



Prospective Predictors of Suicidality: Defeat and Entrapment Lead to Changes in Suicidal Ideation over Time

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Theoretical perspectives into suicidality have suggested that heightened perceptions of defeat and entrapment lead to suicidality. However, all previous empirical work has been cross-sectional. We provide the first longitudinal test of the theoretical predictions, in a sample of 79 students who reported suicidality. Participants completed self-report measures of suicidal ideation, depression, defeat, and entrapment at two time points, approximately 12 months apart. People higher in defeat became more suicidal over time ($\beta = .45$), with baseline levels of suicidality and depressive symptoms controlled. The current results support the posited role of perceived defeat in driving suicidal ideation.

Suicidal ideation is highly prevalent, with recent epidemiological data suggesting a 2 weeks prevalence of almost 10% in Europe (Casey et al., 2008). This constitutes a major health concern. Suicidal ideation at one time point is a known predictor of further suicidal ideation and behavior at subsequent time points (Reinherz, Tanner, Berger, Beardslee, & Fitzmaurice, 2006; Williams, Crane, Barnhofer, Van der Does, & Segal, 2006). Moreover, suicidal ideation is a highly distressing experience, associated with a heightened psychopathology (Reinherz et al., 2006) and is, therefore, in itself a valid target for clinical intervention (TARRIER, Taylor, & Gooding,

2008). In considering the psychological mechanisms underlying suicidal thinking, several theorists have focused on perceptions of defeat and entrapment (e.g., Johnson, Gooding, & TARRIER, 2008; Taylor, Gooding, Wood, & TARRIER, in press; Williams, 1997). Defeat is characterized by perceptions of failed struggle related to the loss of status or identity, whereas entrapment describes an overlapping construct characterized by the perceived inability to move forward or escape (Gilbert & Allan, 1998; Taylor, Wood, Gooding, Johnson, & TARRIER, 2009). Defeat and entrapment may lead to suicidal thinking as a possible escape route from these seemingly irreparable and unbearable circumstances (Baumeister, 1990). The current study is the first to investigate the relationship between these variables and changes in suicidal ideation over time.

The concepts of defeat and entrapment originate in evolutionary models of depression (Gilbert, 2001; Gilbert & Allan, 1998; Sloman, Gilbert, & Hasey, 2003; Taylor et al., in press). Entrapment is derived from the concept of “arrested flight,”

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whereby a powerful motivation to escape, driven by threat-related psychobiological systems, is blocked (Gilbert, 2001; Gilbert & Allan, 1998; Sloman et al., 2003). These psychobiological threat systems remain active in the absence of an escape route, producing a highly stressful and aversive entrapped state (Gilbert, 2001; Sloman et al., 2003). Perceptions of defeat are believed to occur due to evolved sensitivities to rank and status that can produce psychobiological changes in response to the failure or loss of status-related goals (Gilbert & Allan, 1998; Rhode, 2001; Sloman, 2000; Sloman et al., 2003). The hypothalamic-pituitary-adrenal axis that governs the human stress response is believed to be important in these psychobiological responses (Gilbert, 2000; Sloman et al., 2003).

The concepts of defeat and entrapment share some parallels with psychoanalytic approaches to suicide. In Maltzberger's (2004) model of the descent into suicide, the state of lost control and disintegration, which follows a period of struggling against a deluge of negative affect, seems phenomenologically similar to the concepts of defeat and entrapment in as much as a sense of failed struggle and powerlessness is emphasized.

Perceptions of defeat and entrapment have been cross-sectionally linked with a heightened risk of suicidal ideation and behavior in parasuicidal participants, suicidal ideating students, adolescents, and individuals diagnosed with schizophrenia spectrum disorders (O'Connor, 2003; Park et al., 2010; Rasmussen et al., 2010; Taylor, Wood, Gooding, & Tarrier, 2010; Taylor, Gooding, Wood, Johnson, Pratt, & Tarrier, 2010). Moreover, these perceptions have shown incremental validity over hopelessness, another notable psychological risk factor for suicide, in the prediction of depression and suicidality (Gilbert & Allan, 1998; Taylor, Gooding, et al., 2010; Taylor, Wood, et al., 2010). Hopelessness is a cognition focused on the likelihood of future events, and does not capture the motivation to escape or sense of diminished status that is important to defeat and entrapment (Gilbert & Allan, 1998).

