

Original research

Gender Differences in Risk and Protective factors for Resolved Plans and Preparations for Suicide among University Students

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Abstract: Background. Identifying the psychological predictors of suicide risk is essential because these variables may be amenable to change in treatment, unlike demographic or historical factors. Aims. The aim of this study was to examine the predictors of past two-week suicidal ideation for males and females separately. Method. Participants were 1184 healthy adults who completed an online survey. Results. A significant association between suicidal ideation and gender was found, such that mean levels were significantly higher in females than males. Separate regression analyses accounted for significant amounts of variance in suicide ideation, 54% for males and 68% for females. Moreover, the analyses revealed that suicide resilience Factor 2 (Emotional Stability) was a protective factor for both males and females; however, defeat, goal disengagement, and depression were independently associated with suicide ideation in males but not females. By contrast, entrapment, perceived burdensomeness, and hopelessness Factor 3 (Future Expectations) were significant risk factors only in females. Conclusions. The findings have clinical and practical implications, which may guide future practice, and supports the notion of targeted prevention and intervention strategies.

Keywords: Suicide ideation, risk and protective factors, gender differences, Integrated Motivational–Volitional Model (IMV)

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Introduction

In the United Kingdom, approximately 6,000 individuals die by suicide per year (Office for National Statistics, 2013). Furthermore, it is

estimated that for every suicide death there are approximately 25 suicide attempts (Crosby, Gfroerer, & Han *et al.*, 2011). Suicide is also a leading cause of death among university students, and a significant number of students report having experienced suicidal thoughts (American Foundation for Suicide Prevention, 2010). With such a large number of people experiencing

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suicidal behaviour, it is crucial that researchers and practitioners are better able to identify who is at risk in order to design effective intervention programs. Understanding of the psychological processes that underpin suicidal ideation is particularly important to inform interventions that address suicidal ideation when it first emerges, before it progresses to a suicide attempt (O'Connor & Nock, 2014).

Research consistently demonstrates that men are significantly more likely to die by suicide; whereas, the lifetime occurrence of suicidal ideation is significantly higher in women (e.g., Hawton, 2000). Despite this, gender has been largely neglected in prior research. Given that suicide is understood as a function of both emotional and cognitive vulnerabilities and that past studies revealed significant sex differences in emotionality (e.g., Kring & Gordon, 1998) and coping (see Tamres, Janicki, & Helgeson, 2002 for a review), it appears that pathways to suicidal ideation will likely differ for the two genders. To date, however, few studies have examined the factors that contribute to suicide ideation separately for males and females.

According to Joiner (2005), the desire to die by suicide is affected by two distinct psychological states, namely perceived burdensomeness and thwarted belongingness. While some research has found perceived burdensomeness to be a suicide risk factor for both genders (e.g., Donker, Batterham, & Van Orden *et al.*, 2014; Lamis & Lester, 2013), in a recent study, thwarted belongingness was associated with suicidal ideation only in females (Donker *et al.*, 2014). Evidence of gender-specific suicide risk factors was also provided by Lamis and Lester (2013) in their study of college students. Specifically, depression was found to be a significant suicide risk factor only in females, while alcohol-related problems and social support from family predicted suicidal ideation in males, but not in females. Similarly, Vasiliadis, Gagné, and Prévaille (2012) found that younger age, daily life stressors, chronic conditions, and antidepressant use were independently associated with suicide ideation in females but not males. By contrast, older age was significantly related to suicide ideation in males.

While the above studies are informative, most have included only a small number of variables, and have not drawn on theoretical models of suicide to guide variable selection. Thus, the use of a conceptual framework for organising known risk factors and for guiding a comprehensive examination of potential gender differences in

suicide risk and protective factors is likely to be advantageous. One such theoretical model is the integrated motivational-volitional model (IMV) of suicidal behavior (O'Connor, 2011).

