



An Examination of Social Comparison and Suicide Ideation Through the Lens of the Integrated Motivational–Volitional Model of Suicidal Behavior

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We aimed to investigate whether negative social comparisons are associated with key components of the integrated motivational–volitional (IMV) model of suicidal behavior. Specifically, we investigated the relationship between negative social comparisons, suicide ideation, defeat, entrapment, socially prescribed perfectionism, and resilience. Adult participants ($N = 422$) completed an online survey comprised of a range of psychological measures. An initial regression analysis indicated that negative social comparisons were associated with suicide ideation. Three mediation models were tested based on the IMV model, all controlling for depressive symptoms. In the first, social comparison partially mediated the relationship between socially prescribed perfectionism and defeat. In the second, defeat mediated the relationship between negative social comparisons and entrapment, and resilience moderated the relationship when defeat was high. In the final model, entrapment mediated the relationship between defeat and suicide ideation, with resilience moderating this relationship when entrapment was high. These findings are novel and lend support to the IMV model. The clinical implications include highlighting the importance of targeting resilience given its potential association with defeat and entrapment.

Suicide remains a major public health concern, with around 804,000 deaths per annum worldwide (World Health Organisation, 2014), yet our knowledge of the specific markers of risk is limited (Franklin et al., 2017). There is general recognition that we

need to move beyond mental disorders and embrace more sophisticated explanatory models of suicide that highlight the complex interplay of risk and protective factors (O’Connor & Nock, 2014). Of particular interest, from a psychosocial perspective, is

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how people interact with their social environment and how this may lead to harmful psychological consequences (e.g., Lynch, Smith, Kaplan, & House, 2000). Indeed, how we perceive ourselves compared to others, and the resulting social rank, has long been recognized as important in the etiology of well-being (e.g., Festinger, 1954). More recently, research has established that individuals with depression (Gilbert & Allan, 1998) and those who self-harm (Gilbert, McEwan, Bellew, Mills, & Gale, 2009) tend to make more unfavorable social comparisons with others. Therefore, the extent to which we perceive ourselves negatively compared with others is a good candidate for understanding suicidal thoughts and behaviors.

THEORIES OF SOCIAL COMPARISON

From a theoretical perspective, a number of attempts have been made to understand why we make social comparisons and how they influence well-being. For example, social comparison theory (Festinger, 1954) states, “there exists, in the human organism, a drive to evaluate his opinions and abilities.” Therefore, comparing oneself with others is intrinsic to how an individual acquires an accurate assessment of themselves. Indeed, a key assessment tool in this area, the Social Comparison Scale (SCS; Allan & Gilbert, 1995), arguably taps into aspects of the self that are integral to one’s identity (e.g., attractive, competent). Social rank theory (SRT; Price, 1972) also has the making of social comparisons as a central tenet. Rooted within an evolutionary perspective, SRT suggests that mood disorders such as depression are an adaptive response to losing rank within social groups; subordinate group members (i.e., those who compare negatively) display submissive behaviors (defeat) to de-escalate conflicts for resources. Therefore, making negative social comparisons, and the resulting perceptions of being of lower rank, may make an individual feel defeated and trapped in their environment (Gilbert & Allan, 1998).

This may be linked to the “arrested flight” phenomenon within the ethological literature, whereby a stress reaction resulting from feeling defeated becomes chronic, leading to entrapment (Dixon, 1998). With respect to humans, findings from an extensive review (Taylor, Gooding, Wood, & Tarrier, 2011) and recent meta-analysis (Siddaway, Taylor, Wood, & Schulz, 2015) indicate that there is considerable evidence that perceptions of defeat and entrapment are important factors in understanding mood disorders such as depression and anxiety.

INTEGRATED MOTIVATIONAL-VOLITIONAL MODEL OF SUICIDAL BEHAVIOR

In recent years, the concepts of defeat and entrapment have been applied to understanding suicidal behavior. In particular, the cry of pain hypothesis of suicide (Williams, 1997) suggests that when an individual feels defeated and trapped by their circumstances then thoughts of suicide may become more salient. Building on this, other models and explanations of suicidal behavior have incorporated these facets, including the schematic appraisals model of suicide (SAMS; Johnson, Gooding, & Tarrier, 2008) and the integrated motivational-volitional model of suicidal behavior (IMV; O’Connor, 2011; see Figure 1). The SAMS suggests that situation and self-appraisals may influence suicidal thoughts and behaviors; in particular, that appraising a situation as defeating and entrapping may increase suicidal risk, and positive or negative self-appraisals may decrease or increase risk (Johnson, Gooding, Wood, & Tarrier, 2010). The IMV model is a tri-partite (premotivational, motivational, and volitional phases) diathesis-stress model that, consistent with the ideation-to-action framework (Klonsky & May, 2014), identifies key constructs that aid the understanding of why suicide ideation emerges and the transition from ideation to suicide attempt, including factors that act to moderate this transition (O’Connor, 2011; O’Connor, Cleare, Eschle,

