, Hyattsville, MD 20784, USA or APA, 3 Henrietta Street, London, WC3E 8LU, UK. Details concerning this referencing style can also be found at http://humanities.byu.edu/linguistics/Henrichsen/APA/APA01.html

Citation in text

Please ensure that every reference cited in the text is also present in the reference list (and vice versa). Any references cited in the abstract must be given in full. Unpublished results and personal communications are not recommended in the reference list, but may be mentioned in the text. If these references are included in the reference list they should follow the standard reference style of the journal and should include a substitution of the publication date with either 'Unpublished results' or 'Personal communication'. Citation of a reference as 'in press' implies that the item has been accepted for publication.

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Data references

This journal encourages you to cite underlying or relevant datasets in your manuscript by citing them in your text and including a data reference in your Reference List. Data references should include the following elements: author name(s), dataset title, data repository, version (where available), year, and

global persistent identifier. Add [dataset] immediately before the reference so we can properly identify it as a data reference. The [dataset] identifier will not appear in your published article.

References in a special issue

Please ensure that the words 'this issue' are added to any references in the list (and any citations in the text) to other articles in the same Special Issue.

Reference style

References should be arranged first alphabetically and then further sorted chronologically if necessary. More than one reference from the same author(s) in the same year must be identified by the letters "a", "b", "c", etc., placed after the year of publication. **References should be formatted with a hanging indent (i.e., the first line of each reference is flush left while the subsequent lines are indented).**

Examples: Reference to a journal publication: Van der Geer, J., Hanraads, J. A. J., & Lupton R. A. (2000). The art of writing a scientific article. *Journal of Scientific Communications,* 163, 51-59.

Reference to a book: Strunk, W., Jr., &White, E. B. (1979). *The elements of style.* (3rd ed.). New York: Macmillan, (Chapter 4).

Reference to a chapter in an edited book: Mettam, G. R., & Adams, L. B. (1994). How to prepare an electronic version of your article. In B.S. Jones, & R. Z. Smith (Eds.), *Introduction to the electronic age* (pp. 281-304). New York: E-Publishing Inc.

[dataset] Oguro, M., Imahiro, S., Saito, S., Nakashizuka, T. (2015). *Mortality data for Japanese oak wilt disease and surrounding forest compositions.* Mendeley Data, v1. http://dx.doi.org/10.17632/xwj98nb39r.1

Appendix B: An example of the data extraction table

Reference
Cwik, J.C., Till, B., Bieda., Blackwell, S. E., Walter, C., & Teismann, T. (2017). Measuring attitudes towards suicide: Preliminary evaluations of an attitude toward suicide scale. *Comprehensive Psychiatry, 72*, 56-65.
Sample size
503
Sample characteristics
Data collected from two existing studies – the first was an investigation of suicidal behaviour in female students. Second study was open to women and men but unclear if still suicidal behaviour being investigated? Those with depressive mood and suicidal ideation advised not to participate. 90.01% were female Age ranged 18-67 with a mean of 24.74 26.8% showed SBQ scores above 7 77.1% were students All participants were of Caucasian ethnicity
Study design
Cross-sectional cohort
Type of suicide
Historical suicide ideation, planning and attempting, suicidal communication and estimation of likelihood of future suicide attempt.
Measure of Suicide
Suicidal Behaviours Questionnaire (SBQ-R: Osman, et al. 2001)
Measure of attitudes towards suicide
Cognitions concerning suicide scale (CCSS: Biblarz, Brown, Bilblarz, Pilgrim & Baldree, 1991)
Analysis
Spearman's correlation coefficients conducted between CCSS and criterion measures. Logistic regression analyses also carried out to investigate whether the CCSS total and subscale scores predict the suicide risk status of the participants when other risk factors were controlled for (gender, age, depression).
Results
There was a moderate, positive, significant correlation between the CCSS and the SBQ-R ($r = .442$, $p < .001$) There was a significant positive association between higher CCSS sum scores and suicide risk status (OR = 1.07 95% CI = 1.05-1.10, $p < .001$) indicating that a more positive attitude towards suicide was associated with greater suicide risk.
Strengths and Weaknesses
A large sample size which is good although the generalisability to a suicidal population is poor given those experiencing depression or suicide ideation were encouraged not to take part. Predominately female, University students and only Caucasian ethnicity again affecting generalisability. Both measures validated and reliable adding strength to validity of results. Strength in analysis as regression could control for known correlates of suicide.

Appendix C: An example of the risk of bias assessment

<table>
<tr><td colspan="2">STUDY:
Cwik, J.C., Till, B., Bieda., Blackwell, S. E., Walter, C., & Teismann, T. (2017). Measuring attitudes towards suicide: Preliminary evaluations of an attitude toward suicide scale. Comprehensive Psychiatry, 72, 56-65.</td></tr>
<tr><td>SELECTION BIAS</td><td>Are the individuals selected to participate in the study likely to be representative of the target population?
Very likely
Somewhat likely
Not likely - unclear who the target population is and whether this is the general population or those experiencing suicide ideation. University students were recruited with one set of participants taken from another study investigating suicidal behaviour in females. However those currently experiencing depression or suicide ideation were advised not to participate which means it is unlikely this sample will represent those experiencing suicide ideation.
Can’t tell

What percentage of selected individuals agreed to participate?
80 - 100% agreement
60 – 79% agreement
less than 60% agreement
Not applicable
Can’t tell - not reported

<table><tr><th>RATE THIS SECTION</th><th>STRONG</th><th>MODERATE</th><th>WEAK</th></tr><tr><td></td><td>1</td><td>2</td><td>3</td></tr></table></td></tr>
<tr><td>STUDY DESIGN</td><td>Indicate the study design
Randomized controlled trial
Controlled clinical trial
Cohort analytic (two group pre + post)
Case-control
Cohort (one group pre + post (before and after))
Interrupted time series
Other specify - Cross-sectional cohort study design
Can’t tell

Was the study described as randomized? If NO, go to Component C.
No Yes

If Yes, was the method of randomization described? (See dictionary)
No Yes

If Yes, was the method appropriate? (See dictionary)
No Yes

<table><tr><th>RATE THIS SECTION</th><th>STRONG</th><th>MODERATE</th><th>WEAK</th></tr><tr><td></td><td>1</td><td>2</td><td>3</td></tr></table></td></tr>
<tr><td>CONFOUNDERS</td><td>Were there important differences between groups prior to the intervention?
Yes
No
Can’t tell</td></tr>
</table>