The IMV model seeks to elucidate the complex interplay between factors leading to the formation of suicidal ideation and explains how such thoughts are translated into suicidal behaviour. The framework consists of three phases: premotivational, motivational, and volitional. The motivational phase is concerned with the factors related to the formation of suicidal thoughts and intention to end one's life. The IMV proposes that suicidal thoughts derive from feelings of entrapment where suicidal behaviour is seen as the salient solution to life circumstances. Feelings of entrapment, in turn, arise as a response to defeat/humiliation appraisals. Feelings of entrapment are exacerbated by specific state moderators (e.g., brooding rumination, poor problem solving, and attribution biases). In the presence of motivational moderators such as interpersonal states (i.e., perceived burdensomeness and thwarted belongingness), impaired subjective goals, and disrupted future positive thinking, such appraisals lead to suicidal ideation.

Method

The current study

The aim of the present study is to examine the predictive power of putative risk factors for suicidal ideation identified in the IMV model of suicidal behaviour. Important within this study is our focus on a theoretical model of suicidal behaviour and past 2-week suicide ideation. Previous studies have tended to look at risk factor in isolation (Van Orden *et al.*, 2010) and lifetime or past year history of suicidal ideation (e.g., Donker *et al.*, 2014; Vasiliadis *et al.*, 2012). We hypothesise that variables predicting suicidal ideation would differ between the sexes but make no specific hypotheses about the nature of these differences due to the paucity of literature in this area.

Participants

Participants were 1184 university students (657 females and 527 males) recruited from each of the seven faculties in a large UK university. Participants were aged between 18 and 63 years ($M = 27.72$; $SD = 10.08$). Most students identified themselves as White (81.8%), were currently in a relationship (54.5%), and described their sexual orientation as heterosexual/straight (78.4%).

Measures

Perceived burdensomeness and thwarted belongingness. Perceived burdensomeness and thwarted belongingness were measured with the 12-item version of the Interpersonal Needs Questionnaire (INQ; Van Orden, Witte, & Gordon *et al.*, 2008). The INQ assesses respondent's current beliefs about feeling connected to others and feeling like a burden on the people in their lives. Items are rated on a seven-point Likert scale. Internal consistency coefficients were found to be very good for both the burdensomeness ($\alpha = .93$) and the belongingness items ($\alpha = .86$).

Brooding rumination. Brooding, defined as the extent to which individuals passively focus on the reasons for their distress, was measured using the five items from the Response Styles Questionnaire (RSQ; Nolen-Hoeksema, 1991). Cronbach's α was .78

Defeat. Defeat was measured by the Defeat Scale, a self-report measure of 16 questions assessing individuals' perceptions of losing rank position and failed struggle during the past seven days, e.g., "I feel defeated by life" (Gilbert & Allan, 1998). Items are rated on a five-point scale. Cronbach's α was .96.

Entrapment. The Entrapment Scale is a self-report measure of 16 questions that assess motivation to escape, e.g., "I am in a situation I feel trapped in" (Gilbert & Allan, 1998). Items are rated on a five-point scale. Cronbach's α was .96.

Goal Reengagement and Disengagement. The goal adjustment scale (GAS; Wrosch, Scheier, & Miller *et al.*, 2003) is a 10-item instrument that consists of two subscales: (i) goal disengagement (4 items) and, (ii) goal reengagement (6 items). Goal disengagement measures one's perceived difficulty in reducing effort and relinquishing commitment toward unobtainable goals. The goal reengagement subscale taps one's perceived ability to reengage in other new goals if they face constraints on goal pursuits. Both subscales were internally consistent (Cronbach's $\alpha = .91$ and $.83$ for reengagement and disengagement, respectively).

Anxiety and Depression. The Hospital Anxiety and Depression Scale (HADS; Zigmond & Snaith, 1983) was employed to measure anxiety and depression. It consists of 14 questions, seven each to measure depression and anxiety. Cronbach's alphas were $.83$ and $.83$, respectively.

Hopelessness. Hopelessness was measured using the 20-item Beck Hopelessness Scale (BHS; Beck, Weissman, Lester, & Trexler, 1974). Respondents are asked to indicate either agreement or disagreement with statements that assess pessimism for the future. A three-factor solution to the BHS, based on Beck's (1974) original conceptualisation, was found to be the best fit to our data (Boduszek & Dhingra, 2015). Cronbach's alphas were $.88$ for Factor 1 (hopelessness about the future), $.80$ for Factor 2 (giving up), and $.73$ for Factor 3 (future uncertain).