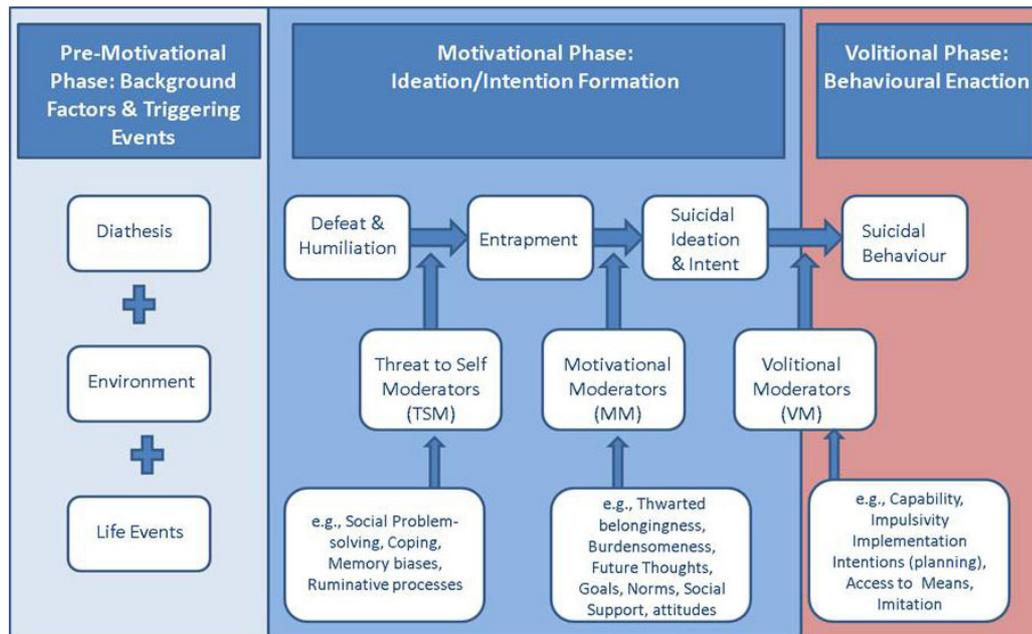


Figure 1. The integrated motivational-volitional model of suicidal behavior (O'Connor, 2011).

Wetherall, & Kirtley, 2016). Therefore, the IMV model extends the cry of pain hypothesis (Williams, 1997) by mapping out the detailed path from defeat/humiliation to entrapment and from suicide ideation to suicide attempts.

In brief, the premotivational phase of the IMV model describes the background context (e.g., deprivation, genetics, vulnerabilities, negative life events) in which suicide ideation may develop. Next, the motivational phase identifies the factors that lead to the development of suicide ideation, including moderators that facilitate the transition from defeat to entrapment and from entrapment to suicide ideation. The final volitional phase of the model outlines the factors that increase or decrease the likelihood that someone acts on their thoughts of suicide; these volitional phase factors include impulsivity, exposure to suicide, and acquired capability for suicide. There is growing evidence for the pathways and processes described in the IMV model. Within the motivational phase, defeat and entrapment are associated with suicidal thoughts and attempts (O'Connor, 2003; O'Connor & Portzky, 2018; Rasmussen

et al., 2010; Taylor, Gooding, Wood, Johnson, et al., 2011), and in a longitudinal study, feeling trapped was a proximal predictor of repeat suicidal behavior over a 4-year period (O'Connor, Smyth, Ferguson, Ryan, & Williams, 2013). In addition, there is some evidence that entrapment mediates the relationship between defeat and suicide ideation (Rasmussen et al., 2010). Drawing from SRT, we propose that the process of social comparison acts as a premotivational factor which influences factors within the motivational phase of the model. Negative social comparisons may provide situational cues for feeling of lower rank, making an individual more likely to interpret life events and difficulties in such a way that they feel defeated or entrapped (Carvalho et al., 2013).

Socially Prescribed Perfectionism

Included within the premotivational phase of the IMV model (Figure 1) are personality and individual differences factors that are hypothesized to render individuals differentially sensitive to environmental signals that indicate defeat and entrapment

(O'Connor, 2011). Socially prescribed perfectionism is a key example in this regard; it is defined as the belief that others hold unrealistically high expectations for you and your behavior (Hewitt & Flett, 1991), and high levels of this form of perfectionism are consistently linked to suicide ideation and behavior (for reviews, see Flett, Hewitt, & Heisel, 2014; O'Connor, 2007; for a meta-analysis, see Smith et al., 2017). It has been suggested that those who are high on self-critical or perfectionistic traits are more likely to perceive defeat and less likely to accept this defeat (Sturman, 2011). Indeed, an earlier study has found that the relationship between self-criticism and depressive episodes was mediated by an involuntary subordination variable, comprised of social comparison and entrapment, indicating that these factors may act as an important mechanism (Sturman & Mongrain, 2005). Additionally, the perfectionism social disconnection model (PSDM; Hewitt, Flett, Sherry, & Caelian, 2006) suggests that interpersonal problems may act as mechanisms for the relationship between perfectionism and negative outcomes such as suicidal thoughts and behaviors (e.g., Roxborough et al., 2012). As there is evidence that perfectionism is associated with making more negative social comparisons (Sturman, 2011; Wyatt & Gilbert, 1998), this study proposes that the relationship between socially prescribed perfectionism and the motivational phase factors of the IMV, such as defeat, may be mediated by making negative social comparisons.

