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SUICIDAL THINKING AND PERFECTIONISM: THE ROLE OF GOAL ADJUSTMENT AND BEHAVIORAL INHIBITION/ACTIVATION SYSTEMS (BIS/BAS)

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ABSTRACT: The current study investigated the associations among perfectionism, goal adjustment, behavioral activation sensitivity (BAS), behavioral inhibition sensitivity (BIS), and suicidal thinking. Participants (n = 255) completed the Multidimensional Perfectionism Scale, the BIS/BAS scale, the Goal Adjustment scale, and a measure of suicidal thinking. The findings showed that socially prescribed perfectionism was the only perfectionism dimension associated with suicidal thinking. Goal reengagement (but not goal disengagement) is an important construct in the suicidal process. A series of hierarchical regression analyses showed that goal reengagement moderates and mediates the effect of socially prescribed perfectionism on suicidal thinking. BIS was also associated with suicidal behavior but its effect was mediated via socially prescribed perfectionism. The theoretical and treatment implications of the relationships between socially prescribed perfectionism, goal reengagement, and suicidal thinking and between BIS, socially prescribed perfectionism, and suicidal thinking are discussed. Future research is required to determine whether these relationships are predictive of suicidal thinking and behavior over time.

KEY WORDS: perfectionism; distress; BIS/BAS; goals; suicide ideation; self-regulation.

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INTRODUCTION

In recent years, theoretical and clinical interest in the relationship between perfectionism and psychological distress has grown markedly (Chang & Sanna, 2001; Flett, Greene, & Hewitt, 2004; Flett, Hewitt, Blankstein, & Mosher, 1995; Hamilton & Schweitzer, 2000; Hewitt & Flett, 1991, 1993; Hewitt, Flett, & Weber, 1994; Hunter & O'Connor, 2003; O'Connor & O'Connor, 2003; O'Connor & Sheehy, 2000). Although there is clear evidence of a relationship between some dimensions of perfectionism and distress, for others the case is somewhat more equivocal. Furthermore, few studies have provided clear data to explain the mechanisms that underpin the association between perfectionism and psychological distress, in particular suicidality. In the present study, therefore, we aimed to investigate one possible mechanism, goal adjustment, to determine whether it can illuminate further the perfectionism–suicidal thinking relationship. In addition, we also drew from the motivational systems literature (Carver & White, 1994; Gray, 1994) to determine the extent to which one's intrinsic responses to threat (behavioral inhibition) and incentives (behavioral activation) relate to perfectionism and suicidal thinking.

Measuring Perfectionism

A number of scales have been devised to measure perfectionism from a clinical perspective. However, the two most commonly used scales are similarly entitled the Multidimensional Perfectionism Scale (MPS; Frost, Marten, Lahart, & Rosenblate, 1990; Hewitt & Flett, 1991) and they each distinguish between the social and personal aspects of perfectionism. We focus on Hewitt and Flett's measure here, as it was employed in the present study. Hewitt and Flett (1991) have identified three components of perfectionism: socially prescribed perfectionism, self-oriented perfectionism, and other-oriented perfectionism. Socially prescribed perfectionism taps beliefs about the excessive expectations individuals perceive significant others have of them, and self-oriented perfectionism focuses on the standards people set for themselves. Other-oriented perfectionism is the extent to which individuals possess high expectations and standards for other people's behavior.

Perfectionism and Suicidality

There is growing empirical evidence of an association between perfectionism and suicidality in adults (Hewitt, Flett, & Weber, 1994; O'Connor, in press) and adolescents (Donaldson, Spirito, & Farnett, 2000; Hewitt, Newton, Flett, & Callander, 1997) and in clinical (Dean & Range, 1999; Hewitt, Flett, & Turnbull-Donovan, 1992; Hewitt, Flett, Callander, & Cowan, 1998; Hunter & O'Connor, 2003) as well as non-clinical populations (Chang, 1998; Hewitt, Flett, & Weber, 1994; O'Connor, O'Connor, O'Connor, Smallwood, & Miles, 2004). In addition, the role of perfectionism in suicidality also fits with two predominant theoretical models of suicidality (Escape Theory; Baumeister, 1990 and Cry of Pain Hypothesis; Williams & Pollock, 2001). In essence, both of these models imply that suicide is motivated by the desire to escape from painful self-awareness and negative affect. Indeed, it is argued that individuals high on perfectionism are more likely to perceive themselves as a failure, thereby increasing the likelihood that they wish to escape from painful self-awareness and contemplate suicide (e.g., Hunter & O'Connor, 2003; O'Connor & Sheehy, 2000).

