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## Relationship between perfectionism and domains of worry in a college student population: Considering the role of BIS/BAS motives

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### Abstract

The present study examined whether perfectionism dimensions were unique predictors of worry when behavioral inhibition system (BIS) and behavioral activation system (BAS) motives are also considered in the model in a sample of 254 college students. Results indicated that, although BIS/BAS motives accounted for variance in different domains of worry, perfectionism dimensions were found to account for additional variance in worry. Indeed, perfectionism dimensions were found to be more robust predictors of worry than BIS/BAS motives. Implications for the present findings with regard to future research are discussed.

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*Keywords:* Perfectionism; BIS/BAS; Non-pathological worry

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## 1. Introduction

Perfectionism has become an important focus of research in recent years. Although different definitions of perfectionism have been provided (Chang, 2003), most researchers have argued that perfectionism represents a personality process variable with cognitive and behavioral properties and a form of psychopathology characterized by high personal standards involving harsh self-criticism (Frost, Marten, Lahart, & Rosenblate, 1990; Hewitt & Flett, 1991). Indeed, studies based on college students have shown that greater perfectionism is associated with greater maladjustment, including greater depressive symptoms, suicide ideation, and greater worry (Shafran & Mansell, 2001). With regard to the study of worry, there are a number of reasons to take a closer look at its relationship with perfectionism.

First, worry itself has been linked to many indicators of psychological maladjustment in adults, including clinical anxiety, depression, and obsessionality (e.g., Brown, O’Leary, & Barlow, 1993). Moreover, within college student populations, worry has long been linked to variations in adjustment and performance (e.g., test anxiety; Flett & Blankstein, 1994). Second, although perfectionism has been examined with worry in college students (e.g., Chang, 2000; Stöber & Joormann, 2001), little is known about the associations between perfectionism and worry as multidimensional constructs. Specifically, although research on clinically dysfunctional or pathological worry has been based on unidimensional conceptualizations (e.g., Meyer, Miller, Metzger, & Borkovec, 1990), research on (non-pathological) worry in college student populations has found that this form of worry represents a multidimensional construct associated with concerns drawn from a variety of different life domains (Joormann & Stöber, 1997; Tallis, Eysenck, & Mathews, 1992). Indeed, based on a model of worry derived from six domains believed to represent major sources of everyday satisfaction in adults (*viz.*, relationships, lack of confidence, aimless future, work incompetence, financial, and sociopolitical), Tallis et al. (1992) developed the Worry Domains Questionnaire (WDQ). Research on worry using the WDQ has supported the multidimensional nature of worry, as different domains of worry have been found to have different associations with different variables. Unfortunately, most researchers have tended to focus on the total WDQ score, which does not take into account potential variations across the different life domains. Investigations looking at worry and perfectionism in college students have also been limited to use of the total WDQ score. Hence, little is known about the relationship between perfectionism and specific domains of worry in college students. Clearly, it would be important to determine if perfectionism holds different associations with different worry domains.

Third, as mentioned earlier, it is important to note that within Frost et al.’s (1990) framework, perfectionism is composed of six distinguishable dimensions, namely, concern over mistakes, personal standards, parental expectations, parental criticism, doubts about actions, organization. These dimensions are assessed by the Multidimensional Perfectionism Scale (MPS; Frost et al., 1990). Consistent with this framework, studies using the MPS have supported the multidimensional nature of perfectionism. Unfortunately, perfectionism was measured as a global construct in the Chang (2000) study and a modified multidimensional model was used in the Stöber and Joormann (2001) study. Therefore, the identification of which specific dimensions of perfectionism are more or less strongly linked with which domains of worry remains unclear at best. Finally, although it would be important to examine these more specific relations, it is important to note that few studies have examined the extent to which perfectionism represents an important unique

predictor of maladjustment beyond other useful predictors. Specifically, studies have shown that BIS/BAS motives are implicated in adult adjustment (Carver & White, 1994; Gable, Reis, & Elliot, 2000).