Resilience

Additionally, the IMV model also describes a range of factors (labeled in Figure 1 as *threat to self*, *motivational*, and *volitional* moderators) that facilitate or buffer movement between defeat and entrapment, and from suicide ideation to suicidal behavior (Dhingra, Boduszek, & O'Connor, 2015; O'Connor, 2011; O'Connor, Smyth, & Williams, 2015). Although most research has focused on risk factors, understanding the protective factors that may reduce

suicide risk is imperative, and resilience is one such protective factor which has received attention in the field (e.g., Johnson et al., 2010). *Resilience* is defined as the ability to thrive despite adversity and bounce back from stressful life events (e.g., Campbell-Sills & Stein, 2007). Indeed, factors that increase resilience, such as coping and problem solving, appear to have a moderating relationship with suicidal outcomes (Johnson, Wood, Gooding, Taylor, & Tarrier, 2011). Recent evidence indicates that being higher on such resilience constructs is associated with lower suicide ideation and behavior (Bezdjian, Burchett, Schneider, Baker, & Garb, 2015; Dhingra, Boduszek, & O'Connor, 2016). Although there is some debate around how resilience is operationalized (Bonanno, 2012), a body of literature suggests that resilience is a pervasive construct, and it moderates both defeat and entrapment's relationship with established risk factors such as hopelessness (Gooding et al., 2015). Therefore, in the context of the motivational phase of the IMV model, we propose that a resilience construct that taps directly into the ability to bounce back or recover from stress would moderate the transition from defeat to entrapment (i.e., a *threat to self-moderator*) and from entrapment to suicide ideation (i.e., a *motivational moderator*).

The Current Study

We aimed to investigate how making negative social comparisons (i.e., feeling of lower rank) is related to suicide ideation within the context of the IMV model. Specifically, in this study we investigated IMV variables that may mediate (explain how or why a relationship occurs) and moderate (change the strength of the relationship between two variables) the relationship between comparing negatively with others (social comparison) and suicide ideation. As suggested, negative social comparisons may act as a premotivational variable that has influence within the motivational phase; therefore, it was tested as a mediator of socially prescribed perfectionism and defeat.

Also within the motivational phase of the IMV model, defeat was investigated as a mediator of the negative social comparisons–entrapment relationship. Finally, entrapment was tested as a mediator of the defeat leading to suicide ideation relationship. Both of the final models included resilience as a moderating variable in the final pathway, as per the threat to self and motivational moderators within the IMV model. Therefore, we tested four hypotheses:

- H1 Negative social comparisons would be associated with suicide ideation.
- H2 Negative social comparisons would mediate the relationship between socially prescribed perfectionism and defeat.
- H3 Defeat would mediate the relationship between negative social comparison and entrapment, with resilience moderating the defeat to entrapment pathway.
- H4 Entrapment would mediate the relationship between defeat and suicide ideation, with resilience moderating the entrapment to suicide ideation pathway.

METHOD

Participants and Procedure

This study employed a cross-sectional design. The data were collected via an online survey between February and March 2015. Participants were mainly students (undergraduate and postgraduate) recruited from the College of Medical, Veterinary and Life Sciences (MVLS) at the University of Glasgow. Participants were invited to take part in “a study about social comparison and psychological well-being” by email and as an incentive were entered into a prize draw to win £100 worth of high street shopping vouchers. Ethical approval was provided by the MVLS ethics committee. All participants provided informed consent

prior to taking part in the survey. Due to the sensitive nature of some of the survey questions, all participants were presented with the contact details for support organizations at the end of the study.

The sample ($N = 422$) was predominantly female (83.6%; $n = 381$), White (85.1%; $n = 388$), heterosexual (86.6%, $n = 395$), and single (80.7%, $n = 368$); highest education level was secondary school (48.2%, $n = 220$) or degree (47.1%, $n = 215$). The age range was 16–61 years ($M = 22.87$ years, $SD = 5.2$ years). Around 32% ($n = 133$) had experienced suicidal thoughts within their lifetime, and 14% ($n = 60$) within the last year.

Measures

Current Suicide Ideation. The Suicide Probability Scale–Suicide Ideation Subscale (SPS; Cull & Gill, 1988) was used to measure current suicide ideation. The subscale is composed of eight items that describe particular feelings and behaviors (e.g., “I think of suicide”), with the respondent indicating how often each statement applies to them on a 4-point scale (*None or a little of the time* to *All of the time*). The suicide ideation subscale of the SPS has shown good validity (Cull & Gill, 1988) and in this study displayed high internal consistency (Cronbach’s $\alpha = 0.88$).

History of Suicide Ideation. Information about participants’ history of suicide ideation was based upon two items taken from the Adult Psychiatric Morbidity Survey (McManus, Meltzer, Brugha, Bebbington, & Jenkins, 2007): “Have you ever seriously thought of taking your life, but not actually attempted to do so?” with a further question establishing when (*Past week, Past year, Longer ago*). These items have been used in multiple household surveys and are well established.

Social Comparison. The SCS (Allan & Gilbert, 1995) assesses comparisons based on judgments of social rank, relative attractiveness, and group fit. Using a semantic differentiation approach, individuals rate

how they feel relative to others on 11 bipolar constructs (e.g., “Inferior”—“Superior”) on a 10-point scale. A higher score indicates a more favorable rating compared to others. The SCS has been found to have high internal consistency (Allan & Gilbert, 1995) and to have concurrent validity with other psychological measures such as the defeat and entrapment scales (ESs; e.g., Gilbert & Allan, 1998). In this study, it displayed high internal reliability (Cronbach’s $\alpha = 0.94$).