More research is required to determine the extent to which the three Hewitt and Flett dimensions of perfectionism relate to suicidal thinking. The existing evidence base for socially prescribed perfectionism is solid: social perfectionism is consistently associated with suicidal ideation (Hewitt et al., 1998, 1997, 1994, 1992; Hunter & O'Connor, 2003; O'Connor, O'Connor, & Marshall, in press). However, the relationship with self-oriented perfectionism is less clear: on some occasions a relationship with suicidality is evident (Hewitt et al., 1994), on others it is not (Hewitt et al.,1998, 1997, 1992; Hunter & O'Connor, 2003; O'Connor et al., 2004). The pattern of findings for other-oriented perfectionism is also equivocal. In some studies, for example, higher levels of other-oriented perfectionism are associated with reduced suicidality (Hewitt et al., 1998; Hunter & O'Connor, 2003). Therefore, the first aim of the present study was to investigate further the relationship between perfectionism and suicidal thinking in a large sample of college students. Specifically, we hypothesized that socially prescribed perfectionism would be more closely related to suicidal thinking than the other dimensions (Hypothesis 1).

Goal Adjustment and Self-Regulation

Our ability to identify, pursue, and attain goals is thought to be central to adaptive and effective self-regulation (e.g., Carver & Scheier, 1998; O'Connor & Cassidy, 2007; Sheldon, Ryan, Deci, & Kasser, 2004). Indeed, there is growing evidence to suggest that certain aspects of goal adjustment, specifically goal disengagement, and goal reengagement have important effects on psychological well-being (Wrosch, Scheier, Carver, & Schulz, 2003; Wrosch, Scheier, Miller, Schulz, & Carver, 2003). Furthermore, it is also well established that cognitive/personality characteristics like self-efficacy and optimism are moderated by (and moderate) goal attainment (Bandura, 1997; Wrosch & Scheier, 2003), Therefore, the second aim of the present study was to extend the existing literature, to determine whether goal adjustment moderates the relationship between goal adjustment and suicidal thinking. Given that previous research has shown that suicidal individuals have difficulty in generating positive future thoughts—which are possibly the outcomes of goal reengagement processes—rather than being preoccupied with the occurrence of negative future thoughts (Hunter & O'Connor, 2003; MacLeod, Pankhania, Lee, & Mitchell, 1997; O'Connor, Connery, & Cheyne, 2000; O'Connor, 2003), we anticipated that goal reengagement would be more pertinent to suicidal thinking than goal disengagement (Hypothesis 2) and that it would moderate the effect of socially prescribed perfectionism on suicidal thinking (Hypothesis 3). Furthermore, in the light of the evidence that perfectionism can have a mediating effect on psychopathology (see Hewitt & Flett, 2002), we also hypothesized that goal reengagement would mediate the social perfectionism-suicidal thinking pathway (Hypothesis 4).

Behavioral Inhibition/Activation Systems

Gray (1994) argues that two general motivational systems underlie behavior and affect: a behavioral inhibition system (BIS) and a behavioral activation system (BAS). These two systems are characterized by differences in sensitivity to two neurological systems which regulate our responses to cues and signals. The BIS is sensitive to signals of punishment and is concerned with anticipating and avoiding unfavorable outcomes. The BAS controls appetitive motivation

and is sensitive to signals of reward, nonpunishment and escape from punishment. Carver and White (1994) have developed the Behavioral Inhibition/Behavioral Activation Scale (BIS/BAS) to assess dispositional sensitivities to Gray's two motivational systems. The scale includes one global measure of BIS and three measures of BAS (i.e., reward, drive, fun-seeking).

If these systems do indeed regulate affect and behavior, it is reasonable to posit that they are involved in the etiology of perfectionism. Indeed, one previous study has tested this postulation (Flett, Hewitt, Oliver, & MacDonald, 2002, p. 112). Although their study was limited to a sample of 71 undergraduates, Flett et al. (2002) found that all three MPS measures were correlated with the BIS measure and self-oriented perfectionism was also positively correlated with BAS Drive and BAS Reward Responsiveness. Therefore in this study, with a larger sample size, we aimed to replicate Flett et al.'s findings by determining whether these relationships are robust and extend their work to determine whether perfectionism mediates the relations between BIS/BAS and suicidal thinking. Guided by Flett et al. (2002), Hunter and O'Connor (2003) and research which suggests that BIS is implicated in emotional disorders (Arcus, 2001), we hypothesized that BIS would be significantly related to suicidal thinking (rather than the BAS dimensions [Hypothesis 5]) and its effect on suicidal thinking would be mediated via social perfectionism (Hypothesis 6).