A fundamental problem with the existing literature exploring defeat, entrapment, and suicidal ideation is the absence of prospective designs. Without such studies it is not possible to make inferences concerning the direction of causality. This is problematic because, although it is plausible that heightened perceptions of defeat and entrapment would provoke suicidal ideation, it is also conceivable that experiencing suicidal ideation is in itself an entrapping and defeating experience. This is the first study we are aware of to prospectively test the association between defeat, entrapment, and suicidal ideation.

The current study focuses on a subset of students who self-reported some degree of existing suicidality, in line with previous research into the mechanisms underlying suicidality (Johnson, Gooding, Wood, & Tarrier, 2010; Taylor, Wood, et al., 2010). By the term *suicidality*, we refer to any suicidal activity, including ideation and behavior, based on the assumption that all these activities reside on a continuum whereby ideation leads to planning, which then leads to suicidal acts (Taylor, Wood, et al., 2010). As current suicidality is an important predictor of future suicidality, it can be argued that those who report some degree of suicidal thinking or behavior are distinct from those who have never experienced suicidality in terms of their future risk (Kerr, Owen, & Capaldi, 2008; Lau, Segal, & Williams, 2004) and thus represent an important group to focus on. Moreover, the problem of suicide in student populations is one that has been increasingly recognized by U.K. higher education authorities (Grant, Kester, Donnelly, & Hale, 2002), as well as by researchers in the United States and Australia (Schweitzer, Klayich, & McLean, 1995). Understanding the precipitants of suicidality in this population is therefore valuable for university-based counselors and therapists. Consequently, students reporting suicidality represent a subgroup that is both clinically and theoretically important in the study of suicide.

The aim of this study was to test whether perceptions of defeat and entrap-

ment predicted change in suicidal ideation in a sample of students with some degree of self-reported suicidality, over a 12 month period. A 12-month follow-up period was chosen to ensure that there was adequate variability in the measure of suicidal ideation, since suicidal ideation can be highly stable over time (Williams et al., 2006). It was hypothesized that perceived defeat and entrapment would lead to greater suicidal ideation over time, providing the first evidence of temporal precedence in this relationship. Perceptions of defeat and entrapment are also associated with depressive symptoms (Gilbert & Allan, 1998; Sturman & Mongrain, 2005, 2008). Consequently, any effect that defeat and entrapment have upon suicidal ideation could primarily be a consequence of co-occurring depressive symptoms. Depressive symptoms were therefore controlled for in the present study to account for this possibility. A secondary analysis was also undertaken to test whether thoughts of suicide may themselves contribute to greater perceptions of defeat and entrapment over time. This analysis provided an indication of whether the relationship between defeat/entrapment and suicidal ideation was uni-or bidirectional.

Previous studies conducted by our research group have treated defeat and entrapment as indicators of a single latent variable (Taylor, Gooding, et al., 2010; Taylor, Wood, et al., 2010), based on factor analytic evidence (Taylor et al., 2009). Consistent with these prior analyses, we conducted a tertiary analysis examining whether defeat and entrapment, treated as a single latent variable, could prospectively predict suicidal ideation at follow-up, controlling for baseline suicidal ideation and depressive symptoms.

METHOD

Participants and Procedure

The sample consisted of 79 students from a major English university who took part in the research in exchange for course-

related credits (13 men; $M_{\text{age}} = 19.61$ years, $SD = 4.45$). These individuals responded to advertisements on a study investigating suicide and met the inclusion criterion of having a total score of ≥ 4 on the Suicidal Behaviours Questionnaire-Revised (SBQ-R; Osman et al., 2001). This measure assesses a range of suicidal activities, including ideation, attempts, intent, and communication of self-harm. A score of ≥ 4 indicates some endorsement of these suicidal activities. This criterion has been effectively employed in prior suicide research as a means of identifying a subgroup of students who have experiences of suicidality (Johnson et al., 2010; Taylor, Wood, et al., 2010). This approach differs from arbitrarily selecting some pre-existing level of suicidal behavior (e.g., suicide attempts) as a means of identifying an at-risk sample. Participants completed all measures at two time points, spaced approximately 12 months apart. Six participants failed to complete the measures at follow-up and were excluded from the longitudinal analyses. A favorable review was obtained from a university ethics committee for this study prior to recruitment.