	N/A **The following are examples of confounders:** Race Sex Marital status/family Age SES (income or class) Education Health status - depression measured and controlled for Pre-intervention score on outcome measure **If yes, indicate the percentage of relevant confounders that were controlled (either in the design (e.g. stratification, matching) or analysis)?** 80 – 100% (most) 60 – 79% (some) Less than 60% (few or none) Can't Tell **RATE THIS SECTION** | **STRONG** | **MODERATE** | **WEAK** **1** | **2** | **3**
BLINDING **N/A**	**Was (were) the outcome assessor(s) aware of the intervention or exposure status of participants?** Yes No Can't tell N/A **(Q2) Were the study participants aware of the research question?** Yes No Can't tell **RATE THIS SECTION** | **STRONG** | **MODERATE** | **WEAK** N/A | **1** | **2** | **3**
DATA COLLECTION METHODS	**Were data collection tools shown to be valid?** Yes No Can't tell Suicide – SBQ-R has been shown to be a validated measure of suicide (Osman, Bagge, Guitierrez, Konick, kopper & Barrios, 2001). Attitudes towards suicide – CCSS validity was provided as part of this study. 4 factors identified with alpha ranging from .78-.84. Criterion validity was reported with correlations between the scale and the 'IRIS' index variable which was a measure of risk of suicide. Evidence of construct validity provided with confirmatory factor analysis. **Were data collection tools shown to be reliable?** Yes No Can't tell SBQ-R – the original study showed good internal consistency (α = .87) as well as good

	sensitivity (93%) and specificity (95%) (Osman, Bagge, Guitierrez, Konick, kopper & Barrios, 2001). Internal consistency reported as good for the current study (α = .80). CCSS – the original study showed high test retest reliability r = .80, p < .001 (Biblarz, Brown, Biblarz, Pilgrim & Baldree, 1991). Good internal consistency for the current study (α = .83) **RATE THIS SECTION** | **STRONG** | **MODERATE** | **WEAK** **1** | **2** | **3**
WITHDRAWALS AND DROP-OUTS **N/A**	**Were withdrawals and drop-outs reported in terms of numbers and/or reasons per group?** Yes No Can't tell Not Applicable (i.e. one time surveys or interviews) **Indicate the percentage of participants completing the study. (If the percentage differs by groups, record the lowest).** 80 -100% 60 - 79% less than 60% Can't tell Not Applicable (i.e. Retrospective case-control) **RATE THIS SECTION** | **STRONG** | **MODERATE** | **WEAK** N/A | **1** | **2** | **3**
INTERVENTION INTEGRITY **N/A**	**What percentage of participants received the allocated intervention or exposure of interest?** 80 -100% 60 - 79% less than 60% Can't tell **Was the consistency of the intervention measured?** Yes No Can't tell **Is it likely that subjects received an unintended intervention (contamination or co-intervention) that may influence the results?** Yes No Can't tell
ANALYSES	**(Q1) Indicate the unit of allocation (circle one)** community organization/institution practice/office individual **(Q2) Indicate the unit of analysis (circle one)** community organization/institution practice/office individual **(Q3) Are the statistical methods appropriate for the study design?** Yes No Can't tell

	Correlation and regression analyses conducted on cross-sectional cohort design data. Regression analyses allowed the control of known correlates of suicide including age, gender and depression. **(Q4) Is the analysis performed by intervention allocation status (i.e. intention to treat) rather than the actual intervention received?** Yes No Can't tell N/A **RATE THIS SECTION** | **STRONG** | **MODERATE** | **WEAK** **1** | **2** | **3**

GLOBAL RATING
COMPONENT RATINGS

A	**SELECTION BIAS**	**STRONG**	**MODERATE**	**WEAK**	
		1	2	3	
B	**STUDY DESIGN**	**STRONG**	**MODERATE**	**WEAK**	
		1	2	3	
C	**CONFOUNDERS**	**STRONG**	**MODERATE**	**WEAK**	
		1	2	3	
D	**BLINDING**	**STRONG**	**MODERATE**	**WEAK**	
	N/A	1	2	3	
E	**DATA COLLECTION METHOD**	**STRONG**	**MODERATE**	**WEAK**	
		1	2	3	
F	**WITHDRAWAL AND DROP OUT**	**STRONG**	**MODERATE**	**WEAK**	
	N/A	1	2	3	
G	**ANALYSES**	**STRONG**	**MODERATE**	**WEAK**	
		1	2	3	

GLOBAL RATING FOR THIS PAPER (circle one):

1 STRONG (no WEAK ratings)
2 MODERATE (one WEAK rating)
3 WEAK (two or more WEAK ratings)

Appendix D: Questionnaire references for the systematic review table 2

SPAS: The Scale of Public Attitudes about Suicide (Li et al. 2011); SOQ: Suicide Opinion Questionnaire (Domino, Gibson, Poling & Westlake, 1980); STOSA: Stigma of Suicide Attempt Scale (Scocco, Castriotta Toffol & Preti, 2012); ATTS: Attitude Toward Suicide Scale (Renberg & Jacobsson, 2003); SUIATT: Suicide Attitude Questionnaire (Diekstra & Kerkhof, 1988); RFLI: Reasons for Living Inventory (Linehan, Goodstein, Nielsen & Chiles, 1983); RFLI-OA: Reasons for Living Inventory – Older Adult version (Edelstein et al. 2009); RFLI Spanish adaptation (Oquendo et al. 2000); E-ATSS: Eskin's Attitudes Towards Suicide Scale (E-ATSS) (Eskin, 2004); E-SRSPS: Eskin's Social Reactions to a Suicidal Persons Scale (Eskin, 1999); CCCS-18: Attitudinal Beliefs Questionnaire about Suicidal Behaviour (Ruiz et al. 2005); CCSS: Cognitions Concerning Suicide Scale (Biblarz, Brown, Biblarz, Pilgrim & Baldree, 1991)

SSI: Scale for Suicidal Ideation (Beck, Kovacs & Weissman, 1979); C-SSRS: Columbia Suicide Severity Rating Scale (Posner et al. 2011); SBQ-R: Suicidal Behaviour Questionnaire – Revised (Osman, Bagge, Guitierrez, Konick, Kooper & Barrios, 2001); Life and Death Scale (Inumiya & Han, 2004); SBQ: Suicidal Behaviours Questionnaire (Linehan & Nielsen, 1981a); LAS-SF; Life-attitudes schedule short form (Lewinsohn, Langhinrichsen-Rohling, Rohde, & Langford, 2004); Columbia Suicide History Form (Oquendo, Halberstam & Mann, 2003); Suicidal Intent Scale (Beck, Morris & Beck, 1974); SIQ: Reynolds Suicidal Ideation Questionnaire (Reynolds, 1987); Medical Lethality Scale (Beck, Beck & Kovacs, 1975); SPS: Suicide Probability Scale (Cull & Gill, 1982); Suicide Ideation Questionnaire (Sutherland & Cantrell, 1993); Modified Scale for Suicidal Ideation (Miller et al. 1986)