To summarize, we had three key research aims: (1) to investigate further the relationship between perfectionism and suicidal thinking; (2) to establish the mediating and moderating pathways between perfectionism, goal adjustment and suicidal thinking and, (3) to replicate Flett et al. (2002)'s BIS-perfectionism findings and extend them to the understanding of suicidal thinking.

METHOD

Participants

Two hundred and fifty-five undergraduate students (56 men, 199 women) were recruited from a Scottish University. Their mean age was 22 years (SD = 6.6), and the ages ranged from 17 to 59 years. The men and women did not differ significantly in age, $t(253) = 1.78$,

ns, and the majority of participants were unmarried (93%). We did not collect details of the racial-ethnic composition of the sample, however, the students at the university are predominantly White, representing 95% of the student population.

Measures and Procedure

All students were informed that participation was voluntary, entirely confidential, and that even if they agreed to participate, they could withdraw at any stage without explanation. The following measures were administered in a random order:

Suicidal Thinking. Consistent with the International Academy for Suicide Research's recommendation (Leenaars et al., 1997) and the methodology employed by Tomori, Kienhorst, de Wilde, and van den Bout (2001) and Hamilton and Schweitzer (2000), we employed four items from the General Health Questionnaire (GHQ-28) (Goldberg & Williams, 1988) to assess suicidal thinking: "Have you recently found that the idea of taking your own life kept coming into your mind?", "Have you recently felt that life isn't worth living?", "Have you recently thought of the possibility that you might make away with yourself?" and "Have you recently found yourself wishing you were dead and away from it all?". Respondents are asked to compare their recent experience with their usual state on a 4-point Likert-type scale of severity ranging from *not at all* (0) to *much more than usual* (3). Internal consistency in this sample was very good (Cronbach's a = .91).

Perfectionism. The Multidimensional Perfectionism Scale (MPS) (Hewitt & Flett, 1991) was used to measure perfectionism. The MPS is a 45-item measure of perfectionism with 15 items assessing each of three dimensions of perfectionism: (a) Self-Oriented Perfectionism (MPS-Self), is defined as a strong motivation to be perfect, all-or-nothing thinking, and self-reported high achievement expectations (e.g., "One of my goals is to be perfect in everything I do"); (b) Socially Prescribed Perfectionism (MPS-Social) assesses the degree of belief that others hold unrealistically high expectations of one's behavior and that they would only be satisfied with these standards (e.g., "The people around me expect me to succeed at everything I do"); and (c) Other-Oriented Perfectionism (MPS-Other) assesses the degree to which one sets unrealistic standards for others (e.g., "If I

ask someone to do something, I expect it to be done flawlessly"). Respondents rate each statement on a 7-point Likert-type scale ranging from 1 (disagree) to 7 (agree). The MPS has been shown to be reliable and valid (Hewitt & Flett, 1991). The three dimensions of perfectionism yielded good internal consistency for the present sample (Cronbach's as = .90, .82, and .73, for MPS-Self, MPS-Social, and MPS-Other, respectively).

Behavioral Inhibition System (BIS) and Behavioral Activation System (BAS) Sensitivity. BIS/BAS sensitivity was assessed using the BIS/BAS Scale (Carver & White, 1994) which is comprised of 24 items with four subscales: One reflects BIS sensitivity (7 items), and three reflect aspects of BAS sensitivity: BAS Drive (4 items); BAS Fun Seeking (4 items); and BAS Reward Responsiveness (5 items). The three aspects of BAS sensitivity derive from diverse theoretical statements about how BAS functioning should be reflected experientially. Specifically, high BAS engagement should cause people to seek out new incentives, to be persistent in trying to reach goals, and to respond with positive feelings when these goals are attained. The three BAS-related scales were designed to reflect these somewhat distinct functions (Carver, Meyer, & Antoni, 2000). Respondents rate each item on a 4-point scale ranging from 1 (*very true for me*) to 4 (*very false for me*). Higher scores on each scale indicate greater levels of BIS/BAS sensitivity. The internal consistencies for the BIS/BAS Scales for the present sample were adequate: Cronbach's as = .79, .72, .69, and .69, for the BIS scale, BAS Drive, BAS Fun Seeking, and BAS Reward Responsiveness, respectively.

