

Perception matters for clinical perfectionism and social anxiety



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ABSTRACT

Despite research documenting a relationship between social anxiety and perfectionism, very little research has examined the relationship between social anxiety and *clinical perfectionism*, defined as the combination of high personal standards and high maladaptive perfectionistic evaluative concern. In the current studies we examined whether clinical perfectionism predicted social anxiety in a large sample of undergraduates ($N=602$), in a clinical sample of participants diagnosed with social anxiety disorder (SAD; $N=180$), and by using a variance decomposition model of self- and informant-report of perfectionism ($N=134$). Using self-report, we found that an interaction of personal standards and evaluative concern predicted both social interaction anxiety and fear of scrutiny, but not in the theorized direction. Specifically, we found that self-report of low standards and high evaluative concern was associated with the highest levels of social anxiety, suggesting that when individuals with SAD hold low expectations for themselves combined with high concerns about evaluation, social anxiety symptoms may increase. Alternatively, when an informants' perspective was considered, and more consistent with the original theory, we found that the interaction of informant-only report of personal standards and shared-report (between both primary participant and informant) of concern over mistakes was associated with self-reported social anxiety, such that high concern over mistakes and high personal standards predicted the highest levels of social anxiety. Theoretical, clinical, and measurement implications for clinical perfectionism are discussed.

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Perfectionism has garnered clear interest from clinicians and researchers alike. High levels of perfectionism relate negatively to improvement in psychotherapy and negatively impact the

development of a strong therapeutic alliance (Blatt, Quinlan, Pilkonis, & Shea, 1995; Zuroff et al., 2000). Multiple studies indicate that there is a strong relationship between perfectionism and a wide range of psychopathology, including depression, eating disorders, personality disorders, suicide, and anxiety disorders (e.g., Frost, Glossner, & Maxner, 2010; Lundh & Öst, 2001; Shafraan, Cooper, & Fairburn, 2002). One disorder that has received considerable attention regarding perfectionism is social anxiety disorder (SAD) (Heimberg, Juster, Hope, & Mattia, 1995; Juster et al., 1996). As with a variety of other disorders, individuals with SAD have elevated scores on perfectionism measures compared to controls (e.g., Antony, Purdon, Huta, & Swinson, 1998) and perfectionism has been found to impede cognitive behavioral treatments for SAD (e.g., Lundh & Öst, 2001).

However, perfectionism is not always presumed to be maladaptive. Instead, perfectionism has been conceptualized as having two

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dimensions: an adaptive type (e.g., high personal standards), that may be related to healthy functioning (Dibartolo, Frost, Chang, Lasota, & Grills, 2004), and a maladaptive type (e.g., evaluative perfectionism), related to negative outcomes such as anxiety and depression (Dibartolo, Li, & Frost, 2008). Maladaptive perfectionism is conceptualized as excessive concern about errors and the resulting critical self-evaluation that may then occur, whereas personal standards are conceptualized as setting objectively high goals for oneself (e.g., Slaney, Rice, & Ashby, 2002).

One area of growing interest is in the definition of *clinical perfectionism* (i.e., the type of perfectionism that leads to clinical impairment). Shafran et al. (2002) theorize that it is not purely one dimension of perfectionism that is problematic, but rather, that an interaction of personal standards and maladaptive perfectionism contributes to psychological distress, including SAD. Specifically, these authors theorize that individuals who hold high personal standards for themselves and have concerns about evaluation are likely to suffer impairment from perfectionism. Shafran et al. (2002) define this combination as *clinical perfectionism* or “the overdependence of self-evaluation on the determined pursuit of personally demanding, self-imposed, standards in at least one highly salient domain, despite adverse consequences” (p. 778). According to this theory, in clinical perfectionism, not meeting high personal standards leads to increased self-criticism, especially when such standards are applied to a highly valued area of one’s life (Shafran et al., 2002). Alternatively, it would be expected that having high personal standards without negative self-evaluation could be beneficial by motivating individuals to achieve systematically higher goals (e.g., Frost, Heimberg, Holt, Mattia, & Neubauer, 1993; Terry-Short, Owens, Slade, & Dewey, 1995). This theory has also been articulated by other researchers who posit that problematic perfectionism has multiple components, such that a combination of high personal standards and high evaluative concern (maladaptive perfectionism) leads to impairment (Alden, Ryder, & Mellings, 2002; Lundh, 2004; Stoeber & Otto, 2006).