Appendix E: Pilot diary items

Item	Construct
I want to die	Suicide ideation
I feel unhappy	Negative affect
I feel happy	Negative affect
I feel angry	Negative affect
I feel anxious	Negative affect
I feel empty	Negative affect
I feel powerless	Defeat
I am worried that my suicidal thoughts have a grip on me	Negative MCB
I was thinking about killing myself	Suicide ideation
It is bad to have thoughts of killing myself	Need to control thoughts
Not being able to control my thoughts is a sign of weakness	Negative MCB
When I start thinking about suicide I can't stop	Negative MCB
My suicidal thoughts persist, no matter how I try to stop them	Negative MCB
Thinking about suicide is dangerous for me	Negative MCB
Thinking about suicide helps me cope	Positive MCB
If I don't stop my suicidal thoughts I will go mad	Negative MCB
Thinking of ending it all gives me peace of mind	Positive MCB
Thinking about suicide is better than thinking about my problems	Positive MCB
I have no control over my suicidal thoughts	Negative MCB
I have a poor memory	Negative MCB
I do not trust my memory	Negative MCB
I think a lot about my suicidal thoughts	Cognitive self-consciousness

I am constantly aware of my suicidal thoughts	Cognitive self-consciousness
My future seems dark to me	Hopelessness
I look forward to the future with hope and enthusiasm	Hopelessness
Things just don't work out the way I want them to	Hopelessness
I feel like life it worth living	Hopelessness
I feel like I am one of life's losers	Defeat
I feel I have given up	Defeat
I am in a situation I feel trapped in	Entrapment
I have a strong desire to escape from things in my life	Entrapment
I feel like I am in a deep hole that I can't get out of	Entrapment

Appendix F: Descriptive statistics and item total correlations for trial diary items (shaded items were removed)

Item	Mean	Median	Mode	Kurtosis	Skewness	Minimum	Maximum	Sum	Count	Comments
Right now…										
1. I want to die	2.70	1	1	-0.39	0.97	1	7	164	61	
2. I feel unhappy	3.34	3	3	-0.41	0.57	1	7	207	62	
3. I feel happy	3.48	3	3	0.32	0.30	1	7	216	62	Unnecessary given item above
4. I feel angry	2.80	2	1	0.73	0.75	1	7	170	61	Mode = 1
5. I feel anxious	3.82	4	3	-1.12	0.05	1	6	237	62	
6. I feel empty	3.45	3	3	0.81	0.43	1	7	214	62	Feedback that item was too vague
7. I feel powerless	2.92	2.5	1	-0.14	0.81	1	7	181	62	
8. I am worried my suicidal thoughts have a grip on me	2.18	2	1	0.80	1.23	1	6	135	62	Mode = 1 and conflating with worry
Right now, how much do you believe the following:										
1. It is bad to have thoughts of killing myself	2.98	3	2	1.03	0.92	1	7	185	62	
2. Not being able to control my thoughts is a sign of weakness	2.69	3	2	1.69	0.99	1	7	167	62	Higher kurtosis, item correlation
3. When I start thinking about suicide I can't stop	3.03	3	2	0.20	0.99	1	7	188	62	Item correlation

4. My suicidal thoughts persist, no matter how I try to stop them	3.85	3	2	-1.74	0.16	1	7	239	62	
5. Thinking about suicide is dangerous for me	3.05	3	2	-0.09	0.90	1	7	189	62	
6. Thinking about suicide helps me cope	2.5	2	1	0.62	1.18	1	7	155	62	
7. If I don't stop my suicidal thoughts I will go mad	3.85	3	2	-1.70	0.17	1	7	239	62	
8. Thinking of ending it all gives me peace of mind	2.69	2	1	0.11	1.06	1	7	167	62	
9. Thinking about suicide is better than thinking about my problems	3.65	3	1	-1.61	0.20	1	7	226	62	Kurtosis and item correlation
10. I have no control over my suicidal thoughts	4.47	4.5	6	-1.44	-0.25	1	7	277	62	
11. I have a poor memory	3.87	4	3	-0.75	0.32	1	7	240	62	
12. I trust my memory	3.19	3	3	-0.37	0.34	1	6	198	62	Item 11 better psychometrically
13. I think a lot about my suicidal thoughts	3.45	3	2	-1.14	0.43	1	7	214	62	
14. I am constantly aware of my suicidal thoughts	4.10	3	7	-1.79	0.02	1	7	254	62	
15. My future seems dark to me	2.84	2	1	0.29	0.91	1	7	176	62	Skewness and ambiguity
16. I look forward to the future	3.52	3	3	-0.54	0.72	1	7	218	62	

17. Things don't work out the way I want	4.06	4	4	-1.06	-0.29	1	7	252	62	
18. Life is worth living	5.21	6	7	0.34	0.87	1	7	323	62	Ambiguous
19. I am one of life's losers	4.02	3.5	7	-1.60	0.12	1	7	249	62	
20. I have given up	2.70	2	1	0.75	1.21	1	7	164	62	Ambiguous mode = 1 and item correlation
21. I am trapped in my situation	3.15	3	3	1.36	0.95	1	7	195	62	
22. There are things in my life I want to escape	2.82	2	2	-0.30	0.77	1	7	175	62	
23. I'm in a deep hole that I can't get out of	2.70	2	1	0.82	1.18	1	7	166	62	Ambiguous, mode = 1 and skew

Construct	Cronbach's α	Item	Item-total correlation
Negative affect	0.915	I feel empty	0.844
		I feel unhappy	0.820
		I feel angry	0.810
		I feel anxious	0.742
		I feel happy	0.730
Negative metacognitive beliefs (harm)	0.659	I am worried that my suicidal thoughts have a grip on me	0.534
		If I don't stop my suicidal thoughts I will go mad	0.449
		Thinking of suicide is dangerous for me	0.355
Negative metacognitive beliefs (uncontrollability)	0.76	I have no control over my suicidal thoughts	0.818
		My suicidal thoughts persist no matter no matter how I try to stop them	0.713
		When I start thinking of suicide I can't stop	0.445
		Not being able to control my thoughts is a sign of weakness	0.342
Need to control thoughts	0.513	It is bad to have thoughts of killing myself	0.513
Defeat	0.814	I feel powerless	0.832
		I am one of life's losers	0.772
		I have given up	0.554
Entrapment	0.774	I am trapped in my situation	0.710
		There are things in my life I want to escape from	0.547
		I am in a deep hole that I can't get out of	0.562
Hopelessness	0.772	I look forward to the future	0.764
		My future seems dark to me	0.625
		Life is worth living	0.480
		Things don't work out the way I want them to	0.453
Positive metacognitive beliefs	0.912	Thinking about suicide helps me cope	0.885
		Thinking of ending it all gives me peace of mind	0.845
		Thinking about suicide is better than thinking about my problems	0.776