The behavioral activation system (BAS) and the behavioral inhibition system (BIS) have been viewed as distinct and biologically grounded systems (Reuter, Schmitz, Corr, & Hennig, 2006), that are believed to provide the basic motivational basis for individual differences in behavior, mood, and affect (Gray, 1990). BAS motives are presumed to be responsive to signals of reward, nonpunishment, and escape from punishment, and are believed to be associated with positive emotional experiences or positive affects. In contrast, BIS motives are believed to be responsive to signals of punishment, nonreward, and novelty, and are believed to be associated with negative emotional experiences or negative affects. Indeed, studies in college student populations have shown BIS/BAS motives predict positive and negative affect, respectively (e.g., Gable et al., 2000). Although BIS/BAS motives have been linked to a variety of clinical conditions (e.g., depression, pathological worry), no study has examined the relations between BIS/BAS motives and non-pathological worry in college students. For these reasons, insofar that BIS/BAS motives are believed to represent more “basic” determinants of adjustment, it would be particularly important to examine whether perfectionism remains an important predictor of worry as indicated by past research findings. To date, no study has compared the relative explanatory power of perfectionism over BIS/BAS motives in predicting psychological adjustment.

## 2. Purpose of the present study

With the above considerations in mind, the purpose of our present study was threefold: (a) to examine the relationship between BIS/BAS motives and multidimensional perfectionism; (b) to examine the relations of multidimensional perfectionism and BIS/BAS motives with worry; and (c) to examine the extent to which perfectionism accounts for variance in worry beyond what is accounted for by BIS/BAS motives.

Given that perfectionism is characterized as a predominately maladaptive individual difference variable, we hypothesized that perfectionism dimensions would be significantly and positively correlated with BIS motives, which is the system that is purported to lead to negative emotional experiences. Similarly, given that both constructs have been found to be associated with maladjustment, we hypothesized that perfectionism and BIS motives would be significantly and positively correlated with worry. Finally, and most importantly, we expected that although BIS/BAS motives would account for a large amount of the variance in worry, we believed that perfectionism could add to the prediction of worry beyond what may be accounted for by BIS/BAS motives.

## 3. Method

### 3.1. Participants

A total of 266 college students from a large-sized Midwestern university participated in the present study. All participants were enrolled in an upper division psychology course and earned

course credit for participating. Ages across participants ranged from 17 to 39 years, with a mean age of 19.98 ( $SD = 2.94$ ) years. Men and women were not found to differ significantly in age. Participants were predominantly European American (94.0%).

### 3.2. Measures

*Multidimensional Perfectionism Scale* (MPS; Frost et al., 1990). To assess for multidimensional perfectionism, we used the MPS. The MPS is a 35-item five-point Likert-type measure of perfectionism consisting of the following six subscales: Concern over Mistakes (MPS-CM; e.g., “People will probably think less of me if I make a mistake”), Personal Standards (MPS-PS; e.g., “I set higher goals than most people”), Parental Expectations (MPS-PE; e.g., “My parents have expected excellence from me”), Parental Criticism (MPS-PC; e.g., “I never felt like I could meet my parent’s standards”), Doubts about Actions (MPS-DA; e.g., “Even when I do something very carefully, I often feel that it is not quite right”), and Organization (MPS-O; e.g., “Neatness is important to me”). Respondents are asked to rate items from 1 (*strongly disagree*) to 5 (*strongly agree*).

*Behavioral Inhibition System/Behavioral Activation System* (BIS/BAS; Carver & White, 1994). To assess for BIS/BAS motives, we used the BIS/BAS scales. The BIS/BAS scales are a 20-item four-point Likert-type measure of BIS/BAS motives composed of the following four subscales: BIS (e.g., “Criticisms or scolding hurts me quite a bit”), BAS-Reward Responsiveness (BAS-RR; e.g., “When I get something I want, I feel excited and energized”), BAS-Drive (BAS-D; e.g., “When I want something, I usually go all out to get it”), and BAS-Fun Seeking (BAS-FS; e.g., “I will often do things for no other reason than that they might be fun”). Respondents are asked to rate the extent of their agreement from 1 (*strongly disagree*) to 4 (*strongly agree*).