Suicide resilience. Suicide resilience was assessed with the Suicide Resilience Inventory 25 (SRI-25; Osman, Gutierrez, & Muehlenkamp *et al.*, 2004). The SRI-25 is a 25-item self-report measure used to assess factors that help defend against suicidal thoughts and behaviours. The External Protective subscale ($\alpha = .94$) assesses people's positive perceptions or beliefs that they are able to seek help from those close to them should they experience suicidal thoughts; the Emotional Stability ($\alpha = .93$) subscale assesses people's positive perceptions or beliefs that they are able to resist acting on suicidal thoughts when experiencing them. The Internal Protective subscale ($\alpha = .93$) assesses people's satisfaction with life and positive feelings about themselves overall. Higher total scores indicating greater resilience against attempting suicide.

Resolved plans and preparations for suicide. The four-item Depressive Symptom Index – Suicidality Subscale (DSI-SS; Joiner, Pfaff, & Acres, 2002) was used to resolved plans and preparations for suicide made in the past two weeks. The DSI-SS consists of 4 items that assess the extent to which an individual is thinking about suicidal behaviour, has made a tangible plan for a suicide attempt, intends to engage in suicidal behaviour, and experiences impulses to engage in a suicide attempt. Items are scored on a 0 to 3 scale, with statements of increasing severity associated with each increasing number on the scale. We opted to include this measure in order to expand upon prior work which has not focussed on resolved plans and preparations, which are conceptualised as markers of imminent risk for suicide. Cronbach's α was $.92$.

Suicide attempt. A single item drawn from the self-report version of the Self-Injurious Thoughts and Behaviors Interview (SITBI; Nock, Holmberg, Photos, & Michel, 2007) was used to assess the presence of a lifetime history of suicide attempts. This items asks, "Have you ever made an actual

attempt to kill yourself in which you had at least some intent to die?”).

Procedure

The research protocol was reviewed and approved by the institutional ethics panel in advance of data collection, and ethical procedures were followed throughout the study. Participants were recruited via an email invite to participate in a study examining “the relationship between interpersonal beliefs and behaviour and suicide”. Within this email it was made clear to potential participants that they did not need to have experienced suicidal thoughts and behaviour to take part. Unfortunately, due to the use of a gatekeeper to distribute our recruitment email to students, it is not possible to calculate a response rate. Participants completed the survey online using Qualtrics, a Web interface that allows for secure remote data collection through the distribution of anonymous secure links to the protocol. Participants were required to consent before the survey was presented. Participation in the current study was voluntary and no inducements or obligations were used. All participants were debriefed in writing on the final page of the survey and given phone numbers for local mental health services, and telephone, postal and electronic contacts for useful support organisations. Data were collected between 2014 and 2015.

Analysis

T-tests were conducted to compare males and females on all continuous scales directly. To control for the number of comparisons, Bonferroni correction method was applied (significance set at $p < 0.003$). Following this, gender-specific multiple regression analyses were carried out to study the association between suicidal ideation and the predictor variables while controlling for age, relationship status, and sexual orientation. Pairwise deletion was used in order to deal with the missing data. All analyses were conducted in SPSS 22.

Results

Descriptive Statistics and T-tests

Of the overall sample of 1184 respondents, 230 (33.6%) reported having made at least one suicide attempt, and a score of 4 or higher on DSI-SS, which is indicative of clear elevation in suicide ideation (Joiner *et al.*, 2002) was reported by 149 (22.9%) respondents. The distribution of DSI-SS suicidality scores is reported in Table 1.

Table 1. *Distribution of DSI-SS suicidality scores*

Suicide ideation score	N	%
< 4	499	77.1
4	54	8.4
5	34	5.2
6	25	3.9
7	14	2.2
8	14	2.2
9	4	.6
10	2	.3
11	2	.3

Descriptive statistics, including means (*M*) and standard deviations (*SD*) for all continuous measures are presented in Table 2. Compared to females, males reported significantly lower scores on defeat, brooding rumination, anxiety, suicide ideation, and significantly higher scores on suicide resilience factor 2 (Emotional Stability). Males in the sample were also significantly younger than female participants.