Appendix G: Participant information sheet

MANCHESTER 1824

The University of Manchester

Participant Information Sheet

Title of project: An investigation into suicidal thinking

Principle Investigator: Vikki Aadahl and Robert Hallard

I would like to invite you to take part in some research about suicidal thinking. It will involve filling in some questionnaires both on paper and online. Please read the following information about the study carefully, ask me any questions you like and take the time to decide whether or not you wish to take part.

What is the purpose of the study?

We know that sometimes people have thoughts they don't like. This can lead people to try to control their thoughts. This study wants to find out how people feel about having suicidal thoughts and whether they do anything to manage them. We hope that knowing more about this will lead to more effective support.

Why have I been asked to take part?

You have been asked to take part in this study because a member of staff recognizes that you have experienced suicidal thoughts recently and because you are over 18 years of age. The study hopes to recruit about 80 participants altogether. If too many people volunteer to take part you may not be able to take part.

What will I be asked to do if I take part?

If you decide to take part, a researcher will initially contact you on the telephone. If you are eligible to take part you will then meet a researcher at your local Women's Centre or NHS building. This meeting will last about an hour and a half and will involve completing some questionnaires about your thoughts and feelings, including your thoughts and feeling relating to suicide. You can take a break at any point during this meeting. After that, you will be asked to complete a short online diary, up to 7 times a day, for 6 days, using your mobile smartphone. If you don't have a smartphone, one will be provided for you. You will be given £5 at the end of the study to reimburse you for any mobile data costs.

You will be sent a text message every two hours to remind you to fill in the diary, which should take 2-3 minutes to complete. If you miss an entry, you do not have to go back and complete it; just carry on the next time you get a text message.

Do I have to take part?

You do not have to take part in the study if you don't want to. Your decision to participate in this study will not be connected to the care you are receiving now or in the future. If you decide to take part and then later change your mind, you can withdraw and all your data will be destroyed. However, once you have completed the study your data cannot be destroyed.

What are the risks to taking part in the research?

For some people it might be an inconvenience to complete the internet diary. For some, it could be difficult for to think about thoughts and feelings, especially in relation to suicide.

MANCHESTER 1824

The University of Manchester

What are the benefits of taking part in the research?

We hope that this research will contribute to a better understanding of suicidal thoughts. Taking part in the research may mean that in the future, people will receive more effective care.

Will my data be confidential?

Your data will be given a unique identification number and will not be stored with anything showing your name. This way your data will not be identifiable by anyone other than the research team. The only other time someone might need to look at the study information is during an audit or monitoring visit. This is when people from the University of Manchester, NHS Trust or regulatory authorities review all the data to make sure the study is being carried out as planned. If you agree, they will include your identifiable data when doing the checks (they will see it belongs to you). Anyone that does look at the data will have a duty to keep it confidential.

All data will be stored securely at the University of Manchester. Records will be destroyed at the end of the study. Data from the study will be kept for a minimum of 5 years after the date of any publication which is based upon it, to follow recommended good practice guidelines for research.

What if there is a problem?

It is unlikely that anything would go wrong. But, if there is a problem, you may contact me in the first instance (vikki.aadahl@postgrad.manchester.ac.uk; 07432152921) or you can contact my supervisor (daniel.pratt@manchester.ac.uk; 0161 306 0400).

If you wish to make a formal complaint or if you are not satisfied with the response you have gained from the researchers in the first instance then please contact the Research Governance and Integrity Manager, Research Office, Christie Building, University of Manchester, Oxford Road, Manchester, M13 9PL, by emailing: research.complaints@manchester.ac.uk or by telephoning 0161 275 2674 or 275 2046.

What will happen if I do not want to carry on with the study?

You can withdraw from the study completely at any time without giving a reason and without any consequence to your current or future treatment. No further data will be collected from the moment you withdraw.

What will happen to the results of the research study?

The study will be submitted for contribution to a doctorate degree in clinical psychology for the principle investigator. It will also be submitted for publication in a scientific journal. If you would like a summary of the results, please let the researcher know the best way to send you this information.

Who is organising this study?

The study will be sponsored by the University of Manchester. The study has been reviewed by a research subcommittee in the Clinical Psychology department at the University of Manchester and NHS ethics committee [REC reference 16/NW/0094].

The University of Manchester

Who should I contact if I want to find out more?

If you would like to take part please complete and sign the below slip. Please give this to your care coordinator/named worker who will give this information to the researchers.

✂----------

I agree **to provide/for my health care professional to provide** (delete as appropriate) my personal details so that I can be contacted about this study.

Name	
Signature	
Today's date	

Please complete the details below or hand back to your health care provider to complete on your behalf

Contact by phone	Preferred contact number	
	When would you prefer to be contacted? (please circle)	Morning/ Afternoon/ Evening/ Don't Mind
Contact by email	Email address	

Appendix H: Consent form

The University of Manchester

Title of project: An investigation into suicidal thinking

Principle Investigators: Robert Hallard and Vikki Aadahl

The participant should complete the following part of this sheet him/herself

	Please delete as appropriate **and initial**
1. I confirm that I have read and understood the attached information sheet (v2: 18/02/2016) and have had the opportunity to ask questions. **OR** I confirm that I have had the attached information sheet explained to me and have had the opportunity to ask questions.	**YES/NO** Initials:……
2. I understand that I can withdraw from the study at any time without having to give any reasons, without any negative impact on any current or future care.	**YES/NO** Initials:……
3. I understand that relevant sections of my medical notes and data collected during the study may be looked at by individuals from the University of Manchester, from the regulatory authorities or from the NHS trust, where it is relevant to my taking part in this research. I give permission for these individuals to have access to my data.	**YES/NO** Initials:……
4. I consent to my GP being informed that I am taking part in this research.	**YES/NO** Initials:……
4. I understand that my information will remain confidential but if there are concerns that myself and/or others are at risk of harm this will be shared with other professionals such as my named worker/care coordinator and GP.	**YES/NO** Initials:……
5. I agree to take part in this study.	**YES/NO** Initials:……

Name of participant: ……**Signed:** …… **Date:** ……

Research ID Number (please leave blank): ……

Name of researcher: …… **Signed:** …… **Date:** ……

When completed: 1 copy for participant; 1 original for researcher site file.