*Worry Domains Questionnaire* (WDQ; Tallis et al., 1992). To assess for different domains of (non-pathological) worry, we used the WDQ. The WDQ is a 30-item five-point Likert-type measure of worry across multiple domains composed of the following six subscales: Relationships (WDQ-R; e.g., “That I will lose friends”), Lack of Confidence (WDQ-LC; e.g., “That I cannot be assertive or express my opinions”), Aimless Future (WDQ-AF; e.g., “That I’ll never achieve my ambitions”), Work Incompetence (WDQ-WI; e.g., “That I will be late for an appointment”), Financial (WDQ-F; e.g., “That my money will run out”), and sociopolitical (WDQ-SP; e.g., “That people treat each other terribly all over the world”). Respondents are asked to rate the extent of their agreement from 0 (*not at all*) to 4 (*extremely*). Higher scores on the WDQ reflect greater general worry.

### 3.3. Procedure

All study measures were administered to all 266 participants in the form of a take-home survey that was to be returned at the next class meeting. Before receiving a survey, participants were informed that their participation was completely voluntary. Students signed consent forms that reiterated the voluntary nature of the study and indicated that all responses would be anonymous. When the completed surveys were returned, all consent forms were immediately removed from the surveys to protect the anonymity of the participants. Of the initial sample, 254 participants completed all the study measures.

## 4. Results

### 4.1. Relations between perfectionism and BIS/BAS motives

To examine the relations between multidimensional perfectionism and BIS/BAS motives, we computed zero-order correlations. Correlations, means, standard deviations, and internal consistencies for these study measures are presented in Table 1. As the table shows, scores on BAS-D were found to be positively and significantly associated with scores on all the MPS subscales (range  $r_s = .13$ – $.23$ ), indicating that drive plays a small but important role in perfectionism. For example, greater drive was most strongly associated with greater concern over mistakes, accounting for 4% of shared variance. Additionally, scores on BIS were found to be positively and significantly associated with MPS-PS and MPS-DA scores ( $r_s = .15$  and  $.17$ , respectively), while scores on BAS-RR were found to be positively and significantly correlated with MPS-PS and MPS-O scores ( $r_s = .16$  and  $.20$ , respectively). Overall, these findings indicate that drive towards a goal, responsiveness to rewards, and responsiveness to punishment or nonrewards are involved in some or all aspects of perfectionism, whereas fun seeking motives have no involvement in perfectionism.

### 4.2. Relations of perfectionism and BIS/BAS motives with domains of worry

Zero-order correlations were computed to examine the relations between BIS/BAS motives and multidimensional perfectionism with different domains of worry. Correlations, means, standard deviations, and internal consistencies for these study measures are presented in Table 2. As the table shows, BIS scores were found to be significantly correlated with scores on all six domains of worry (range  $r_s = .14$ – $.43$ ). In addition, scores on BAS-RR were found to be positively and significantly correlated with scores on all of the domains of worry except with WDQ-SP scores

Table 1

Zero-order correlations for the Multidimensional Perfectionism Scale (MPS) and the Behavioral Inhibition and Activation System (BIS/BAS) Scale

	MPS-CM	MPS-PS	MPS-PE	MPS-PC	MPS-DA	MPS-O	<i>M</i>	<i>SD</i>	$\alpha$
BIS	.11	.15*	-.04	-.01	.17**	.12	17.22	2.74	.79
BAS-RR	-.03	.16*	.08	-.03	.01	.20***	16.33	2.19	.81
BAS-D	.20***	.19**	.23***	.17**	.15*	.13*	11.17	2.25	.82
BAS-FS	.07	.02	-.04	.01	.03	-.03	11.85	1.98	.75
<i>M</i>	23.48	23.84	14.93	9.41	11.44	22.70			
<i>SD</i>	6.88	4.72	3.86	3.53	3.24	5.22			
$\alpha$	.73	.83	.85	.82	.88	.76			

Note:  $N = 254$ . MPS-CM = Multidimensional Perfectionism Scale-Concern over Mistakes; MPS-PS = Multidimensional Perfectionism Scale-Personal Standards; MPS-PE = Multidimensional Perfectionism Scale-Parental Expectations; MPS-PC = Multidimensional Perfectionism Scale-Parental Criticism; MPS-DA = Multidimensional Perfectionism Scale-Doubts about Actions; MPS-O = Multidimensional Perfectionism Scale-Organization; BIS = Behavioral Inhibition System; BAS-RR = Behavioral Activation System-Reward Responsiveness; BAS-D = Behavioral Activation System-Drive; BAS-FS = Behavioral Activation System-Fun Seeking.