Defeat. The defeat scale is a 16-item self-report measure (Gilbert & Allan, 1998) designed to tap into perceptions of failed struggles and loss of social standing. Participants were asked to indicate on a 5-point Likert-type scale (*Never* to *Always*) the degree to which the items represent their thoughts and feelings over the last 7 days (e.g., “I feel defeated by life”). The measure has been widely used and has demonstrated concurrent validity with other measures of social rank (Griffiths, Wood, Maltby, Taylor, & Tai, 2014). In the study, the measure displayed high reliability ($\alpha = 0.95$).

Entrapment. The ES (Gilbert & Allan, 1998) assesses how trapped an individual feels by their circumstances. This measure consists of 16 self-report items (e.g., “I feel powerless to change myself”; “I am in a relationship that I can’t get out of”). Participants indicate on a 5-point scale the extent to which they endorse each statement (*Not at all like me* to *Extremely like me*). The scale has displayed concurrent validity with other measures of social rank (Griffiths et al., 2014) and had high internal reliability in this study (Cronbach’s $\alpha = 0.96$).

Socially Prescribed Perfectionism. Socially prescribed perfectionism (MPS-Social; Hewitt & Flett, 1990) is a 15-item subscale of the Multidimensional Perfectionism Scale, assessing the extent to which individuals perceive that others demand perfection from them. Participants rate the extent to which they agreed or disagreed on a 7-point scale (e.g., “The people around me expect me to succeed at everything I do”). The MPS has exhibited good validity and reliability in many studies (Hewitt & Flett, 1991). In this

study, the scale showed good internal reliability (Cronbach’s $\alpha = 0.87$).

Resilience. The Brief Resilience Scale (Campbell-Sills & Stein, 2007) is a 10-item measure of resilience (e.g., “Can deal with whatever comes”) with five response options (*Not true at all* to *True nearly all the time*). This measure has good internal consistency and construct validity and displays good psychometric properties (Campbell-Sills & Stein, 2007). In this study, the scale displayed high internal reliability (Cronbach’s $\alpha = 0.92$).

Depressive Symptoms. Depressive symptoms were assessed with the Center for Epidemiologic Studies Depression Scale-Revised (CESD-R, Eaton, Smith, Ybarra, Muntaner, & Tien, 2004) adapted from the original CES-D (Radloff, 1977). This is a 20-item measure assessing symptoms of depression (e.g., “I could not get going”). Respondents rated the number of days over the past week they felt a particular way on a 5-point scale (*Not at all/Less than 1 day* to *nearly every day for 2 weeks*). The adapted tool is a valid measure of depressive symptoms in the general population (Van Dam & Earleywine, 2011) and has exhibited good psychometric properties (Eaton et al., 2004). In this study, it showed good internal reliability (Cronbach’s $\alpha = 0.91$).

Statistical Analysis

Data analysis was conducted using the statistical package SPSS version 22 (IBM Corp., Armonk, NY). An individual’s data was excluded for any scale in which they did not complete at least 75% of the items; as there is no consensus around what percentages of missing data are acceptable in surveys of this kind, at a research team meeting, we agreed on 75% as an appropriate cutoff for completeness. Therefore, 41 (9%) participants were excluded, and the only demographic difference between these was on ethnicity ($t(75.08) = -2.84, p < .001$), with those excluded being almost exclusively White (95%). After removing those who had not completed at least 75% of each

individual scale, 0.14% of data were missing. The patterns of missing data were checked against demographic characteristics, and there was no systematic bias in the missingness, indicating that the data were missing at random. Therefore, the expectation–maximization algorithm was applied to replace missing items. This is an iterative method used to estimate the parameters of a statistical model and has been shown to be suitable for this type of missing data (Tsikriktsis, 2005). As some participants did not complete all of the measures, the analyses included have different sample sizes (see Figure 2). A sensitivity analysis was also completed with no imputed data, and no differences in the pattern of results were found.

Initial correlation analyses were conducted to test the associations between all study variables. Linear regression analysis was used to test the first hypothesis that making negative comparisons was associated with suicide ideation, and also to test the direct effects of hypotheses 2–4; that is, all predictor variables were associated with the outcome variables before taking mediators or moderators into account. All regressions controlled for depressive symptoms. To further explore each hypothesis, three models were tested using Hayes' (2013) PROCESS macro for SPSS. The PROCESS macro uses regressions to test mediation and moderation effects within models, and bootstrapping to estimate the confidence intervals as these yield inferences that are more accurate and better reflect the irregularity of sampling design. Hayes (2013) suggested that this is best repeated thousands of times, as this will more accurately reflect the sample population, and therefore, all analyses used a minimum of 10,000 bootstraps. This method rigorously tests the pathways for mediation and moderation, including the indirect effects, direct effects, and tests of simple slopes. The first model was a mediation model testing negative comparisons as a mediator of the relationship between socially prescribed perfectionism and defeat. The second model was a moderated mediation model testing defeat as a mediator of

negative comparisons and entrapment, with resilience as a moderator of the defeat and entrapment relationship. The final model was a moderated mediation model testing entrapment as a mediator of the defeat to suicide ideation relationship, and resilience as a moderator of entrapment to suicide ideation. To ensure that these relationships are not accounted for by depressive symptoms, these were controlled for in all analyses.

RESULTS

Correlation Analysis

Correlations (Pearson's r) between all study variables are presented in Table 1, along with the means and standard deviations. All of the psychological variables were significantly associated with each other in the predicted directions.

Negative Social Comparisons Would Be Associated with Suicide Ideation (Hypothesis 1)

A linear regression analysis was conducted to test the first hypothesis. Social comparison was negatively associated with suicide ideation ($\beta = -0.001$, $t = -3.13$, $CI = -0.001$ to 0.000 , $p = .002$), suggesting that those who made more negative social comparisons were more likely to experience suicide ideation. This held when controlling for depressive symptoms.