Goal Adjustment. The goal adjustment scale (Wrosch 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 unattainable goals (e.g., "It's easy for me to reduce my effort toward the goal"). The goal reengagement subscale taps one's perceived ability to reengage in other new goals if they face constraints on goal pursuits (e.g., "I think about other new goals to pursue"). Both subscales were internally consistent (Cronbach's alpha = .76 and .84 for disengagement and reengagement, respectively).

RESULTS

Zero-order correlations, means, and standard deviations for all of the variables are presented in Table 1. Suicidal thinking was correlated with the BIS subscale ($r = .18$, $p < .01$) but it was not associated with any of the BAS measures. Its association with perfectionism was also limited, to a positive correlation with socially prescribed perfectionism ($r = .27$, $p < .001$). Finally, suicidal thinking was negatively correlated with goal reengagement ($r = -.20$, $p < .001$). The BAS subscales were all positively intercorrelated ($r = .43$–$.50$, $p < .001$), however, BAS Reward Responsiveness was the only BAS subscale to correlate with BIS ($r = .35$, $p < .001$). BAS Drive was positively correlated with self-oriented ($r = .14$, $p < .05$) and other-oriented perfectionism ($r = .19$, $p < .01$) and negatively associated with goal disengagement ($r = -.18$, $p < .01$). Socially prescribed perfectionism was also negatively correlated with BAS Fun Seeking ($r = -.14$, $p < .05$). In addition, BAS Reward Responsiveness was negatively correlated with goal disengagement ($r = -.17$, $p < .01$). The BIS subscale was positively correlated with all of the perfectionism subscales ($r = .21$–$.35$, $p < .001$), and negatively with goal disengagement ($r = -.15$, $p < .05$).

Not surprisingly, all of the perfectionism dimensions were significantly intercorrelated ($r = .38$–$.52$, $p < .001$). Socially prescribed perfectionism was also negatively correlated with both of the goal engagement subscales ($r = -.19$ and $r = -.17$, $p < .01$ for disengagement and reengagement, respectively). Self-oriented ($r = -.37$, $p < .001$) and other-oriented perfectionism ($r = -.28$, $p < .001$) were also negatively correlated with goal disengagement.

We compared men and women on each of the measures. These analyses revealed no differences on goal adjustment, however, women reported significantly higher levels of BAS-Reward ($M = 16.41$, $SD = 2.31$ vs. $M = 17.07$, $SD = 2.12$), BIS ($M = 18.86$, $SD = 3.89$ vs. $M = 22.30$, $SD = 3.57$), self-oriented ($M = 59.34$, $SD = 14.00$ vs. $M = 65.28$, $SD = 15.58$) and other-oriented perfectionism ($M = 50.23$, $SD = 11.26$ vs. $M = 52.03$, $SD = 2.12$). Accordingly, in subsequent analyses, we conducted regression analyses with gender included and excluded. As controlling for gender had no effect on any of the results reported, these results are not reported.

Table 1

Zero-Order Correlations, Means and Standard Deviations for all Variables

	BAS Drive	*BAS Fun-seeking*	*BAS Reward*	*BIS*	*MPS-Social*	*MPS-Self*	*MPS-Other*	*Goal Disengage*	*Goal Reengage*	*Suicidal Thinking*
BAS Drive	.									
BAS Fun-seeking	.50***	.								
BAS Reward	.43***	.49***	.							
BIS	.05	−.06	.35***	.						
MPS-Social	.05	−.14*	−.05	.35***	.					
MPS-Self	.14*	−.11	.05	.33***	.49***	.				
MPS-Other	.19**	−.02	.09	.21**	.38***	.52***	.			
Goal Disengagement	−.18**	.05	−.17**	−.15*	−.19**	−.37***	−.28***	.		
Goal Reengagement	−.01	.10	.09	.02	−.17**	.07	.11	.14*	.	
Suicidal Thinking	−.03	−.02	−.04	.18**	.27***	.04	.01	−.01	−.20***	.
Mean (*SD*)	10.71 (2.16)	12.02 (2.24)	16.92 (2.18)	21.55 (3.91)	51.63 (11.75)	63.98 (15.42)	53.64 (10.01)	2.75 (.74)	3.57 (.57)	.22 (.54)

Note: MPS-Social = socially prescribed perfectionism; MPS-Self = self-oriented perfectionism; MPS-Othe r = other-oriented perfectionism. * $p < .05$, ** $p < .01$, *** $p < .001$.