Measures

The Defeat Scale (Gilbert & Allan, 1998) is a 16-item self-report instrument assessing perceptions of failed struggle and low social rank over the previous week (“I feel that I have given up”). Ratings are made on a 5-point scale, scored from 0 to 4, with higher scores indicating greater defeat. Internal consistency for this measure was $\alpha = .95$, with a test-retest reliability using the Intra-class Correlation Coefficient (ICC) of $r_{\text{icc}} = .50$ over the 12-month study period. The Entrapment Scale (Gilbert & Allan, 1998) is a 16-item self-report instrument assessing perceptions of psychological entrapment (“I feel powerless to change things”). Ratings are made on a 5-point scale, scored from 0 to 4, with higher scores indicating greater entrapment. The Entrapment Scale was initially developed as two subscales, measuring internal and external

entrapment (Gilbert & Allan, 1998); however, previous work in the area of suicide has used a full score comprising the sum of both subscales (e.g., Rasmussen et al., 2010; Taylor, Wood, et al., 2010). As no hypothesis was made in this study concerning the distinction between internal and external entrapment, the full entrapment score was used in this instance. Internal consistency for this measure was $\alpha = .95$, with a test-retest reliability of $r_{1cc} = .50$ over the 12-month study period.

Depressive symptoms were measured via the Beck Depression Inventory second edition (BDI-II; Beck, Steer, & Brown, 1996). This is a widely used 21-item self-report measure assessing a range of depressive symptoms. Symptoms are rated for their severity over the past 2 weeks on a 3-point scale, with higher scores indicating greater depression. Scores on the BDI-II have been found to correlate highly with interview-rated depressive symptoms ($r = .90$) in clinical student samples (Sprinkle et al., 2002). To avoid confounding depression and suicidal ideation, scores on the single item assessing suicidal ideation on this scale were subtracted from the total score. Internal consistency for this measure was $\alpha = .90$, with a test-retest reliability of $r_{1cc} = .37$ over the 12-month study period.

Suicidal ideation over the past 12 months was assessed using the second item of the revised Suicidal Behaviours Questionnaire (SBQ-R (Osman et al., 2001). The SBQ-R is a 4-item questionnaire that assesses a variety of suicidal thoughts, feelings, and behaviors over the lifetime, with possible scores ranging from 3 to 18. The second item alone was utilized in the present study to assess suicidal ideation, with the total score only used to screen participants, as outlined above. The second item measures suicidal ideation across a 12-month period, equivalent to the follow-up period of the study (“How often have you thought about killing yourself in the past year?”). Responses to this item are scored on a 5-point scale from 1 (*never*) to 5 [*very often (5 or more times)*]. The other items of the SBQ-R assess-

ment were inappropriate for the present study as they focus on lifetime indicators of suicide risk (e.g., “Have you ever thought about or attempted to kill yourself?”) and thus referred to behaviors that may have predated the 12-month study period. These questions were therefore not used in the analyses.

Statistical Analysis

The data were analyzed using multiple hierarchical regression. The measure of suicidal ideation was positively skewed in the present study (skew = 1.78 at follow-up). Such skew can violate the assumptions of normal parametric inferential testing. Consequently, a nonparametric approach to inferential testing was undertaken in the current study using bootstrapping to generate 95% confidence intervals (CI) for regression coefficients and the squared semi-partial correlation coefficients (ΔR^2). Bootstrapping generates CI through a process of re-sampling at random from the original data set (2,000 times in the present study following recommendations by Mooney & Duval, 1993). Bootstrapping has been recommended as the method of choice in situations where normal parametric assumptions may not hold, including situations where the data are skewed (Mooney & Duval, 1993).