Negative Social Comparisons Would Mediate the Relationship Between Socially Prescribed Perfectionism and Defeat (Hypothesis 2)

A mediation model was used to test the second hypothesis; an initial regression testing the direct effect of the model indicated that, before taking into account the mediator, higher scores on socially prescribed perfectionism were significantly associated with defeat ($\beta = 0.127$, $t = 4.265$, $CI = 0.069$ – 1.26 , $p < .001$).

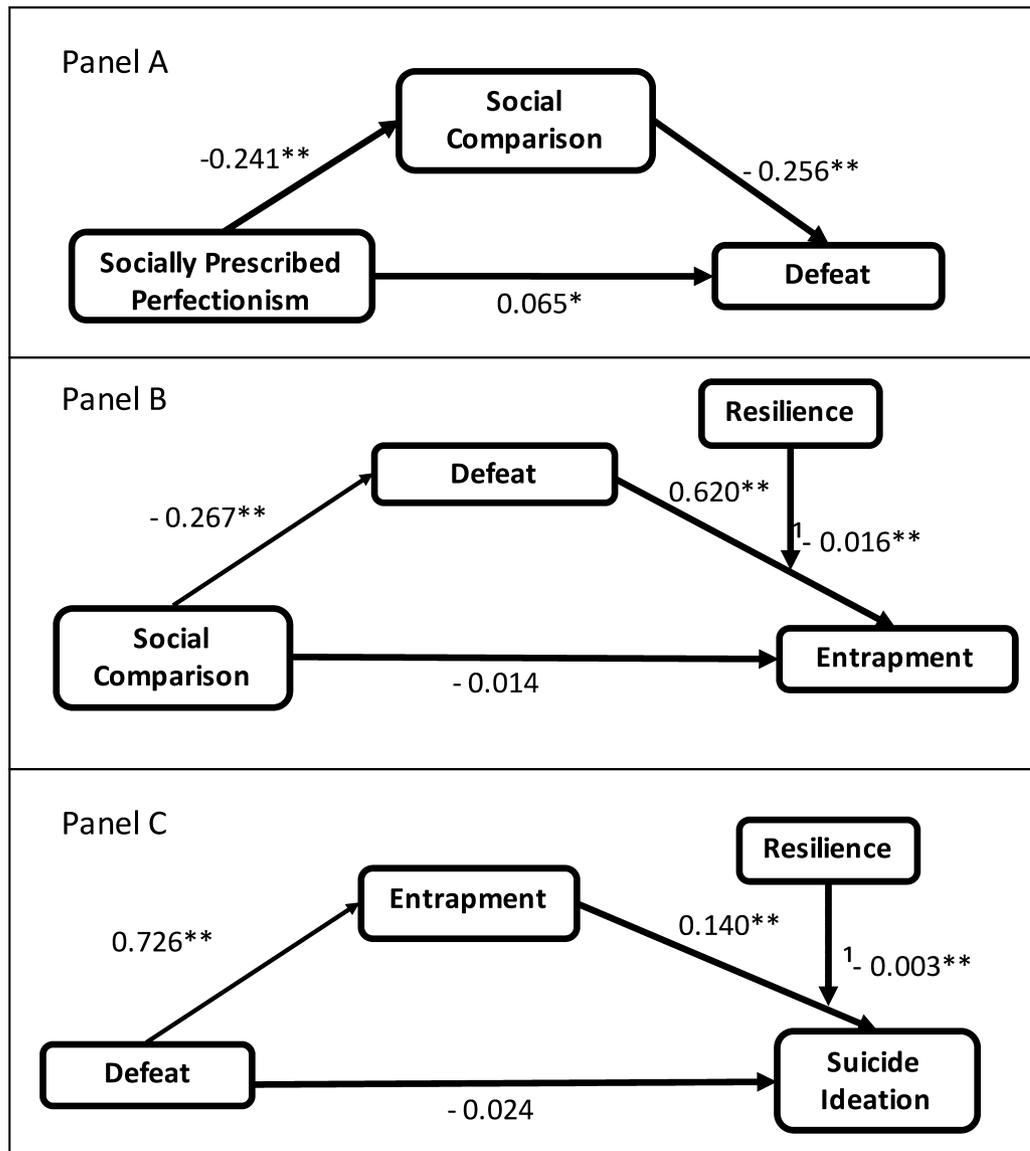


Figure 2. Panel A—Mediation analysis of social comparison on the relationship of perfectionism and defeat ($N = 422$), Panel B—Moderated mediation analysis of defeat on the relationship of social comparison and entrapment, with resilience as a moderator ($N = 415$), Panel C—Moderated mediation analysis of entrapment on the relationship of defeat and suicide ideation, with resilience as a moderator ($N = 415$). Unstandardized β values reported, $^*p < .05$, $^{**}p < .001$. 1 Defeat \times resilience interaction, 2 entrapment \times resilience interaction. Depressive symptoms are controlled for in all analyses.