However, it is important to note that there is considerable debate over the definition of clinical perfectionism, what type of methodology should be utilized to define clinical perfectionism, and which aspects of perfectionism are most relevant for psychopathology (Dunkley, Blankstein, Masheb, & Grilo, 2006; Hewitt, Flett, Besser, Sherry, & McGee, 2003; Lundh, Saboonchi, & Wangby, 2008; Shafran, Cooper, & Fairburn, 2003). In fact, some researchers argue against the idea that there are dimensions of perfectionism, and suggest the usage of more complex person-centered approaches (e.g., Lundh et al., 2008; Wheeler, Blankstein, Antony, McCabe, & Bieling 2011). Other researchers argue that a combination of socially prescribed perfectionism and self-oriented perfectionism may be the best way to conceptualize clinical perfectionism (Gaudreau & Verner-Filion, 2012). More importantly, there is limited empirical evidence showing that an interaction of personal standards and maladaptive perfectionism is associated with psychopathology. In fact, we are unaware of any literature showing that this interaction predicts social anxiety as would be implied by the theory of clinical perfectionism. Further, specifically in reference to social anxiety and adaptive perfectionism, researchers have found that a measure of personal standards has a weak, *negative* relationship with social anxiety, whereas social anxiety and maladaptive perfectionism have a positive relationship (Shumaker & Rodebaugh, 2009).

Although we find the rationale presented by Shafran et al. (2002) compelling, we think that one major reason why empirical research has not provided support for the theory in regard to social anxiety may be because of researchers’ heavy reliance on self-report measures of adaptive and maladaptive perfectionism. It seems plausible that perfectionism may not always be accurately perceived within

an individual, especially within individuals with high social anxiety. Individuals with high social anxiety tend to perceive themselves in an overly negative manner (e.g., Rapee & Lim, 1992) and often report low confidence in their abilities to succeed (Moscovitch, Orr, Rowa, Reimer, & Antony, 2009). Such biased, negative self-perceptions make it seem plausible that asking individuals with higher social anxiety whether they have high personal standards may yield inaccurate or incomplete results. It seems likely that individuals high in social anxiety may perceive themselves as having low standards, even if others perceive them as having high standards. Perhaps excessively high personal standards may be perceived more accurately by an informant rather than by the self for such individuals. If that is the case, when the report of a knowledgeable informant is obtained, we may be more likely to find an interaction aligned with the original theory of clinical perfectionism.

It is also worth considering that the combination of a (however inaccurate) perception of low ability and low standards with high fears of making critically evaluated mistakes may increase symptoms of social anxiety. For example, an individual who reports low confidence in her ability to personally succeed combined with an overwhelming fear of making mistakes may feel socially anxious in situations where she perceives she is undergoing scrutiny by others. Investigations relying on self-report might therefore tend to find that when the expected interaction between personal standards and maladaptive evaluation concerns is found, the direction of the interaction may not be consistent with the original theory.

We hypothesized that, in both a clinical and non-clinical sample, we would *not* find the originally theorized interaction in the expected direction using self-report alone. Instead of expecting that *high* standards and high maladaptive perfectionism (or clinical perfectionism as originally theorized) would be related to higher social anxiety, we expected that utilizing self-report alone we would find that *low* personal standards and high maladaptive perfectionism would be associated with higher social anxiety. We based this alternative hypothesis on theory and literature that shows individuals with SAD are likely to be negatively biased and perceive themselves in a negative manner (Moscovitch et al., 2009). Therefore, we would expect that individuals with SAD would be more likely to report low standards reflecting a lack of confidence in their abilities. This reflection of low standards, combined with maladaptive perfectionism and concern about evaluation by others, may then be related to high social anxiety.

Additionally, given that research shows that self-report is often negatively biased, especially within individuals with high social anxiety (Moscovitch et al., 2009; Rapee & Heimberg, 1997), we expected that excessively high personal standards may be more usefully evaluated by an informant rather than by the self. Thus, in a third sample, we tested if informant-only report of high standards (i.e., an informant report factor that was uncorrelated with self-report items) in combination with high concern over mistakes (as reported by both self and informant) would be related to heightened social anxiety. In essence, we theorize that, as Shafran et al. speculated, a combination of personal standards and maladaptive perfectionism is impairing, however, more specific measurement (self versus informant) may impact how personal standards appears to impact social anxiety.