The CI for the regression coefficients was generated using STATA version 10 (*bootstrap_b* command; Stata Corporation, College Park, TX). These CI indicate significance when values do not cross zero. CI for the squared semi-partial correlation coefficients were based on the modified bootstrap method suggested by Algina, Keselman, and Penfield (2007, 2008) and generated using the program developed by the same authors. The modified bootstrap sets a lower limit of zero on ΔR^2 in situations where inadmissible solutions could otherwise occur. A lower limit of zero therefore indicates a nonsignificant ΔR^2 . This method has been found to be more accurate than the standard bootstrap method (Algina et al., 2007).

The analysis whereby defeat and entrapment were conceptualized as a single

latent variable was achieved by analyzing the covariance matrix in structural equation modeling software, AMOS version 7.0 (Arbuckle, 2006). Good fit with the data would be indicated by a nonsignificant chi-square and scores $<.09$ on the standardized root mean squared residual (SRMR) and $>.95$ on the Comparative Fit Index (CFI; Hu & Bentler, 1999). However, it is important to note that the non-normal data in this study are likely to bias these fit indices. For example, there is evidence that the chi-square test and associated fit indices are more likely to favor the rejection of the model when data are non-normal (Wang, Fan, & Willson, 1996). That is, the fit indices are likely to be worse, counting against our hypothesis. As with the other analyses, we used bootstrapping to determine the significance of the coefficient for the longitudinal effect of the latent defeat/entrapment variable on suicidal ideation at follow-up and this result will therefore be more robust against the non-normality in the data.

RESULTS

Descriptive statistics and Spearman's correlations for all variables are reported in Table 1. Twenty-four participants (32.88%) reported one or more instance of suicidal ideation at follow-up (score ≥ 2 on ideation measure), and 11 of these reported multiple instances (15.07%). Baseline defeat had a marginally stronger correlation with suicidal

ideation at follow-up than entrapment ($r_s = .48$ vs. $.40$), but this difference was not significant, $t(70) = 1.18, p > .10$.

Predicting Suicidal Ideation

Two multiple hierarchical regression analyses were conducted with suicidal ideation at follow-up as the outcome. Suicidal ideation and depression at baseline were included as covariates in the first step, and either defeat or entrapment was entered in the second step. Thus, the depression and defeat/entrapment variables predict the variance in suicidal ideation at follow-up that is not shared with suicidal ideation at baseline (i.e., the residualized changes in the variable over time).

The first step, including suicidal ideation and depression at baseline, resulted in $f(2, 70) = 28.50, p < .01$, and $R^2 = .67$. Including defeat as a predictor made a significant improvement in the variance explained in suicidal ideation in this model, $\Delta R^2 = .07$ (95% $CI_{\text{bootstrap}} = 0.003-0.207$). In contrast, including entrapment as a predictor did not make a significant improvement to the model, $\Delta R^2 = .02$ (95% $CI_{\text{bootstrap}} = 0.000-0.125$). The regression coefficients and associated CI for all variables in the regression are reported in Table 2. Greater perceived defeat was significantly associated with greater suicidal ideation at follow-up covarying for baseline ideation and depression. In summary, perceptions of defeat, but not those of entrapment, successfully predicted

TABLE 1
Descriptive Statistics and Spearman's Correlations for Variables in the Study

	<i>M</i>	<i>SD</i>	2	3	4	5	6	7
1. Suicidal ideation (baseline)	1.58	0.98	.60*	.60*	.60*	.37*	.34*	.62*
2. Suicidal ideation (follow-up)	1.55	0.93		.48*	.40*	.50*	.55*	.38*
3. Defeat (baseline)	17.04	12.44			.79*	.55*	.58*	.73*
4. Entrapment (baseline)	14.46	15.35				.51*	.56*	.73*
5. Defeat (follow-up)	14.53	10.75					.80*	.50*
6. Entrapment (follow-up)	10.34	13.42						.47*
7. Depression (baseline)	11.46	8.67						

* $p < .05$.

TABLE 2
Regression Coefficients and Bootstrapped 95% CI for Variables in the Analysis

Step ^b	Variable	<i>B</i>	Bootstrap 95% CI for <i>B</i> ^a		β
			Lower	Upper	
1	Depression	-0.01	-.026	.040	.08
	Suicidal ideation	0.57	.288	.927	.61*
2 (with entrapment)	Depression	-0.01	-.049	.033	-.07
	Suicidal ideation	0.57	.255	.941	.61*
2 (with defeat)	Entrapment	0.01	-.008	.036	.20
	Depression	-0.02	-.064	.008	-.25
	Suicidal ideation	0.53	.260	.862	.57*
	Defeat	0.03	.004	.066	.45*

Note. Significant effects the same when standard parametric analysis used.