As is evident in the mediation model (Figure 2, Panel A), socially prescribed perfectionism was significantly associated with social comparisons ($\beta = -0.241$, $t = -4.935$, $CI = -0.338$ to -0.145 , $p < .001$) and the association between social comparisons and defeat was also significant ($\beta =$

-0.256 , $t = -9.452$, $CI = -0.309$ to -0.203 , $p < .001$). The addition of social comparison did not reduce the direct effect of socially prescribed perfectionism on defeat to nonsignificance ($\beta = 0.066$, $t = 2.347$, $CI = 0.011$ – 0.120 , $p = .019$). As the indirect effect of social comparisons was significant

TABLE 1
Means, Standard Deviations, and Correlations (Two-Tailed Pearson r) of All Study Variables ($N = 422$)

	Suicide ideation	Depressive symptoms	Social comparison	Defeat	Entrapment	Perfectionism	Resilience
Suicide ideation	—						
Depressive symptoms	0.62**	—					
Social comparison	-0.45**	-0.61**	—				
Defeat	0.59**	0.72**	-0.69**	—			
Entrapment	0.64**	0.71**	-0.60**	0.82**	—		
Perfectionism	0.35**	0.43**	-0.45**	0.44**	0.45**	—	
Resilience	-0.43**	-0.50**	0.62**	-0.64**	-0.56**	-0.39**	—
Means (<i>SD</i>)	9.98 (3.32)	12.30 (9.64)	57.34 (17.72)	17.93 (12.42)	13.50 (14.41)	58.82 (15.01)	25.46 (8.16)

** $p < .001$.

($\beta = 0.062$, $SE = 0.014$, $CI = 0.036-0.092$), this indicates that social comparisons partially mediated the relationship between socially prescribed perfectionism and defeat.

Defeat Would Mediate the Relationship Between Negative Social Comparison and Entrapment, with Resilience Moderating the Defeat to Entrapment Pathway (Hypothesis 3)

A further moderated mediation model was used to test the third hypothesis. An initial regression confirmed the direct effect of this model, as lower scores on social comparison were associated with higher entrapment scores ($\beta = -0.212$, $t = 6.337$, $CI = 0.000$ to -2.78 , $p < .001$).

Figure 2 (Panel B) shows that social comparison was significantly associated with defeat ($\beta = -0.267$, $t = -10.035$, $CI = -0.319$ to -0.215 , $p < .001$), and defeat was significantly associated with entrapment ($\beta = 0.620$, $t = 11.202$, $CI = 0.511-0.729$, $p < .001$). The inclusion of defeat in the model reduced the direct effect of social comparison on entrapment to nonsignificance ($\beta = -0.014$, $t = -0.445$, $CI = -0.078$ to 0.049 , $p = .656$), suggesting mediation.

Additionally, the interaction of defeat and resilience was significant ($\beta = -0.016$, $t = -4.629$, $CI = -0.023$ to -0.009 , $p < .001$), indicating that resilience moderates the relationship between defeat and entrapment. The simple slopes (the relationship between defeat and entrapment at 1 *SD* below and above the mean of resilience) analysis indicates that at high ($\beta = -0.201$, $SE = 0.029$, $CI = -0.261$ to -0.147) and low ($\beta = -0.130$, $SE = 0.027$, $CI = -0.189$ to -0.084) levels of resilience, defeat is related to entrapment. To clarify, Figure 3 (Panel A) indicates that when defeat is low, levels of resilience do not impact upon the defeat-entrapment relationship. However, when defeat is high, lower resilience is associated with higher entrapment. Therefore, entrapment is highest for those who are high in defeat and low in resilience. The index of moderated mediation also indicates there is

evidence of a conditional relationship of the moderator (resilience) and the mediator (defeat) when influencing the outcome (entrapment), ($\beta = 0.004$, $SE = 0.001$, $CI = 0.002-0.007$).

Entrapment Would Mediate the Relationship Between Defeat and Suicide Ideation, with Resilience Moderating the Entrapment to Suicide Ideation Pathway (Hypothesis 4)

A final moderated mediation model was specified to test the fourth hypothesis. This model's direct effect was found to be significant, as higher defeat was associated with higher suicide ideation ($\beta = 0.003$, $t = 6.244$, $CI = 0.002-0.004$, $p < .001$).

Figure 2 (Panel C) indicates that defeat was significantly associated with entrapment ($\beta = 0.726$, $t = 15.664$, $CI = 0.635-0.817$, $p < .001$), and entrapment was associated with suicide ideation ($\beta = 0.140$, $t = 5.92$, $CI = 0.094-0.187$, $p < .001$). The inclusion of entrapment reduced the direct effect of defeat on suicide ideation to nonsignificance ($\beta = 0.024$, $t = 1.326$, $CI =$

-0.012 to 0.060 , $p = .178$), suggesting mediation.

The interaction between entrapment and resilience was also significant ($\beta = -0.003$, $t = -3.340$, $CI = -0.005$ to -0.001 , $p < .001$), indicating that resilience moderates the relationship between entrapment and suicide ideation. The simple slopes analysis (the relationship between entrapment and suicide ideation at 1 SD below and above the mean of resilience) indicates that at low levels of resilience ($\beta = 17.280$, $SE = 0.063$, $CI = 0.038-0.091$), higher entrapment was associated with higher suicide ideation, whereas at high levels of resilience, it was not ($\beta = 33.61$, $SE = 0.027$, $CI = -0.007$ to 0.061). As Figure 3 (Panel B) displays, it is when entrapment is high and resilience low that suicide ideation is at its highest. The index of moderated mediation ($\beta = 0.002$, $SE = 0.001$, $CI = -0.004$ to 0.000) crossed zero, suggesting no evidence of a conditional relationship of the moderator (resilience) and the mediator (entrapment) when influencing the outcome (suicide ideation). Therefore, although they interact, one is not necessary for the other to influence suicide ideation.