1. Methods: Study 1

1.1. Participants

Participants were 602 undergraduate students combined across three samples collected at three separate universities during the same time period. The first sample was collected at a Midwestern

university ($n = 236$) and consisted of participants who were mostly White ($n = 211$; 90%) and mostly women ($n = 172$; 74%), with a median age of 19.00 years ($SD = 1.49$). Participants were recruited from an introductory psychology class and completed all measures (listed below) online. Portions of this dataset have also been used to test the relationship between social anxiety and avoidance of exercise (Levinson, Rodebaugh, Menatti, & Weeks, 2013) and to test maladaptive perfectionism as a shared risk factor for disordered eating and social anxiety (Levinson, Rodebaugh, White, et al., 2013) but these analyses do not overlap with those presented here. The second sample was collected at a large university in the Southwestern United States ($n = 156$). Participants were all women and of diverse ethnicities: White ($n = 71$; 45.8%), Asian ($n = 37$; 23.9%), Hispanic ($n = 25$; 16.1%), Black ($n = 15$; 9.7%), and other ($n = 8$; 4.5%), with a median age of 19.00 years ($SD = 4.30$). Participants were recruited from undergraduate psychology courses for a study examining the relationships between body image, personality, and mood, and completed all study measures online. The third sample ($n = 210$) was collected at a Midwestern university (different from sample 1) as part of an ongoing longitudinal study. Participants were all women (because the primary aim of the study was to examine disordered eating) and mostly Caucasian ($n = 137$, 65.2%). Other ethnicities represented were: Asian ($n = 49$, 23.3%), Hispanic ($n = 10$, 4.8%), Black ($n = 7$, 3.3%), multi-racial ($n = 6$, 2.9%) and one reported that her ethnicity was not listed (0.5%). The median age in this sample was 18.00 ($SD = 1.01$).

1.2. Measures

The Frost Multidimensional Perfectionism Scale (FMPS) (Frost, Marten, Lahart, & Rosenblate, 1990) measures several dimensional aspects of perfectionism: concern over Mistakes, Doubts about Actions, Parental Criticism, Parental Expectations, Personal Standards, and Organization. We used a combination of these subscales to create measures of adaptive and maladaptive perfectionism as used in previous research (Dibartolo et al., 2004; Frost et al., 1993). The Maladaptive Evaluative Concerns (MEC) subscale sums items from the Concern over Mistakes, Doubts about Actions, Parental Criticism, and Parental Expectations subscales. MEC assesses critical self-evaluation and perceptions of parentally influenced perfectionism. An example item is *People will probably think less of me if I make a mistake*. MEC is related to indicators of poor psychological functioning, such as self-concealment and depression (Dibartolo et al., 2008). We used the MEC subscale as a measure of *maladaptive perfectionism* (see Section 1 for details). For adaptive perfectionism we used the Pure Personal Standards (PPS) subscale, which includes the Personal Standards subscale items that are least related to fear of negative evaluation (Dibartolo et al., 2004) and represents a specific measure of *personal standards*. An example item is *I set higher goals for myself than most people*. We utilized this scoring because confirmatory factor analyses suggest that adaptive and maladaptive perfectionism facets exhibit better fit than a single factor structure for the FMPS (Cox, Enns, & Clara, 2002) and because this structure fits with theory that there are adaptive and maladaptive forms of perfectionism (Alden et al., 2002; Shafran et al., 2002). Internal consistencies were good ($\alpha s = .76, .78$).

The Social Interaction Anxiety Scale (SIAS) (Mattick & Clarke, 1998) is a 20-item measure designed to assess social interaction anxiety. The items describe anxiety-related reactions to a variety of social interaction situations (e.g., *I have difficulty talking with other people; I am tense mixing in a group*). Overall, research on the scale suggests good to excellent reliability and good construct validity (Fernandez, Piccirillo, & Rodebaugh, 2014). When used for statistical analyses, the three reverse-scored items are omitted (i.e., the straightforwardly-worded SIAS, or SIAS-S), as available evidence suggests that the straightforward items fail to load on the same

factor as the other items (Rodebaugh, Woods, Heimberg, Liebowitz, & Schneier, 2006) and appear less related to social anxiety and more related to extraversion than is desirable (Rodebaugh, Woods, & Heimberg, 2007). Removal of the reverse-scored items has no negative effects on the validity of the scale and generally improves convergent validity (Rodebaugh et al., 2007). Internal consistency was excellent ($\alpha = .94$).

The Social Phobia Scale (SPS) (Mattick & Clarke, 1998) is a 20-item scale designed to assess *fear of scrutiny*. Items ask about fears of being scrutinized during routine and performance activities (e.g., *I would get tense if I had to carry a tray across a crowded cafeteria; I become anxious if I have to write in front of other people*). The SPS has been shown to have high levels of internal consistency and test-retest reliability and to adequately discriminate between individuals with SAD and other disorders (i.e., agoraphobia, depression) (e.g., Peters, 2000). Internal consistency was excellent ($\alpha = .94$).

Social anxiety composite. To create a measure of SAD we standardized and summed scores on the Social Interaction Anxiety Scale and Social Phobia Scale (see scale information above). We decided to use this method because composite measures provide a more reliable estimate of the construct (Zeller & Carmines, 1980) and can reduce the number of analyses conducted; this method has been used in previous social anxiety studies (Clark et al., 2003, 2006). Further, research has supported the idea that both scales are related to a higher order construct of social anxiety (e.g., Safren, Turk, & Heimberg, 1998).