Goal Adjustment as a Moderator of the Perfectionism and Suicidal Thinking Relations

Next, we conducted a series of hierarchical regression analyses to determine whether goal adjustment moderated the relationship between perfectionism and suicidal thinking. All data were centered before inclusion in the regression analyses. In the first step of each regression we entered one of the dimensions of perfectionism (e.g., socially prescribed perfectionism), followed by one of the goal adjustment subscales (e.g., goal reengagement) in step 2. In the final step, we entered the relevant multiplicative term (e.g., socially prescribed perfectionism $\times$ goal reengagement) to test for interaction effects (Pedhazur, 1997). Only the regression analyses involving socially prescribed perfectionism yielded significant effects in the final models, with socially prescribed perfectionism being a significant predictor of suicidal thinking in both the goal disengagement (b = .279), t(254) = 4.53, $p < .001$, and goal reengagement regressions (b = .222), t(254) = 3.63, $p < .001$. The goal reengagement regression was of particular interest though, as goal reengagement (b = −.160), t(254) = −2.65, $p < .01$, and the goal reengagement $\times$ socially prescribed perfectionism interaction term were significant (Total Adj R^2 = .106, b = −.133), t(254) = −2.20, $p < .05$. To probe the interaction, consistent with Aiken and West (1991), we plotted the regression lines of best fit at high (1 standard deviation above the mean) and low (1 standard deviation below the mean) levels of social perfectionism and goal reengagement (see Figure 1 Panel A). We conducted further tests separately on the high and low goal engagement lines to determine whether they differed significantly from zero. Application of the procedures outlined by Aiken and West (1991) revealed that the low reengagement slope, (b = 338), t(254) = 4.60, $p < .001$, but not the high reengagement slope differed significantly from zero, (b = .106 t(254) = 1.21, *ns*. In other words, those participants who were high on socially prescribed perfectionism and low on goal reengagement reported significantly higher levels of suicidal thinking (Figure 1 Panel A & B). There were no other significant effects or interactions.

Goal Adjustment as a Mediator of the Perfectionism and Suicidal Thinking Relations

Following the procedure described by Baron and Kenny (1986) and Holmbeck (1997), we examined the potential mediating role of goal

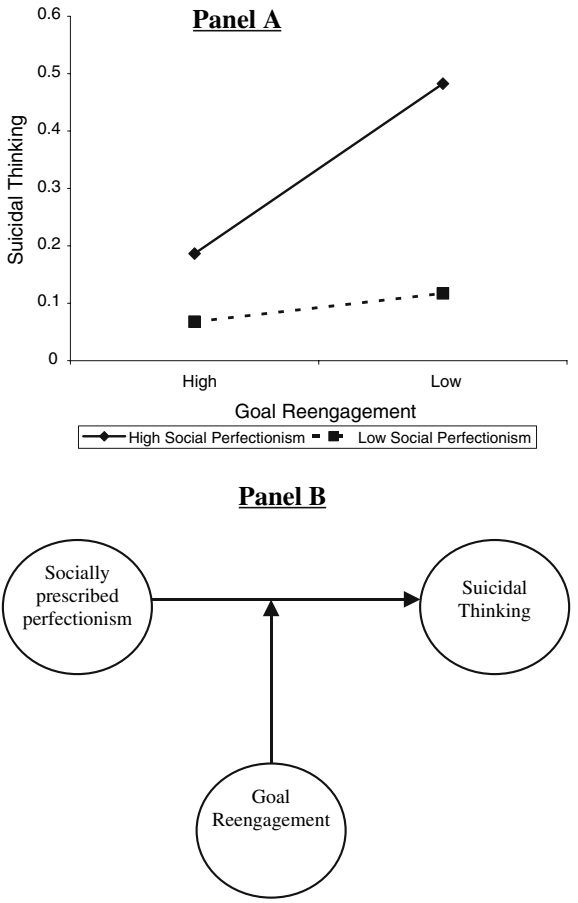

Figure 1. Goal reengagement as a moderator of the relationship between socially prescribed perfectionism and suicidal thinking (Panel A and Panel B).

adjustment on the relations between perfectionism and suicidal thinking via regression analysis. To establish mediation, four conditions must hold: First, the independent variable must significantly affect the mediator; second, the independent variable must significantly affect the dependent variable; third, the mediator must affect the dependent variable and fourth, the impact of the independent variable on the dependent variable must be less after controlling for the mediator. As self-oriented perfectionism, other-oriented perfectionism, and goal disengagement did not significantly affect the DV (i.e., suicidal thinking) we did not conduct any of the other mediational tests.