\*  $p < .05$ .

\*\*  $p < .01$ .

\*\*\*  $p < .001$ .

Table 2

Zero-order correlations for the Worry Domains Questionnaire (WDQ), Multidimensional Perfectionism Scale (MPS), and the Behavioral Inhibition and Activation Systems (BIS/BAS)

	Relationship	Lack of confidence	Aimless future	Work incompetence	Financial	Sociopolitical
BIS	.29***	.43***	.21***	.22***	.14*	.16**
BAS-RR	.15*	.24***	.18**	.19**	.14*	.02
BAS-D	.12	.12*	.15*	.20**	.07	.09
BAS-FS	.14*	.07	.13*	.12*	.07	.09
MPS-CM	.44***	.43***	.45***	.50***	.34***	.25***
MPS-PS	.18**	.08	.08	.14*	.05	.04
MPS-PE	.26***	.18**	.12	.15*	.10	.08
MPS-PC	.34***	.32***	.30***	.30***	.27***	.14*
MPS-DA	.44***	.41***	.49***	.52***	.33***	.26***
MPS-O	.04	.07	-.04	-.05	.01	-.06
<i>M</i>	6.35	7.27	7.46	6.90	7.92	6.81
<i>SD</i>	4.35	5.01	4.83	4.52	4.98	4.34
$\alpha$	.96	.92	.95	.91	.92	.89

Note:  $N = 254$ .

\*  $p < .05$ .

\*\*  $p < .01$ .

\*\*\*  $p < .001$ .

(range  $r_s = .14$ – $.24$ ). In contrast, BAS-D and BAS-FS scores were found to be significantly correlated with scores on only three of the six domains of worry. Specifically, BAS-D and BAS-FS scores were correlated with both WDQ-AF and WDQ-WI scores (range  $r_s = .12$ – $.20$ ). In addition, BAS-D scores were correlated with WDQ-LC scores ( $r = .12$ ) and BAS-FS scores were correlated with WDQ-R scores ( $r = .14$ ).

For multidimensional perfectionism, scores on all six domains of worry were positively and significantly correlated with scores on MPS-CM (range  $r_s = .44$ – $.50$ ), MPS-PC (range  $r_s = .14$ – $.34$ ), and on MPS-DA (range  $r_s = .26$ – $.52$ ), while scores on none of the domains of worry were significantly correlated with MPS-O scores. In addition, MPS-PS scores were significantly correlated with WDQ-R and WDQ-WI scores ( $r_s = .14$  and  $.18$ , respectively) and MPS-PE scores were significantly correlated with WDQ-R, WDQ-LC, and WDQ-WI scores ( $r_s = .26$ ,  $.18$ , and  $.15$ , respectively). Taken together, these findings indicate that both BIS/BAS motives and multidimensional perfectionism are involved in different domains of worry.

Parenthetically, it is worth noting that there were considerable differences in mean scores across the different worry domains. For example, WDQ-AF scores were found to be significantly greater than WDQ-R scores,  $M_s = 7.46$  vs.  $6.35$ , respectively,  $t(253) = 5.13$ ,  $p < .001$ . Alternatively, WDQ-WI scores were found to be significantly lower than WDQ-F scores, ( $M_s = 6.90$  vs.  $7.92$ , respectively,  $t(253) = 3.70$ ,  $p < .001$ ). Thus, the present findings underscore the value of examining different sources of worry.