Multiple regression

To test for the main effects of the risk and protective factors on suicide ideation, the independent variables were entered into two separate gender-specific regression models (Table 3). Preliminary analyses were conducted to ensure no violation of the assumptions of normality, linearity, multicollinearity and homoscedasticity. A test of the full model for males containing all predictor variables against the constant-only model was statistically significant, $F(18, 478) = 17.82, p < .001$, and explained 54 per cent of the variance in suicide ideation. As shown in Table 2, four independent variables made a unique statistically significant contribution to the model. Specifically, greater suicide ideation was associated with higher levels of defeat and depression, and negatively related to suicide resilience factor 2 (Emotional Stability) and goal disengagement. A test of the full model for females containing all predictor variables against the constant-only model was again statistically significant, $F(18, 605) = 36.72, p < .001$, and explained 68 per cent of the variance in suicide ideation. As shown in Table 2, five independent variables made unique statistically significant contributions to the model. Specifically, greater suicide ideation was associated with higher levels of entrapment and perceived burdensomeness, and negatively related to suicide resilience factor 2 (Emotional Stability), hopelessness factor 3 (Future Expectations), and sexual orientation.

Table 2. Descriptive statistics and t-test results for males (n = 527) and females (n = 657).

Variable	Males		Females		95% CI	t	Cohen's d
	M	SD	M	SD			
Defeat	35.41	12.37	38.67	13.84	-5.27/-1.28	-3.22*	.25
Entrapment	35.80	15.48	38.53	17.96	-5.28/-.18	-2.10	
Brooding rumination	12.14	3.53	13.17	3.75	-1.58/-.48	-3.69*	.28
Goal disengagement	11.09	3.67	10.45	3.40	.11/1.18	2.36	
Goal reengagement	20.44	5.21	20.25	5.21	-.60/1.00	.48	
Suicide resilience 1	37.52	10.93	35.56	11.97	.21/3.71	2.20	
Suicide resilience 2	41.18	7.83	38.15	9.96	1.66/4.39	4.35*	.34
Suicide resilience 3	36.36	10.45	35.61	11.42	-.92/2.43	.89	
Burdensomeness	18.17	10.15	19.09	11.82	-2.62/.77	-1.07	
Belongingness	21.07	8.01	21.64	8.02	-1.81/.67	-.90	
Hopelessness 1	2.11	1.99	2.31	2.05	-.50/.10	-1.30	
Hopelessness 2	1.89	2.24	2.22	2.59	-.69/.03	-1.78	
Hopelessness 3	2.97	1.89	2.98	1.96	-.30/.28	-.06	
Anxiety	16.07	4.47	17.70	4.70	-2.33/-.93	-4.58*	.36
Depression	12.65	4.17	13.17	4.67	-1.19/.16	-1.51	
Suicide Ideation	5.27	2.09	5.90	2.65	-1.00/-.27	-3.41*	.26
Age	25.08	9.45	30.14	10.03	-6.52/-3.59	-6.79*	.52

Note: * $p < .003$ (Bonferroni correction applied), Suicide resilience 1 = Internal Protective, suicide resilience 2 = Emotional Stability, suicide resilience 3 = External Protective, Hopelessness 1 = Feelings about the Future, Hopelessness 2 = Loss of Motivation, Hopelessness 3 = Future Expectations.

Table 3: Multiple regressions predicting suicide ideation for males and females separately.