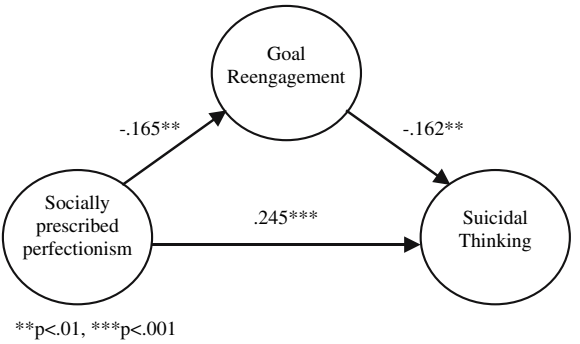

Figure 2. Goal reengagement as a partial mediator of the effect of socially prescribed perfectionism on suicidal thinking, $^{**}p < .01$, $^{***}p < .001$.

Goal reengagement, however, did partially mediate the socially prescribed perfectionism-suicidal behavior pathway. First, socially prescribed perfectionism predicted goal reengagement ($b = -.165$), t (254) = −2.68, $p < .01$, and socially prescribed perfectionism predicted suicidal thinking ($b = 272$), t(254) = 4.50, $p < .001$. Third, the strength of the relationship between socially prescribed perfectionism and suicidal thinking was reduced when goal reengagement was controlled ($b = 245$), t(254) = 4.04, $p < .001$, albeit that the relationship remained significant (see Figure 2). A Sobel test indicated that goal reengagement significantly mediated the relationship between socially prescribed perfectionism and suicidal thinking (z = 1.96, $p < .05$; MacKinnon & Dwyer, 1993).

Testing Perfectionism as a Mediator of the BIS/BAS and Suicidal Thinking Relations

As with the previous analyses, we examined the potential mediating role of perfectionism on the relations between BIS/BAS sensitivity and suicidal thinking via regression analysis. However, none of the three BAS subscales was involved in any mediating pathways as they were not independently predictive of suicidal thinking. Whereas, there was evidence that socially prescribed perfectionism mediated the BIS-suicidal thinking pathway. Socially prescribed perfectionism and BIS both independently predicted suicidal thinking ($b = .272$), t(254) = 4.50, $p < .001$ and ($b = .177$), t(254) = 2.86, $p < .005$,

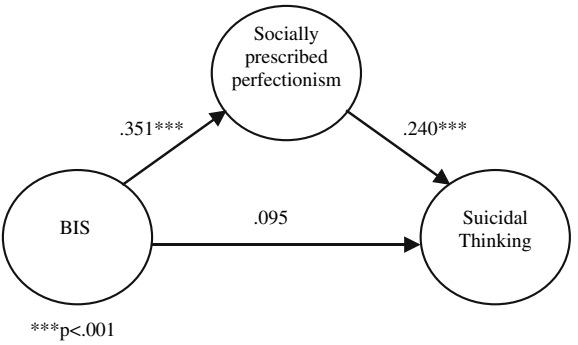

Figure 3. Socially prescribed perfectionism as a mediator of the effect of BIS on suicidal thinking, *** $p < .001$.

respectively; and BIS predicted socially prescribed perfectionism (b = .351), t(254) = 6.01, $p < .001$. In the final regression, BIS no longer served as a significant predictor of suicidal thinking (b = .095), t(254) = 1.48, *ns*, when socially prescribed perfectionism was controlled (see Figure 3). A Sobel test indicated that socially prescribed perfectionism mediated the relationship between BIS and suicidal thinking completely (z = 3.13, $p < .001$). There were no mediating pathways involving the other perfectionism dimensions.

DISCUSSION

The study's three research aims were met: (1) we investigated further the perfectionism-suicidal thinking relationship; (2) we established the nature of the relationships between goal adjustment, perfectionism and suicidal thinking, and; (3) we replicated and extended previous research on BIS/BAS-perfectionism-suicidal thinking relations.