Consent form, v2: 18/02/2016

Appendix I: Demographic form

Demographic questionnaire, v1: 14/12/2015

Patient Identification Number:

An Investigation into suicidal thinking

Participant Information Questionnaire

1. Age: ……

2. I identify my gender as (circle as appropriate):
   Male **Female** **Trans** **Other** **Prefer to not say**

3. Telephone number:……

4. GP Name (including surgery name)……

5. GP Telephone number:……

6. Named worker:……

7. Named worker's telephone:……

8. Ethnicity (circle as appropriate):

WHITE
English/Welsh/Scottish/Northern Irish/British
Irish
Gypsy or Irish Traveller
Any other White background or ethnicity (please describe)……

MIXED/MULTIPLE ETHNIC GROUPS
White and Black Caribbean
White and Black African
Any other Mixed/Multiple ethnic backgrounds (please describe)……

ASIAN/ASIAN BRITISH
Indian
Pakistani
Bangladeshi
Chinese
Any other Asian (please describe)……

BLACK / AFRICAN / CARIBBEAN / BLACK BRITISH
African
Caribbean
Any other Black, African, Caribbean background (please describe)……

OTHER ETHNIC GROUP
Arab
Any other ethnic group (please describe).....

1. Do you have a mental health diagnosis? If so which.....
2. Have you ever attempted suicide in the past? If so, how long ago?.....
3. Are you currently accessing psychological therapy?.....
4. If not, have you accessed psychological therapy in the past?.....
5. Please indicate your highest academic achievement:

   - Higher Education & professional/vocational equivalents
   - A levels, vocational level 3 and equivalents
   - GCSE/O Level grade A*-C, vocational level 2 and equivalents
   - Qualifications at level 1 and below
   - Other qualifications: level unknown (including foreign qualifications)
   - No qualifications

Appendix J: Risk management protocol

PROTOCOL FOR MANAGING DISCLOSURE OF RISK

Rationale

During a session or other contact with the researcher a participant may indicate an intention to harm themselves or others. Alternatively, they may provide information to the effect that a child or other vulnerable person may be in danger. Any information of this nature **must** be acted upon.

At the beginning of each meeting the participant will be informed that what is discussed is private and confidential except if they indicate any current intention to harm themselves or others, or if they provide information to the effect that a child or other vulnerable person may be in danger. In such situations the researcher has a legal duty to break confidentiality.

If a participant indicates imminent risk during a face-to-face or telephone contact with the researcher (either verbally or via their questionnaire responses), the following action will be taken, depending on the particular setting within which risk is disclosed (i.e. hospital ward or community).

In-patient participants

In the case that the individual indicates current intention to harm themselves or others the action taken is to remind the participant of the staff member's Duty of Care to break confidentiality where risk is identified (as previously outlined at the commencement of the interview) and contact the appropriate Registered Nurse on the ward (ideally the participant's Named Nurse but in her/his absence the Registered Nurse in charge of the shift at that time) to verbally report the situation. This staff member should then document the incident in the participant's clinical notes.

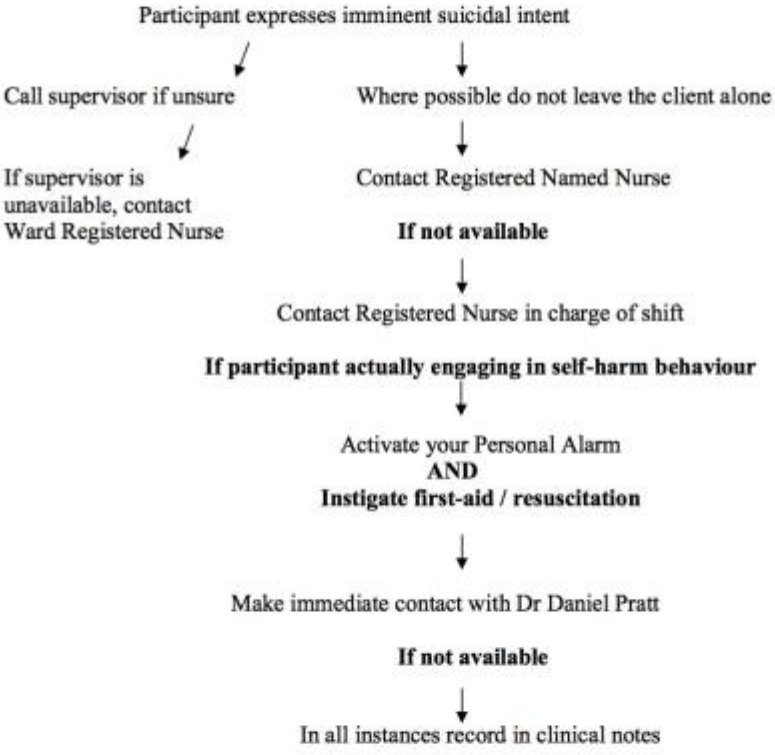
In situations where the researcher is uncertain of whether information disclosed by a participant constitutes a risk, contact should be made with Dr Daniel Pratt by phone who will advise on the appropriate action. If it is not possible to make contact with Dr Daniel Pratt before the researcher needs to leave, the ward the situation should be reported to the appropriate Registered Nurse (as above) and recorded similarly.

It is advisable for the researcher to also record details of the situation within the study master file. Identifying and managing disclosure of risk should always feature within supervision sessions.

The researcher should not carry out full Risk Assessments and must ensure ward staff understand that a formal Risk Assessment has not been done as this is their responsibility. The specific details of any risk disclosed will determine decisions of whether to stop the interview at that point or continue to the natural conclusion of the interview. Generally, this will be influenced by the participant's demeanour and level of distress and / or the researcher's level of perceived threat in situations where there is a risk of harm to others.

In a situation where a participant begins to engage in self-harm behaviour during an interview (e.g. ligaturing, cutting, taking medications etc.) the researcher should immediately activate their Personal Alarm, commence first-aid or resuscitative interventions if necessary and not leave the participant until ward staff have taken over. Such situations should be reported to Dr Daniel Pratt immediately. Documentary recordings should be made in line with Trust policies. Additional reports may need to be completed if it is determined to be a Serious Incident Requiring Investigation (SIRI). For such incidents research staff should participate in Trust procedures including Debriefing sessions and other staff support mechanisms.