^aPercentile CI reported. No differences were observed between these and bias-corrected CI.

^bThe second step of the regression was calculated twice with either defeat or entrapment as the predictor.

* $p < .05$.

suicidal ideation at follow-up, adjusting for baseline suicidal ideation and depressive symptoms.

Predicting Defeat and Entrapment

A secondary analysis was undertaken to see whether suicidal ideation at baseline could successfully predict changes in perceptions of defeat and entrapment. As before, a multiple regression analysis was conducted, with baseline defeat/entrapment entered in the first step, and baseline suicidal ideation entered in the second. Baseline suicidal ideation did not significantly predict changes in either defeat, $\Delta R^2 = .00$ (95% $CI_{\text{bootstrap}} = 0.000-0.089$), $B = 0.50$ (95% $CI_{\text{bootstrap}} = -3.354-4.079$), $\beta = .05$, or entrapment, $\Delta R^2 = .01$ (95% $CI_{\text{bootstrap}} = 0.000-0.101$), $B = 1.45$ (95% $CI_{\text{bootstrap}} = -2.683-5.528$), $\beta = .11$.

Predicting Suicidal Ideation with a Latent Defeat/Entrapment Variable

A tertiary analysis tested whether a latent defeat/entrapment variable could predict levels of suicidal ideation at follow-up while controlling for baseline depressive

symptoms and suicidal ideation. There was a significant effect of the defeat/entrapment latent variable on suicidal ideation at follow-up, $B = 0.03$ (95% $CI_{\text{bootstrap}} = 0.002-0.074$), $\beta = .47$. Although the fit indices also indicated very good fit with the data, these should be interpreted with caution due to the non-normal data, as noted above, $\chi^2(2) = 2.63$, $p = .27$, CFI = 1.00, SRMR = .02.

DISCUSSION

The current study was the first to test whether a disposition toward perceptions of defeat and entrapment would prospectively predict suicidal ideation. It was found that perceived defeat, but not entrapment, at baseline, predicted the change in frequency of suicidal ideation over the following 12 months, adjusting for depressive symptoms. The reverse relationship, where greater suicidal ideation leads to exacerbations in perceptions of defeat and entrapment, was not supported, suggesting that a one-way or unidirectional relationship exists between defeat and suicidal ideation. The effect size for the relationship between defeat and the change in suicidal ideation

was meaningfully large (Rosenthal, 1990), especially considering the relative stability of suicidal ideation over the study period. The stability of suicidal ideation over time is in line with previous research findings (Williams et al., 2006). When defeat and entrapment were conceptualized as a single latent variable, this variable continued to significantly predict the change in suicidal ideation.

These results complement cross-sectional research showing an association of perceptions of defeat and entrapment with suicidality (O'Connor, 2003; Rasmussen et al., 2010; Taylor, Gooding, et al., 2010; Taylor, Wood, et al., 2010; Taylor et al., in press), by clarifying the direction of this relationship. The present study demonstrates that perceived defeat may lead to subsequent changes in suicidality, rather than being a consequence of the experience of suicidality. The results therefore support psychological models of suicide, which posit a central role for perceived defeat and entrapment in suicidality including the Cry of Pain model (Williams, 1997) and Schematic Appraisals Model of Suicide (Johnson et al., 2008). It has been suggested that sensitivity toward defeat is partially an evolved disposition, with evidence of defeated states apparent in animal research (Gilbert, 2000; Gilbert & Allan, 1998; Shively et al., 2005). Perceived defeat is likely to be destructive as it signals the thwarting of fundamental biopsychosocial goals associated with social status and self-identity (Taylor et al., in press). Thoughts of suicide may therefore emerge in response to perceived defeat as they provide a possible solution or escape for this state (Johnson et al., 2008; Williams, 1997).