Perfectionism and Suicidal Thinking

Consistent with previous research (Hewitt et al., 1998, 1997, 1994, 1992; Hunter & O'Connor, 2003; O'Connor et al., 2004), we found unequivocal evidence to support the first hypothesis. Socially prescribed perfectionism was the only dimension of perfectionism to be significantly correlated with suicidal thinking. Furthermore, it also

predicted suicidal thinking in a number of the multiple regression analyses. There was no evidence of self-oriented perfectionism or other-oriented perfectionism affecting suicidal thinking directly. This suggests that the other dimensions of perfectionism, if they are associated with suicidal thinking, may exert their effect on emotional well-being concomitant with other factors rather than independently (e.g., O'Connor & O'Connor, 2003). These findings support the Cry of Pain Hypothesis (Williams & Pollock, 2001) and Escape Theory (Baumeister, 1990) as they suggest that concern about other people's high expectations for one's behavior is associated with suicidal thinking.

Goal Reengagement, Perfectionism, and Suicidal Thinking

The second hypothesis, which was derived from self-regulatory theory (Carver & Scheier, 1998), was also supported. Goal reengagement was negatively correlated with suicidal thinking, whereas the correlation between goal disengagement and suicidal thinking was not significant. It seems, therefore, that those people who have difficulty in reengaging in new goal setting are at increased risk of suicidal thinking in comparison with those who have difficulties disengaging from unobtainable goals. This distinction has important theoretical and clinical implications as it points to a possible difference between non-suicidal depressives and suicidal depressives. Some research from the depression literature (e.g., Wrosch, Schulz, & Heckhausen, 2004) suggests that one problem that chronic depressives experience is that they cannot disengage from unobtainable goals, and therefore they continue to experience failure, leading to reduced self-esteem and longer lasting depression. We could not test this postulation here as we did not measure depression separately. Consequently, future research should determine whether clinically diagnosed, non-suicidal depressives are characterized by a failure to disengage and suicidal depressives are characterized by a failure to reengage with future goals.

These findings also support the research which has shown that the presence of negative cognitions about the future is not functionally equivalent to the absence of positive future cognitions (MacLeod et al., 1997; Hunter & O'Connor, 2003; O'Connor, Connery, & Cheyne, 2000; O'Connor, 2003): Goal reengagement may be functionally equivalent to positive future cognitions (which are reduced in suicidal participants) and goal disengagement is related to negative future

cognitions (which do not distinguish between suicidal and non-suicidal depressives). It may be that future cognitions mediate the effect of goal reengagement on suicidality.

The findings also supported the third hypothesis. This is the first study to demonstrate that, not only is goal reengagement associated with suicidal thinking, but it also acts as a moderator. Those individuals who were high on socially prescribed perfectionism and low on goal reengagement reported significantly higher levels of suicidal thinking. In other words, (high) goal reengagement buffers the impact of social perfectionism on suicidal thinking. Furthermore, the findings relating to the fourth hypothesis point to a more complex relationship between goal reengagement, social perfectionism, and suicidal thinking. As predicted, goal reengagement also mediated the effect of socially prescribed perfectionism on suicidal thinking. Although, the present data are cross-sectional, and therefore we cannot infer causality, they suggest that socially prescribed perfectionism may cause goal reengagement, which, in turn, causes suicidal thinking, in part. Such an interpretation is consonant with the cry of pain hypothesis (Williams & Pollock, 2001; see also O'Connor, 2003) which suggests that biases in information processing impact on our decision-making capacity such that, when under stress, (1) we are more likely to conclude that a stressful event is inescapable, (2) that it will lead to feelings of rejection/loss and that (3) there is no help/support available. The presence of these three factors is associated with increased risk of suicide.

Any firm conclusions are further complicated by the strength of the mediation effect. The regression analyses showed that goal reengagement acts as a partial mediator and the Sobel test showed that the mediation effect just yielded statistical significance. Nonetheless, taking the moderating and mediating effects together, we have evidence, at the very least, of the conditions under which social perfectionism's effect on suicidal thinking is most marked. At the very most, we also have evidence of a mechanism to illustrate how social perfectionism affects suicidal thinking. In all likelihood, socially prescribed perfectionism relates to suicidal thinking directly and indirectly; its effect is strengthened by a range of variables, and its impact is mediated via a plethora of variables including problem-solving, coping, and goal adjustment.