FLOWCHART OF ACTIONS FOR IN-PATIENT PARTICIPANTS WITH IDENTIFIED IMMINENT SUICIDAL INTENT



Community participants

In the case that the individual indicates current intention to harm themselves or others the action taken is to remind the participant of the staff member's Duty of Care to break confidentiality where risk is identified (as already outlined at the commencement of the interview) and then contact their care co-ordinator/psychiatrist/named worker or GP. The immediacy of this action will depend upon the time frame involved.

If an imminent risk is identified, i.e. the individual reports that they intend to harm themselves within the **next 48 hours,** immediate action should be taken and the session should immediately change focus to the imminent threat. However, if the individual reports that they intend to act on their thoughts in a few days, or longer, action by the researcher may involve continuing with the session in light of the information discussed, reviewing how they are feeling at the end of the session and calling the care co-ordinator / psychiatrist / named worker following this.

If the individual indicates that a child / other vulnerable person may be in danger the action taken would be to call the appropriate safeguarding team.

In either eventuality the participant will be informed that confidentiality needs to be broken and, if at all possible, will be encouraged to work in collaboration with the staff member to this end.

Unless there are circumstances that would contraindicate (e.g. risk to safety of staff), the participant should be informed that this action is to be taken.

If this scenario occurs during a face-to-face contact the individual may be given the option of phoning their named worker themselves in the presence of the researcher or staying in the room whilst a call is made. Alternatively, the individual may choose to wait in a safe place such as an adjoining room. Based upon the telephone discussion the researcher will act on any part of the action plan generated that involves action on their part.

In the eventuality that the care co-ordinator / psychiatrist / named worker are not contactable a call should be made within the hours of 9am – 5pm Monday to Friday to the Duty worker for the appropriate Primary/Community Mental Health Team or outside of these hours a call should be made to the Crisis Team or A&E. Once again the worker will act in accordance with any action plan agreed. This may involve faxing information over to A&E, accompanying the individual to A&E etc.

If the scenario occurs during a telephone contact, the individual will be informed that confidentiality will need to be breached. The same plan as above will be implemented and the individual should be called back to feedback the planned actions.

In the eventuality that the individual discloses that a child / vulnerable adult may be in danger the appropriate safeguarding team should be contacted. If it is outside of 9am – 5pm and

there is considered to be imminent risk to a child / vulnerable adult the police should be informed.

If the worker is uncertain as to the appropriate course of action to take they should initially contact the project supervisor (Dr Daniel Pratt). If they are unavailable, the flow diagram of contacts should be followed.

In the unlikely event that all avenues are exhausted the worker should follow the previously outlined plan (commencing with contacting the Care Coordinator).

If the client is currently harming him or herself or has done so recently, and there is a need for medical attention, it would be important to negotiate with the client that they attend hospital or that they allow an ambulance to be called and call ahead to the psychiatric liaison team. The mental health team or duty psychiatrist would ensure that anyone refusing medical attention was assessed under the Mental Health Act. A decision regarding the need for a compulsory admission to hospital will then be made by an approved social worker in accordance with the Mental Health Act 1983.

If the participant or someone else admits to a serious previously unreported crime then it may be necessary to report this to staff or the police as soon as possible.

FACTORS TO CONSIDER IF A PARTICIPANT EXPRESSES HARM TO SELF OR OTHERS

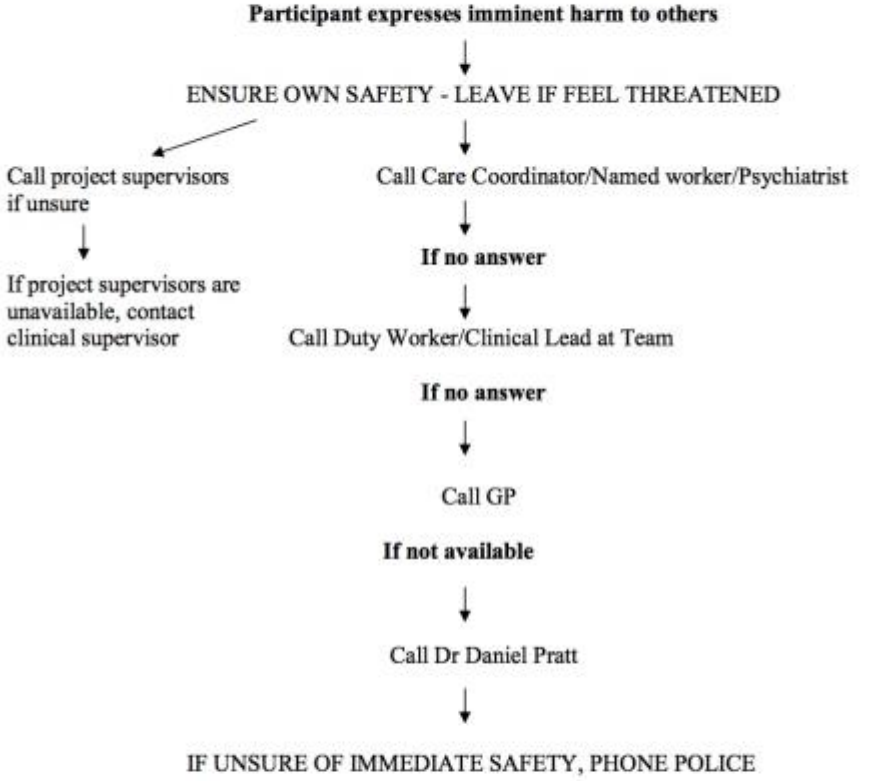
If a participant expresses ideas of harm to self or others these are important factors to consider and pass on:

- Ideation (frequency, intensity, duration, triggers)
- Plans/intent
- Access to means to carry out plans
- Timeframe
- Protective factors
- Access to support/isolation
- Hopelessness
- Drug or alcohol use
- Command hallucinations and perceived power or control over voices