#### 4.3. BIS/BAS motives as predictors of worry: Should perfectionism still be included as a predictor?

To examine the extent to which BIS/BAS motives and multidimensional perfectionism predicted different domains of worry, we conducted a series of hierarchical regression analyses for

Table 3

Hierarchical regression analyses showing amount of variance in different domains of worry accounted for by BIS/BAS motives and perfectionism

Worry domains	$\beta$	$R$	$R^2$	$\Delta R^2$	$F$	$df$
<i>Relationship</i>						
BIS/BAS		0.31	0.10	–	6.67***	4249
BIS	0.28***					
BAS-RR	–0.03					
BAS-D	0.05					
BAS-FS	0.10					
Perfectionism		0.56	0.31	0.21	12.53***	6243
MPS-CM	0.23**					
MPS-PS	–0.08					
MPS-PE	0.10					
MPS-PC	0.04					
MPS-DA	0.25***					
MPS-O	0.02					
<i>Lack of confidence</i>						
BIS/BAS		0.44	0.19	–	14.63**	4249
BIS	0.41***					
BAS-RR	0.05					
BAS-D	0.06					
BAS-FS	–0.03					
Perfectionism		0.63	0.39	0.20	15.62***	6243
MPS-CM	0.29***					
MPS-PS	–0.25***					
MPS-PE	0.02					
MPS-PC	0.10					
MPS-DA	0.20**					
MPS-O	0.08					
<i>Aimless future</i>						
BIS/BAS		0.26	0.07	–	4.35**	4249
BIS	0.17*					
BAS-RR	0.05					
BAS-D	0.09					
BAS-FS	0.05					
Perfectionism		0.59	0.35	0.29	18.09***	6243
MPS-CM	0.33***					
MPS-PS	–0.15*					
MPS-PE	–0.11					
MPS-PC	0.03					
MPS-DA	0.36***					
MPS-O	–0.06					
<i>Work incompetence</i>						
BIS/BAS		0.28	0.08	–	5.42***	4249
BIS	0.18**					
BAS-RR	0.42					

(continued on next page)

Table 3 (continued)

Worry domains	$\beta$	$R$	$R^2$	$\Delta R^2$	$F$	$df$
BAS-D	0.14*					
BAS-FS	0.02					
Perfectionism		0.63	0.40	0.32	21.59***	6243
MPS-CM	0.41***					
MPS-PS	-0.11					
MPS-PE	-0.08					
MPS-PC	-0.07					
MPS-DA	0.36***					
MPS-O	-0.10					
<i>Financial</i>						
BIS/BAS		0.16	0.03	–	1.73	4249
BIS	0.10					
BAS-RR	0.08					
BAS-D	0.02					
BAS-FS	0.02					
Perfectionism		0.44	0.19	0.16	8.12***	6243
MPS-CM	0.27**					
MPS-PS	-0.15*					
MPS-PE	-0.09					
MPS-PC	0.12					
MPS-DA	0.19**					
MPS-O	0.03					
<i>Sociopolitical</i>						
BIS/BAS		0.21	0.05	–	2.99*	4249
BIS	0.20**					
BAS-RR	-0.14					
BAS-D	0.09					
BAS-FS	0.08					
Perfectionism		0.34	0.12	0.07	3.19**	6243
MPS-CM	0.20*					
MPS-PS	-0.08					
MPS-PE	0.01					
MPS-PC	-0.07					
MPS-DA	0.17*					
MPS-O	-0.06					

Note:  $N = 254$ .

\*  $p < .05$ .

\*\*  $p < .01$ .

each domain of worry. In predicting scores on each worry domain, we entered scores for all four BIS/BAS scales as a set in the first step, followed by scores on all six MPS scales as a set in the second step. Results of these regression analyses are presented in Table 3. To examine whether BIS/BAS and MPS scores accounted for a small, medium, or large amount of the variance in

WDQ scores, we used Cohen's (1977) convention for small ( $f^2 = .02$ ), medium ( $f^2 = .15$ ), and large effects ( $f^2 = .35$ ).