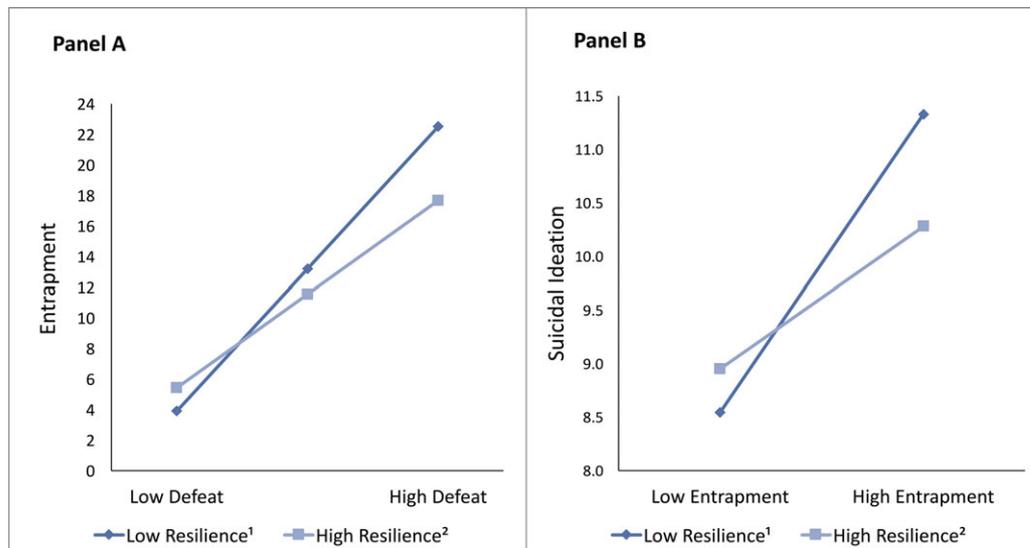


Figure 3. Panel A—Moderation of resilience on the relationship of defeat to entrapment ($N = 415$), Panel B—Moderation of resilience on the relationship of entrapment to suicide ideation ($N = 415$). ¹Mean -1 standard deviation, ²mean $+1$ standard deviation. Depressive symptoms are controlled for.

DISCUSSION

This is the first study to investigate the relationship between social comparison processes, resilience, socially prescribed perfectionism, and suicide ideation through the lens of the integrated motivational–volitional model of suicidal behavior (O’Connor, 2011). We found support for all four hypotheses. An initial regression analysis supported the first hypothesis that making negative social comparisons, and therefore feeling of lower rank, would be associated with higher suicide ideation. This held when controlling for depressive symptoms, and is consistent with previous findings that those who self-harm (Gilbert et al., 2009) are more likely to make negative social comparisons.

In exploring how negative social comparisons are related to suicide ideation, we found support for the final three hypotheses by testing three models derived from the pathways within the IMV model (O’Connor, 2011). The first model found support for hypothesis 2, suggesting that negative social comparisons partially mediate the relationship between socially prescribed perfectionism and defeat. This finding suggests a potential mechanism whereby a premotivational trait factor like perfectionism may increase suicide risk through its association with motivational phase factors. Indeed, as the second model confirms, negative social comparisons were associated with feelings of defeat and entrapment. In support of hypothesis 3, defeat mediated the relationship between negative social comparisons and entrapment. This suggests that if an individual feels they are of a lower social standing, they may become increasingly defeated and this may lead to feelings of entrapment. Importantly, resilience moderated the relationship between defeat and entrapment, influencing only when defeat was high, suggesting that the possible buffering effect of resilience is only activated when feelings of stress are high.

Finally, findings from the third model tested lend some support to hypothesis 4, based upon the motivational pathways

within the IMV model. Entrapment mediated the relationship between defeat and suicide ideation, indicating that it is a key potential mechanism to explain how feeling defeated by life circumstances may lead to suicide ideation. Additionally, resilience moderated the relationship between entrapment and suicide ideation. This potential buffering effect was only found when feelings of entrapment were high; in particular, being low in resilience was associated with higher suicide ideation, although the index of moderated mediation indicated that the relationship was not conditional. These findings suggest that the aspect of resilience measured in this study, the ability to bounce back from life stresses, may tap into aspects of the *threat to self-moderators* as well as the *motivational moderators*, as highlighted in the IMV model.

As well as adding to the growing literature lending support to facets of the IMV model (e.g., Dhingra et al., 2015), this study is novel as it is the first to investigate how making negative social comparisons relates to suicide ideation as well as examining potential mechanisms underpinning this relationship. It could be argued that individuals who compare more negatively view themselves as lacking compared to others on enduring attributes of their self-identity, and this may be particularly harmful for those who also perceive a pressure to be perfect. Although we did not test this directly, the findings also suggest that social perfectionism may predispose an individual to be more attuned to, and to react more negatively to, stressful life events. Indeed, a recent study with adolescents highlighted the diathesis-stress aspects of perfectionism, indicating that more daily hassles interacted with perfectionism for increased suicide potential (Hewitt, Caelian, Chen, & Flett, 2014). Another useful perspective is the PSDM (Hewitt et al., 2006), which suggests that factors related to interpersonal problems and social disconnectedness act as mechanisms for perfectionism leading to negative outcomes, such as depression (Goya Arce & Polo, 2016) and suicide ideation

(Roxborough et al., 2012). Much research has indicated that perfectionism is a consistent risk factor for suicide ideation (Flett et al., 2014; O'Connor, 2007; Smith et al., 2017), but not many factors have been found that can account for this. In this vein, we suggest that making negative comparisons may be a mechanism for an individual high on perfectionist traits to feel defeated and entrapped, and ultimately increase risk of suicide ideation. Indeed, future research should further investigate the association between these social rank factors and perfectionism, as the present findings indicate that they may be particularly useful in understanding the nature of the relationship.