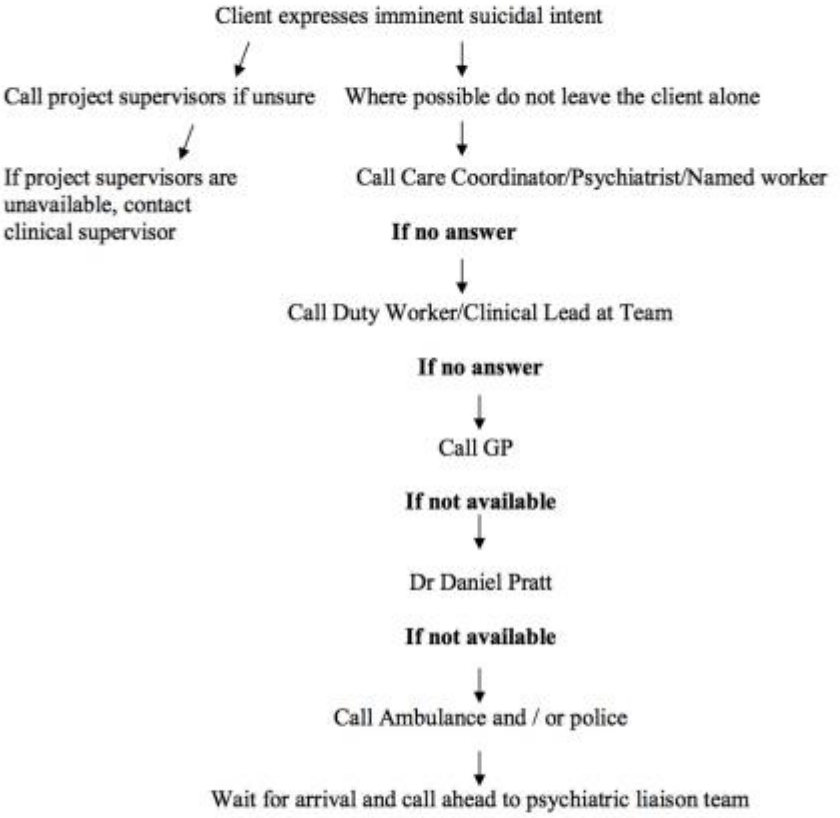
Any concerns should be discussed with the project supervisor as soon as possible.

FLOWCHART OF CONTACTS FOR COMMUNITY PARTICIPANTS WITH IDENTIFIED INTENT TO HARM OTHERS

In situations where a Child / vulnerable Adult is at risk the appropriate Safeguarding Team should be contacted.



FLOWCHART OF CONTACTS FOR COMMUNITY PARTICIPANTS WITH IDENTIFIED IMMINENT SUICIDAL INTENT



Appendix K: GP letter

GP letter v1: 19/12/2015

Section for Clinical and Health Psychology,
2nd Floor, Zochonis Building,
University of Manchester,
Oxford Road,
Manchester,
M13 9PL

Tel. 0161 9098200
Fax.0161 9098184

Dear GP,

Re: X

I am writing to inform you that the above client has agreed to take part in some research that I have organised in association with the University of Manchester. This study aims to further our understanding of the role of meta-cognition in the maintenance of suicidal thinking.

I have enclosed a participant information sheet for more information on exactly what the research entails.

If you have any further queries please do not hesitate to contact me.

Yours Sincerely,

Robert Hallard/Vikki Aadahl, Trainee Clinical Psychologist

Under the supervision of Dr Daniel Pratt, Clinical Psychologist

Appendix L: Ethical approval letter

NHS
Health Research Authority

North West - Lancaster Research Ethics Committee
Barlow House
3rd Floor
4 Minshull Street
Manchester
M1 3DZ

Telephone: 0207 104 8006

09 March 2016

Dr Daniel Pratt
Clinical Tutor
The University of Manchester
Division of Clinical and Health Psycholgy
2nd Floor, Zochonis Building
University of Manchester, Oxford Road
M13 9PL

Dear Dr Pratt

Study title:	**An experience sampling study of self-regulatory executive function and suicidal ideation**
REC reference:	**16/NW/0094**
IRAS project ID:	**193046**

Thank you for your letter of 07 March 2016, responding to the Committee's request for further information on the above research and submitting revised documentation.

The further information has been considered on behalf of the Committee by the Chair.

We plan to publish your research summary wording for the above study on the HRA website, together with your contact details. Publication will be no earlier than three months from the date of this opinion letter. Should you wish to provide a substitute contact point, require further information, or wish to make a request to postpone publication, please contact the REC Manager, Mrs Carol Ebenezer, nrescommittee.northwest-lancaster@nhs.net

Confirmation of ethical opinion

On behalf of the Committee, I am pleased to confirm a favourable ethical opinion for the above research on the basis described in the application form, protocol and supporting documentation as revised, subject to the conditions specified below.

Conditions of the favourable opinion

The REC favourable opinion is subject to the following conditions being met prior to the start of the study.

Management permission must be obtained from each host organisation prior to the start of the study at the site concerned.

Management permission should be sought from all NHS organisations involved in the study in accordance with NHS research governance arrangements. Each NHS organisation must confirm through the signing of agreements and/or other documents that it has given permission for the research to proceed (except where explicitly specified otherwise).

Guidance on applying for NHS permission for research is available in the Integrated Research Application System, www.hra.nhs.uk or at http://www.rdforum.nhs.uk.

Where a NHS organisation's role in the study is limited to identifying and referring potential participants to research sites ("participant identification centre"), guidance should be sought from the R&D office on the information it requires to give permission for this activity.

For non-NHS sites, site management permission should be obtained in accordance with the procedures of the relevant host organisation.

Sponsors are not required to notify the Committee of management permissions from host organisations

Registration of Clinical Trials

All clinical trials (defined as the first four categories on the IRAS filter page) must be registered on a publically accessible database within 6 weeks of recruitment of the first participant (for medical device studies, within the timeline determined by the current registration and publication trees).

There is no requirement to separately notify the REC but you should do so at the earliest opportunity e.g. when submitting an amendment. We will audit the registration details as part of the annual progress reporting process.

To ensure transparency in research, we strongly recommend that all research is registered but for non-clinical trials this is not currently mandatory.

If a sponsor wishes to contest the need for registration they should contact Catherine Blewett (catherineblewett@nhs.net), the HRA does not, however, expect exceptions to be made. Guidance on where to register is provided within IRAS.

It is the responsibility of the sponsor to ensure that all the conditions are complied with before the start of the study or its initiation at a particular site (as applicable).

Ethical review of research sites

NHS sites

The favourable opinion applies to all NHS sites taking part in the study, subject to management permission being obtained from the NHS/HSC R&D office prior to the start of the study (see "Conditions of the favourable opinion" below).