As the table shows, in predicting relationship worries, BIS/BAS scores were found to account for a small ( $f^2 = .11$ ) 10% of the variance in WDQ-R scores. Within the BIS/BAS predictor set, only BIS scores were found to be a unique predictor ( $\beta = .28$ ). MPS scores were found to account for a medium ( $f^2 = .27$ ) 21% of additional variance in relationship worries. Within the MPS predictor set, only MPS-DA ( $\beta = .25$ ) and MPS-CM scores ( $\beta = .23$ ) were found to be unique predictors. In predicting aimless future worries, BIS/BAS scores were found to account for a small ( $f^2 = .08$ ) 7% of the variance in WDQ-LC scores. Within the BIS/BAS predictor set, only BIS scores were found to be a unique predictor ( $\beta = .17$ ). MPS scores were found to account for a large ( $f^2 = .41$ ) 29% of additional variance in aimless future worries. Within the MPS predictor set, only MPS-DA ( $\beta = .36$ ), MPS-CM ( $\beta = .33$ ), and MPS-PS scores ( $\beta = -.15$ ) were found to be unique predictors. In predicting lack of confidence worries, BIS/BAS scores were found to account for a medium ( $f^2 = .23$ ) 19% of the variance in WDQ-AF scores. Within the BIS/BAS predictor set, only BIS scores were found to be a unique predictor ( $\beta = .41$ ). MPS scores were found to account for a medium ( $f^2 = .25$ ) 20% of additional variance in lack of confidence worries. Within the MPS predictor set, only MPS-CM ( $\beta = .29$ ), MPS-PS ( $\beta = -.25$ ), and MPS-DA scores ( $\beta = .20$ ) were found to be unique predictors.

In predicting work incompetence worries, BIS/BAS scores were found to account for a small ( $f^2 = .09$ ) 8% of the variance in WDQ-WI scores. Within the BIS/BAS predictor set, only BIS ( $\beta = .18$ ) and BAS-D scores ( $\beta = .14$ ) were found to be unique predictors. MPS scores were found to account for a large ( $f^2 = .47$ ) 32% of additional variance in work incompetence worries. Within the MPS predictor set, only MPS-CM ( $\beta = .41$ ) and MPS-DA scores ( $\beta = .36$ ) were found to be unique predictors. In predicting financial worries, BIS/BAS scores were not found to account for a significant amount of the variance in WDQ-F scores. Not surprisingly, within the BIS/BAS predictor set, no unique predictors emerged. MPS scores were found to account for a medium ( $f^2 = .19$ ) 16% of additional variance in financial worries. Within the MPS predictor set, only MPS-CM ( $\beta = .27$ ), MPS-DA ( $\beta = .19$ ), and MPS-PS scores ( $\beta = -.15$ ) were found to be unique predictors. Lastly, in predicting sociopolitical worries, BIS/BAS scores were found to account for a small ( $f^2 = .05$ ) 5% of the variance in WDQ-SP scores. Within the BIS/BAS predictor set, only BIS scores ( $\beta = .20$ ) were found to be a unique predictor. MPS scores were found to account for a small ( $f^2 = .08$ ) 7% of additional variance in sociopolitical worries. Within the MPS predictor set, only MPS-CM ( $\beta = .20$ ) and MPS-DA scores ( $\beta = .17$ ) were found to be unique predictors. Overall, the present regression findings indicate that beyond BIS/BAS motives, perfectionism is an important unique predictor of different domains of worry.

## 5. Discussion

One goal of the present study was to examine the relations between perfectionism and BIS/BAS motives. Our findings indicated that drive motives, not BIS motives, had the most consistent association with each dimension of perfectionism. This was unexpected given that BIS motives are believed to be associated with avoidance behavior and perfectionism has typically been viewed as a maladaptive construct (Frost et al., 1990). However, two points are worth noting. First, consistent

with expectations, BIS motives were found to be associated with two of the six dimensions of perfectionism, namely, personal standards and doubts about actions. Thus, BIS motives were found to play some role in perfectionism. Had we studied a more selective college student population (e.g., students reporting academic/emotional problems) we might have found BIS motives to play a more prominent role in perfectionism. Second, although we focused on BIS motives, it is apparent that BAS motives, especially drive motives, should have strong associations with perfectionism given the chronic emphasis placed by the individual on actively pursuing high goals. Indeed, our correlational findings indicate that such motives, especially drive motives, represent a basic component of perfectionism in college students.