	Males			Females		
	β	SE	B (95% CI)	β	SE	B (95% CI)
Defeat	.28**	.02	.05 (.01/.08)	.14	.02	.03 (-.01/.06)
Entrapment	.13	.01	.02 (-.01/.04)	.21**	.01	.03 (.01/.05)
Brooding rumination	-.11	.04	-.07 (-.14/.01)	.01	.03	.01 (-.06/.06)
Goal disengagement	-.09*	.02	-.05 (-.10/-.01)	-.05	.03	-.04 (-.09/.02)
Goal reengagement	.07	.02	.03 (-.01/.07)	.01	.02	.01 (-.03/.04)
Suicide resilience 1	-.03	.02	-.01 (-.04/.03)	.12	.02	.03 (-.01/.06)
Suicide resilience 2	-.21***	.02	-.06 (-.09/-.03)	-.35***	.01	-.09 (-.12/-.06)
Suicide resilience 3	-.03	.01	-.01 (-.03/.02)	-.04	.01	-.01 (-.03/.13)
Burdensomeness	.10	.01	.02 (-.01/.05)	.15**	.01	.03 (.01/.06)
Belongingness	.02	.02	.01 (-.03/.04)	.10	.02	.03 (-.01/.07)
Hopelessness 1	.13	.07	.13 (-.01/.27)	.13*	.08	.17 (.02/.32)
Hopelessness 2	.01	.07	-.10 (-.25/.06)	.08	.07	.08 (-.05/.21)
Hopelessness 3	-.09	.08	-.08 (-.23/.07)	-.14*	.08	-.19 (-.34/-.05)
Anxiety	.02	.03	.01 (-.05/.07)	.03	.03	.02 (-.34/-.04)
Depression	.17*	.04	.08 (.01/.16)	.08	.03	.05 (-.01/.11)
Age	-.02	.01	-.01 (-.03/.02)	-.03	.01	-.01 (-.03/.01)
Relationship	-.01	.20	-.04 (-.43/.36)	.01	.19	.08 (-.31/.46)
Sexual orientation	.01	.23	.05 (-.39/.50)	-.16***	.22	-1.01 (-1.44/-.58)

Note: * $p < .05$, ** $p < .01$, *** $p < .001$, Suicide resilience 1 = Internal Protective, suicide resilience 2 = Emotional Stability, suicide resilience 3 = External Protective, Hopelessness 1 = Feelings about the Future, Hopelessness 2 = Loss of Motivation, Hopelessness 3 = Future Expectation

Discussion

A considerable body of research has accumulated on the psychosocial and behavioural correlates of suicidal behaviour. However, a large proportion of previous studies have considered only a limited number of correlates or taken a gender-neutral perspective, and in doing so, assumed that the factors associated with suicide ideation are the same for males and females. The aim of the present research, therefore, was to examine potential gender differences in suicide ideation and its psychosocial correlates as implicated in the IMV model of suicidal behaviour.

Results of the univariate analysis indicated that, compared to females, males reported significantly lower scores on defeat, brooding rumination, anxiety, and significantly higher scores on suicide resilience factor 2 (Loss of Motivation). Consistent with previous research (e.g., Stephenson *et al.*, 2006), males also reported lower levels of suicide ideation than females. Multivariate analysis results revealed that suicide resilience was a protective factor (for both male and female students), which is consistent with Pietrzak, Goldstein and Malley *et al.* (2010). Importantly, and extending upon this previous research, the protective effect was specific to the Emotional Stability suicide resilience factor. This suggests that university students may not feel that they can approach or access support from others during times of suicidal crisis. Alternatively, as supported by the non-significant associations between suicide ideation and both perceived belongingness and relationship status (in both genders), a lack of connection may play less of a role in suicide ideation in students, who are typically surrounded by their peers, than in young adults living outside of academia (Larmis & Lester, 2013).

In the present study, depression was not associated with suicidal ideation in both males and females as has been reported in previous studies (e.g., Vasiliadis *et al.*, 2012), or with females only (Larmis & Lester, 2013). Instead, depression was significantly associated with suicide ideation in males only. Although the reasons for this disparity with the existing literature are unclear, it could be because we controlled for a larger range of variables than in previous research. The non-significant association between anxiety and suicide ideation in both genders may have arisen for a similar reason. This tentatively suggests that anxiety (in both males and females) and depression (in females) are not specific enough markers to differentiate suicidal respondents from controls when they are included in a model with

more proximal suicide markers (Dhingra, Boduszek, & O'Connor, 2015; O'Connor & Nock, 2014), and supports the assertion that we need to move beyond psychiatric categories and epidemiological risk factors to identify more specific markers of suicide risk (O'Connor & Nock, 2014).