Behavioral Inhibition, Social Perfectionism, and Suicidal Thinking

The two remaining hypotheses (Hypotheses 5 & 6) are concerned with the relationship between BIS/BAS, perfectionism, and suicidal thinking. Once again, the findings supported both hypotheses. First, BIS was the only one of the BIS/BAS dimensions to be associated with suicidal thinking: higher levels of behavioral inhibition sensitivity were associated with higher levels of suicidal thinking (Hypothesis 5). This is not surprising as behavioral inhibition is a temperament construct that is characterized by motivational sensitivity to signals of punishment, nonreward, and the avoidance of unfavorable situations. Although, none of the BAS dimensions was associated with suicidal thinking, BAS Drive was positively correlated with self-oriented and other-oriented perfectionism. These findings suggest that the BIS and BAS Drive associations (but not the self-oriented perfectionism-BAS Reward correlation) reported by Flett et al. (2002) are robust. It is probably reasonable to conclude, therefore, that there is a clear relationship between BIS and perfectionism but that the BAS relationships require closer inspection. Second, we hypothesized that the relationship between BIS and suicidal thinking would be mediated by socially prescribed perfectionism (Hypothesis 6). The regression analyses showed that not only does social prescribed perfectionism mediate the BIS-suicidal thinking pathway, but that the relationship between BIS and suicidal thinking is completely mediated by perfectionism.

Inspection of the Sobel tests shows that the BIS-socially prescribed perfectionism-suicidal thinking pathway is stronger than that calculated for social perfectionism-goal reengagement-suicidal thinking. This is not unexpected given that BIS is hypothesized to be a dispositional construct which exerts most of its effect on emotional regulation via other factors, i.e., its effect is largely indirect (see developmental literature, e.g., Kagan, 1989; Kagan, Reznick, & Snidman, 1988) whereas it is recognized that perfectionism can act as a moderator as well as a mediator (Hewitt & Flett, 2002). A tentative conclusion that one could draw is that these data provide evidence, albeit indirect, and cross-sectional, of a physiological substrate for the motivational basis of socially prescribed perfectionism. It would be interesting, therefore, to compare suicidal individuals with non-suicidal controls on measures of BIS and perfectionism.

Limitations

Although we have extended previous research by assessing the relationships between perfectionism, goal adjustment, and suicidal thinking and between BIS/BAS, perfectionism, and suicidal thinking, it is important to note four limitations. First, we relied exclusively on self-report measures. Future research should include a selection of measures that assess objective (as far as possible), as well as subjective components of perfectionism, BIS/BAS, goal adjustment, and suicidality. Second, the results may not be generalizable beyond a college student population, therefore, future research with clinical and sub-clinical participants is required. Third, we employed a cross-sectional design. Albeit that this was desirable because this is the first study to look at these variables concomitantly, we cannot draw firm conclusions about cause and effect. Future research must employ prospective study designs to determine whether the statistical mediators and moderators reported herein have similar effects on suicidal thinking over time. Fourth, as we did not include a measure of stress in this paper, we were unable, therefore, to test for diathesis-stress relationships. It is possible that some relationships that did not emerge in the present analyses may be elucidated when stress is controlled and vice versa. Finally, work within our research group is ongoing to address many of these issues.

Implications

Despite the limitations noted above, these findings have important implications for clinical practice. Given that it is more difficult to change relatively stable dimensions like perfectionism, within a cognitive behavioral framework, our data suggest that clinical attention ought to be also directed at the characteristics of goal adjustment. Treatment sessions structured around the cognitive strategies required for successful goal identification and pursuit may be beneficial. Although these data point to difficulties with reengaging in goal setting, it may be useful to locate the specific processes or reasons behind this goal reengagement failure. Such an approach fits with the problem-solving and suicide prevention literatures as well the broader self-regulatory theory (Carver & Scheier, 1998; Ellis & Newman, 1996; Rudd, Joiner, & Rajab, 2000). Needless to say, the therapeutic attention to goal adjustment could be developed within a broader

therapeutic program that aims to address the ingrained perfectionistic beliefs and automatic thoughts that seem to be pathogenic. In addition, researchers and clinicians should redouble their efforts to build the clinical evidence base for the treatment of perfectionism. Not only does perfectionism impact on emotional well-being directly and indirectly, but it is also known to interfere with successful therapeutic treatment (Blatt & Zuroff, 2002).

To conclude, this study extended the existing research in a number of key respects. First, we demonstrated that socially prescribed perfectionism is the only dimension of perfectionism to be associated with suicidal thinking in college students. Second, goal reengagement is an important construct in the suicidal process; our findings show that goal reengagement moderates and mediates the effect of socially prescribed perfectionism on suicidal thinking. Third, BIS is associated with suicidal behavior but its effect is mediated via socially prescribed perfectionism. Future research is required to determine whether these relationships are predictive of suicidal thinking and behavior over time.

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