Approved documents

The final list of documents reviewed and approved by the Committee is as follows:

Document	*Version*	*Date*
Copies of advertisement materials for research participants [Poster for participants]	2	18 February 2016
Copies of advertisement materials for research participants [Poster for staff]	2	18 February 2016
Covering letter on headed paper [covering letter for re-submission]	1	04 March 2016
Evidence of Sponsor insurance or indemnity (non NHS Sponsors only) [Sponsor Insurance Letter]		21 January 2016

GP/consultant information sheets or letters [GP letter]	1	19 December 2015
GP/consultant information sheets or letters [GP letter (risk)]	1	19 December 2015
IRAS Checklist XML [Checklist_07032016]		07 March 2016
Letter from sponsor [Sponsor letter]		21 January 2016
Non-validated questionnaire [Demographic Questionnaire]	1	14 December 2015
Non-validated questionnaire [diary items (pre-pilot)]	1	14 December 2015
Other [Pre-validation queries re A54, A56, A13, A63]	E-mail	27 January 2016
Other [Risk Management Protocol]	1	14 December 2015
Other [Distress Policy]	1	14 December 2015
Other [Participant Support Contact Sheet]	1	19 December 2015
Other [Smartphone terms and conditions]	1	18 February 2016
Other [email to Lancashire Crisis Team]	1	19 February 2016
Other [email support from Dr Maisey, NHS]	1	08 July 2015
Participant consent form [Consent form]	2	18 February 2016
Participant information sheet (PIS) [PIS, NHS]	2	18 February 2016
Participant information sheet (PIS) [PIS, Non-NHS]	2	18 February 2016
REC Application Form [REC_Form_25012016]	5.2.0	25 January 2016
Referee's report or other scientific critique report [RSC approval email - student 1]		17 November 2015
Referee's report or other scientific critique report [RSC approval - Student 2]		17 November 2015
Referee's report or other scientific critique report [Stat Review Richard Emsley]		
Research protocol or project proposal [Study protocl]	1	14 December 2015
Summary CV for Chief Investigator (CI) [CV - Dan Pratt]		
Summary CV for student [CV, Student 1 Hallard]	1	
Summary CV for student [CV - Student 2 Vikki Aadahl]	1	14 December 2015
Summary CV for supervisor (student research) [CV - Supervisor Adrian Wells]		14 December 2015
Validated questionnaire [Beck Scales (Hopelessness, Suicide & Depression)]		
Validated questionnaire [Meta-cognitions Questionnaire 30]		
Validated questionnaire [Thought Control Questionnaire]		
Validated questionnaire [Defeat Scale]		
Validated questionnaire [Entrapment Scale]		
Validated questionnaire [Anxious Thoughts Inventory]		

Statement of compliance

The Committee is constituted in accordance with the Governance Arrangements for Research Ethics Committees and complies fully with the Standard Operating Procedures for Research Ethics Committees in the UK.

After ethical review

Reporting requirements

The attached document *"After ethical review – guidance for researchers"* gives detailed guidance on reporting requirements for studies with a favourable opinion, including:

- Notifying substantial amendments
- Adding new sites and investigators

- Notification of serious breaches of the protocol
- Progress and safety reports
- Notifying the end of the study

The HRA website also provides guidance on these topics, which is updated in the light of changes in reporting requirements or procedures.

User Feedback

The Health Research Authority is continually striving to provide a high quality service to all applicants and sponsors. You are invited to give your view of the service you have received and the application procedure. If you wish to make your views known please use the feedback form available on the HRA website: http://www.hra.nhs.uk/about-the-hra/governance/quality-assurance/

HRA Training

We are pleased to welcome researchers and R&D staff at our training days – see details at http://www.hra.nhs.uk/hra-training/

16/NW/0094	**Please quote this number on all correspondence**

With the Committee's best wishes for the success of this project.

Yours sincerely

Signed on behalf of:
Dr Lisa Booth
Chair

Email: nrescommittee.northwest-lancaster@nhs.net

Enclosures: "After ethical review – guidance for researchers"

Copy to: Ms Lynne Macrae

Ms Barbara Bishop, Cumbria Partnership Foundation Trust

Appendix M: Multivariate models when those who completed less than 1/3 of entries or trial participants were removed

The below models which offer a similar pattern of results as when all participants were included provide justification for the inclusion of all participants.

Concurrent associations between negative affect, hopelessness, defeat, entrapment and suicide ideation (n = 393)

Predictor variables (t)	**Outcome – average suicide ideation (t) (coefficient, (SE), p-value)**
Negative affect	0.524 (0.046) 0.000
Hopelessness	0.219 (0.056) 0.000
Defeat	0.303 (0.061) 0.000
Entrapment	-0.039 (0.060) 0.517

Concurrent associations between the metacognitive beliefs and suicide ideation (n = 389)

Predictor variables (t)	**Outcome – average suicide ideation (t) (coefficient, (SE), p-value)**
Cognitive confidence	0.129 (0.084) 0.123
Positive metacognitive beliefs	0.439 (0.064) 0.000
Negative metacognitive beliefs	0.527 (0.062) 0.000

Concurrent associations between metacognitive beliefs and suicide ideation when negative affect, hopelessness and defeat were controlled for (n = 388)

Predictor variables (t)	**Outcome – average suicide ideation (t) (coefficient, (SE), p-value)**
Positive metacognitive beliefs	0.196 (0.049) 0.000
Negative metacognitive beliefs	0.169 (0.052) 0.001

Appendix N: Additional criteria for risk of bias assessment

Selection Bias	**Strong:** If sampling technique allowed representative sample and high percentage agreed to take part (60%+) **Moderate:** If ***either*** sampling technique was not representative OR percentage agreement was not reported or low (60% or lower) **Weak:** If sampling technique was not appropriate and low/not reported percentage agreement
Study Design	**Strong:** Prospective **Moderate:** Cohort cross-sectional
Confounds	This was based on incorporation of constructs in analysis: **Strong:** Analysis incorporated demographics and psychological constructs **Moderate:** Analysis incorporated some demographics but no psychological constructs **Weak:** Analysis did not incorporate demographics or psychological constructs
Blinding	N/A
Data collection methods	**Strong:** If both measures were validated/reliable **Moderate:** If one measure was validated/reliable but the other was not **Weak:** If both measures were not validated or shown to be reliable
Drop outs	**Strong:** 80-100% completing the study **Moderate:** 60-79% **Weak:** Less than 60%
Intervention Integrity	N/A
Analyses	**Strong:** Multiple regression/ANOVA/MANOVA/MANCOVA controlling for the effect of important confounds **Moderate:** T-test (or equivalent) between groups of suicidal or not or correlation looking at relationship between two constructs **Weak:** Percentages of agreement presented for different groups (suicidal group versus non-suicidal for example)
Overall	**STRONG** (no WEAK ratings) **MODERATE** (one WEAK rating) **WEAK** (two or more WEAK ratings)