It is notable that entrapment did not predict subsequent suicidal ideation. This finding runs counter to what might be predicted from escape-focused models of suicide (e.g., Baumeister, 1990). Previous research suggests that both defeat and entrapment load highly onto a single latent variable (Taylor et al., 2009; Taylor, Gooding, et al., 2010; Taylor, Wood, et al., 2010). Consequently, comparable effects would be expected for both defeat and entrapment.

The zero-order correlations these variables had with follow-up suicidal ideation did not differ significantly. It may therefore be that the observed difference in their longitudinal relationships with suicidal ideation reflected random statistical variation, with power being inadequate to detect the slightly weaker effect of entrapment on changes in suicidal ideation. This explanation seems likely as when defeat and entrapment were considered as a single latent variable they significantly predicted suicidal ideation at follow-up.

An alternative explanation is that defeat and entrapment genuinely vary in their longitudinal relationships with suicidal ideation. For example, individuals may feel entrapped but still remain hopeful and optimistic that an escape route will present itself, and so stave off thoughts of suicide as a solution. In contrast, defeat has been characterized by a toning down of explorative behavior and positive affect (Sloman, 2000; Sloman et al., 2003), and so may impair the search for alternative solutions, leaving suicide seemingly as the only viable option. Of course, this explanation relies on being able to conceptually distinguish between defeat and entrapment, a position that has previously been questioned (Taylor et al., 2009). Further prospective research is necessary to explore this issue.

Within a clinical context, heightened perceptions of defeat and entrapment may provide an effective indicator of individuals liable to be at heightened risk of suicidal ideation, who may consequently benefit from interventions directed at these cognitions. The current study took place in a sample of university students with some degree of self-reported suicidality and these results may therefore have particular relevance to this group. There are numerous stressors associated with attending university, both academic (e.g., exam failure) and social (e.g., moving to a new area with no existing peer support), which could conceivably induce feelings of defeat. Counselors and other university-based mental health practitioners may benefit from considering the possible role of perceived defeat in their clients'

suicidal thinking. In particular, interventions could focus on rebuilding a client's sense of autonomy and status either through reframing the defeating situation, modifying unrealistic aspirations, or by directing attention to other more positive domains in the client's life (Rhode, 2001; Sloman et al., 2003; Taylor et al., in press).

A number of limitations should be noted in the current study. First, the sample was demographically homogenous, including few male or older participants. Although this is representative of undergraduate psychological courses in the United Kingdom, replication of these findings in a more demographically diverse sample is desirable. In particular, this could limit the external validity of the present findings, so that results may not generalize to other populations. It would also be interesting to replicate these results in clinical populations, where suicide rates are especially pronounced, such as in people diagnosed with schizophrenia (Taylor, Gooding, et al., 2010). Second, suicidal ideation was measured on a single 5-point scale, which may have restricted the variability available for analyses. This measure was selected for its brevity, ease of completion, and fit with the 12-month study period. Furthermore, similar one-item measures of ideation have been used effectively in other areas of suicide research (e.g., Casey et al., 2008; Fialko et al., 2006). It should also be noted that if any problems with reliability or restricted variability were

present these would have worked against, rather than in favor of, the study hypotheses by limiting statistical power. Nevertheless, future research could benefit from using broader, more detailed measures of suicidal ideation. Third, the present study investigated ideation only, and not more serious levels of suicidality, such as attempts or completions. Thus, it remains unclear from the present study whether perceptions of defeat would also predict more severe life-threatening suicidal behaviors. Ideation was an appropriate outcome to investigate in the present sample, where more serious behavior was rare. Further research could employ alternative methodologies such as case-control and psychological autopsy designs (Cavanagh, Carson, Sharpe, & Lawrie, 2003) to explore how defeat and entrapment relate to more serious forms of suicidality. Fourth, it should be recognized that although the present study adjusted for depressive symptoms, other important psychological predictors, for example, hopelessness, were not included in the analyses. It could be argued that as this study aimed primarily to establish that a prospective relationship between defeat, entrapment, and suicidal ideation existed, controlling for multiple related psychological constructs may have been overly conservative. Nonetheless, future prospective studies looking at defeat and entrapment should account for the confounding effects of these other constructs.

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