The results offer some support for Joiner's (2005) theory in that perceived burdensomeness was associated with greater suicide ideation among females. However, the strength of the association between these variables was weak (.15), suggesting that other factors (e.g., defeat in males and entrapment in females) make a greater contribution to the prediction of suicide ideation among university students. Previous research has illustrated a link between hopelessness and suicidal ideation and behaviour (e.g., Boduszek & Dhingra, 2015; Hawton, Saunders, & O'Connor, 2012). Consistent with this, hopelessness Factor 3 (Future Expectations) was related to suicide ideation among females, but not males. This supports the research that suggests that positive future thinking is particularly important in the suicidal process (MacLeod, Pankhania, Lee, & Mitchell, 1997; O'Connor, Fraser, & Whyte *et al.*, 2008). Thus, for females, if they have fewer positive future expectancies (low rescue potential), this may increase suicide risk because it increases the likelihood that they perceive themselves to be in state of entrapment which is inescapable (see O'Connor, 2003). Specifically, fewer positive future expectancies is akin to a paucity of reasons for living, which, if present may 'rescue' people from misery, despair, and psychological pain by reducing feelings of entrapment. The finding of the pre-eminence of Future Expectations in the prediction of suicidal ideation is particularly important given the widespread use of measures of global hopelessness to assess suicide risk (see Boduszek & Dhingra, 2015). The non-significant association between goal re-engagement and suicide ideation, but significant relationship between Future Expectations and suicide ideations, suggests that positive future thoughts and goal reengagement perhaps do not represent different operationalisations of the same construct (i.e., future personal goals), as suggested by O'Connor *et al.* (2012).

The inability to relinquish unattainable personal goals has been reported to be detrimental to subjective wellbeing (Wrosch *et al.*, 2003) and to predict repetition of self-harm/suicide (e.g., O'Connor *et al.*, 2009). Consistent with this, our results suggest that males, but not females, experiencing higher levels of suicide ideation do

not disengage from unattainable goals. Although consistent with this line of research, our findings conflict with O'Connor and Forgan's (2007) finding from a clinical sample that goal reengagement is a stronger, independent predictor of suicidal risk than goal disengagement. It is important, therefore, for future research to investigate how goal management processes may differ by sample and the reasons for this.

Our findings have important implications for both suicide research and clinical work with individuals experiencing suicidal thoughts. The varying mean scores by gender and the differential correlates found in the current study suggest that there may be differing underlying gendered meanings of these cognitions. Additional research is thus required to examine these unique experiences in greater detail. Another important next step for research is to test the usefulness of these factors in prospective studies among other large samples, such as those presenting to general practitioners, accident and emergency departments, and psychiatric units. The cross-cultural validity of these results will need to be examined by conducting research with international samples, from both developing and developed countries. In particular, it is recommended that studies are conducted to identify pertinent gender-specific risk factors, particularly in countries that have a marked difference in the rates of female and male suicide. Our findings suggest the need to develop and provide separate interventions for males and females aimed at different factors. For instance, for males, in situations where the goals are unrealistic or unattainable, working with the individual to disengage from such goals in a safe manner and engage with new, more realistic positive future thinking may be beneficial. For females, cognitive strategies that target feelings of entrapment and burdensomeness may be more appropriate.

The results should be interpreted in the light of the study's limitations. First, our sample consisted solely of university students and it is unknown how these results would generalise to adults who are not students, as well as to people with documented psychiatric histories. Second, we are not able to confirm causal relations using cross-sectional data. An important next step, therefore, is to test the usefulness of these factors in prospective and longitudinal studies. Third, although we found similar rates of suicide ideation and attempts to previous studies (e.g., Tyssen, Vaglum, Grønvold, & Ekeberg, 2001), there may also have been a problem with selection bias.

While individuals with a history of suicidal behaviour may have been more likely to self-select into the study, we were ethically bound to inform potential participants about that nature of the study so that their decision to participate was fully informed. Finally, the fact that participants were students limits the generalisability of the results given that students are not representative of those who die by suicide. Consequently, there is a need to replicate the findings in other populations.

Nonetheless, these limitations were offset by several strengths including the large sample of students, which afforded us the opportunity to analyse the correlates of suicide ideation separately for males and females, the focus on past two weeks of suicide ideation, and the selection of variables based on a theoretical model of suicidal behaviour. Importantly, our results suggest that the correlates of suicide ideation differ between men and women. This knowledge may improve suicide risk evaluation and guide future research on suicide assessment and prevention, and support the utility of gender-sensitive suicide assessment, prevention and intervention strategies.

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