Taking a wider theoretical perspective, SRT (Price, 1972) suggests that environmental pressures may lead to the triggering of the involuntary defeat strategy (Sloman, 2000); a hardwired adaptive strategy that leads to lower ranked individuals displaying submissive behaviors to a dominant other. It is argued that this evolutionary behavior can misfire (Gilbert, 2001), with the feelings of defeat becoming chronic and the resulting entrapment leading to the emergence of mood disorders and suicide ideation (Williams, 1997). Our article lends support to this literature, as it suggests that a proxy for feeling of lower social rank (i.e., negative social comparisons) may be associated with defeat and entrapment, and by extension to other negative outcomes such as suicide ideation. Additionally, a multivariate regression (not reported) of all study variables indicated that only entrapment, along with depressive symptoms, uniquely contributed to the variance in suicide ideation scores. Therefore, in line with previous findings, and the IMV model, entrapment is proximally associated with suicide ideation and thereby a key mechanism by which defeat may lead to suicide ideation. In sum, we propose that when an individual perceives that they are lacking on important attributes, and therefore rank themselves as lower than others, that they are more likely to perceive defeat and experience feelings of entrapment, key

concepts in the development of suicide ideation (Taylor, Gooding, Wood, & Tarriner, 2011).

In addition to extending the literature on the IMV model, this study has clinical implications, particularly given the evidence for the buffering effect of resilience. The findings suggest that resilience acts as a moderator especially when stress is present, and therefore, targeting this factor early on may act to reduce feelings of entrapment, which may therefore impede the emergence of suicide ideation. Recently, there has been some debate around the operationalization of resilience as a construct. Bonanno (2012) argued that although it may be a measurable trait, often personality factors do not generally account for actual behavior. Further, Bonanno suggested that resilience is a stable pattern of healthy adjustment following an adverse event, only to be measured in temporal proximity to this event. The present study measured resilience as a trait; although our findings suggest that the buffering effect is activated when defeat and entrapment are high and therefore during or after potentially adverse feelings. In their review, Johnson et al. (2011) suggested a number of potential resilience factors that could be targeted, including emotional intelligence (Cha & Nock, 2009) and problem-solving skills (Clum & Febraro, 1994). Indeed, therapy for individuals with posttraumatic stress disorder directly targets resilience (Burton, Cooper, Feeny, & Zoellner, 2015), therefore it is important for future research to explore these protective factors to help vulnerable people cope with feelings of defeat, entrapment, and suicide ideation.

Limitations

This study utilized a cross-sectional design, and future research could improve these findings by employing a prospective design. Although the directionality of the relationships tested are all based on a theoretical model, they could arguably be reversed; for example, defeat may lead to more negative comparisons, or entrapment may make

individuals feel more defeated. Therefore, the addition of multiple time points would also ensure that the variables within each of the models could be placed chronologically in the analysis and more accurately pinpoint the causal and meditational pathways. The sample was relatively homogenous, being mainly young, female, and White, and this potentially restricts the generalizability of the findings. For example, there may be gender differences that could be explored further, as factors such as social comparison and perfectionism may manifest in distinct ways in men and women due to differences in social and cultural expectations. Additionally, consistent with other nonclinical studies of suicidality, the suicide ideation data were skewed, so it would be useful to replicate these findings in a nonskewed sample. Therefore, recruiting a sample that more fully represents the general population or from a clinical population would also clarify the extent to which the study's findings can be generalized to wider populations.

A further limitation of the data is that they were all self-report, and therefore, they would have been affected by demand characteristics. Furthermore, some of the questions raised were sensitive in nature, and participants may have had concerns about confidentiality, although the online format of the questionnaires meant that there was no face-to-face disclosure. Finally, this study employed suicide ideation as the outcome variable; the suicide ideation subscale of the SPS is a recognized measure of suicide

ideation, although arguably it includes some indirect items tapping more passive suicidal thinking (e.g., "I feel people would be better off if I was dead"). Therefore, future research could usefully extend the present research using alternate measures of suicide ideation (e.g., Beck Scale for Suicide Ideation; Beck, Kovacs, & Weissman, 1979). Additionally, as the focus was on ideation rather than behavior, further research should determine whether these factors differentiate between subgroups of those at risk of suicide and investigate the extent to which these factors hinder/facilitate the transition from suicide ideation to suicide attempt.

Conclusions

In sum, we suggest that making negative social comparisons may act as a mechanism whereby trait factors within the premotivational phase of the IMV model may influence factors within the motivational phase of the model. Negative social comparisons may therefore be related to suicide ideation by acting through defeat and entrapment. The findings imply that the emergence of entrapment and suicide ideation may be buffered by resilience, suggesting this may be a potential target for early intervention. Overall, the findings are consistent with the central tenets of the IMV model of suicidal behavior, which maps out the final common pathway to suicide ideation and behavior.

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