A second goal of the present study was to examine the relations of BIS/BAS motives and perfectionism with different domains of worry. Consistent with our hypothesis, both BIS/BAS motives and perfectionism were significantly associated with different domains of worry. As predicted, BIS motives were significantly involved in each of the six domains of worry. Interestingly, some BAS motives were also found to be involved in each of the different worry domains. For example, reward responsiveness, drive, and fun seeking motives were all positively associated with work incompetence worries. A similar pattern was also found for aimless future worries. Accordingly, these findings suggest that the different domains of worry may involve both constructive and destructive motives. In turn, it might be the presence of BIS/BAS motives that not only fosters an appreciation or concern that something is wrong, but also promotes energy and effort to ensure that the source of one's worries is addressed. Indeed, Tallis, Davey, and Capuzzo (1994) found that college students characterized worry as a motivating force towards desired goals (vs. a source of anxiety and avoidance). Similarly, Borkovec, Ray, and Stöber (1998) has noted that non-pathological forms of worry may function constructively by increasing cognitive thought processes, which may then reduce one's immediate exposure to aversive imagery by fostering coping resources.

As expected, many of the perfectionism dimensions were found to be significantly and positively associated with the different domains of worry. For example, concern over mistakes, doubts about actions, and parental criticism were significantly and positively associated with all six domains of worry. Indeed, Stöber and Joormann (2001) also found these three dimensions (plus parental expectations) to be positively and significantly associated with general worry (i.e., total WDAQ scores). However, from looking at different domains of worry, our findings showed that personal standards may also play an important role in relationship worries and work incompetence worries. Similarly, our findings showed that parental expectations is involved in relationship worries, lack of confidence worries, and work incompetence worries, but is not involved in aimless future worries, financial worries, nor in sociopolitical worries (cf. Stöber & Joormann, 2001). Taken together, the present findings clearly show that BIS/BAS motives and perfectionism have important associations with different domains of worry among college students.

Finally, we sought to determine whether perfectionism would remain an important predictor of worry beyond BIS/BAS motives. As discussed earlier, BIS/BAS motives have been implicated in a variety of negative affective conditions in past research, including anxiety (e.g., Carver & White, 1994), and there was good reason to wonder if perfectionism would add much utility in predicting worry. Results from the present study suggest that there is. Specifically, although BIS/BAS motives accounted for a small to medium amount of the variance in worry, ranging from 5% (sociopolitical worries) to 19% (lack of confidence worries), perfectionism was found to account for an

additional small to large amount of unique variance in worry, ranging from 7% (sociopolitical worries) to 32% (work incompetence worries). In predicting the different domains of worry, BIS was found to be the only unique predictor within the BIS/BAS set to predict each of the domains of worry, except for financial worries. Within the perfectionism set, concern over mistakes and doubts about actions, were the two unique perfectionism dimensions to predict all six different domains of worry. This pattern is consistent with past findings indicating that these two perfectionism dimensions may be most strongly associated with maladjustment (Frost et al., 1990).

Interestingly, it is worth noting that we found personal standards to also be an important unique predictor of three domains of worry, namely, lack of confidence worries, aimless future worries, and financial worries. Given that personal standards was not found to be significantly associated with any of these domains of worry based on our earlier simple correlations, these regression findings suggest that beyond BIS/BAS motives, the inclusion of other perfectionism dimensions within the predictor set may have had the effect of uncovering adaptive attributes of personal standards after the common maladaptive qualities of perfectionism have been separated from this dimension. In that regard, there has been some growing evidence to suggest that personal standards may represent some adaptive qualities of perfectionism (Chang, 2003). Overall, our regression findings not only confirmed that perfectionism is an important predictor of worry in college students beyond BIS/BAS motives, but they also pointed to the strong involvement of concern over mistakes and doubts about actions in predicting different domains of worry. Accordingly, our findings suggest that beyond basic motivational differences, there may be some practical value in efforts to reduce worries in college students to include interventions that specifically target concern over mistakes and doubts about actions.

## 6. Conclusion

In conclusion, the present study expands on past research that indicated that perfectionism is associated with worry in college students. Specifically, the present study showed that beyond powerful biological predictors, namely, BIS/BAS motives, perfectionism remained an important unique predictor of non-pathological worry. Further studies are now needed to clarify and expand on these findings. For example, some have suggested alternative approaches to studying BIS/BAS motives (e.g., joint subsystems hypothesis; Corr, 2002). Also, it would be important to determine if racial and cultural variations exist in the perfectionism and worry link (Chang, 2003).

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