1.3. Data analytic procedure

We first tested a multiple regression model that included personal standards, maladaptive perfectionism, and the interaction between these variables (i.e., clinical perfectionism) predicting the social anxiety composite. All variables were centered before inclusion in the regression. The SDbeta statistic was used to detect undue influence on the regression line of individual cases with absolute values of one or higher indicating excessive influence (Neter, Wasserman, & Kutner, 1989). We also inspected normality of the standardized residuals utilizing Q-Q plots and histograms to report any instances of non-normality. Next, we conducted post hoc analyses with each social anxiety measure separately to examine whether there were differential effects for each type of social anxiety. Finally, we conducted analyses in Process (Hayes, 2012) to probe any significant (or near significant) interactions. Process is an SPSS macro that uses ordinary least squares methods for estimating two-way interactions in moderation models and also estimates regions of significance for probing interactions. We report estimates from the Johnson–Neyman Technique that shows the effects of the independent variable on the dependent variable at values of the moderator.

2. Results: Study 1

2.1. Descriptive statistics and zero-order correlations

All variables had low skew (.23–.61). Kurtosis values ranged from $-.31$ to $.03$. All variables were normally distributed as determined by the Q-Q plots. Mean levels of social anxiety and perfectionism are presented in Table 1. Maladaptive perfectionism was significantly positively correlated with both social interaction anxiety and fear of scrutiny. Personal standards was negatively correlated with fear of scrutiny but had no significant relationship with social interaction anxiety.

2.2. Simultaneous multiple regression analyses

We utilized simultaneous multiple regression to test hypothesized interaction effects. First, we entered maladaptive

Table 1
Means and zero-order correlations between social anxiety and perfectionism in Study 1.

	Mal Perf	Personal Standards	SIAS-S	SPS
Mean (SD)	58.31 (15.25)	19.03 (5.01)	20.56 (12.60)	16.91 (13.04)
Mal Perf	.78			
Personal Standards	.27**	.76		
SIAS-S	.29**	.01	.94	
SPS	.30**	-.11*	.75**	.94

Note: Mal Perf, Maladaptive Perfectionism; SIAS-S, Straightforward Social Interaction Anxiety Scale; SPS, Social Phobia Scale. Cronbach's α is on the diagonal.

* $p < .05$.

** $p < .001$.

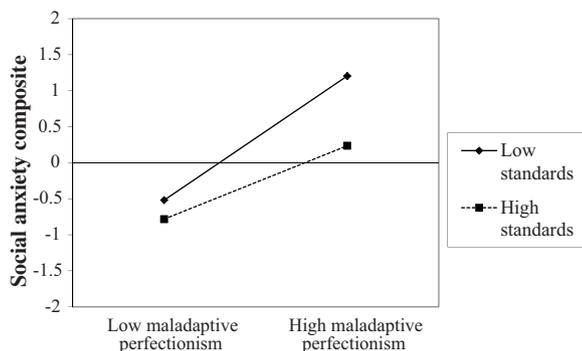


Fig. 1. The interaction between maladaptive perfectionism and high standards predicting social anxiety symptoms in Study 1. Note: Perfectionism is measured by the Frost Multidimensional Perfectionism Measure. Social anxiety is a standardized composite of the Social Interaction Anxiety Scale and Social Phobia Scale.

perfectionism, personal standards, and their interaction into a regression predicting the social anxiety composite. There was a significant interaction between personal standards and maladaptive perfectionism (i.e., a potential effect for clinical perfectionism: part $r = -.10$, $b^* = -.10$, $p = .014$), over and above personal standards (part $r = -.17$, $b^* = -.16$, $p < .001$) and maladaptive perfectionism (part $r = .37$, $b^* = .36$, $p < .001$). We had to remove one case because of a high SD_{beta} value. As can be seen in Fig. 1, this interaction showed that low (not high) standards in combination with high maladaptive perfectionism was associated with high social anxiety: Participants reporting both low personal standards and high maladaptive perfectionism had the highest levels of social anxiety. Probing the interaction revealed that maladaptive perfectionism had a significant effect on social anxiety at low levels of personal standards until reaching a moderator value of 2.06 ($p = .05$), such that maladaptive perfectionism had a significant effect at low (but not high) levels of personal standards.

We then conducted follow-up analyses with fear of scrutiny and social interaction anxiety as outcomes to test if these results held for each type of anxiety separately. Again, the interaction between personal standards and maladaptive perfectionism significantly predicted fear of scrutiny (part $r = -.12$, $b^* = -.11$, $p = .005$). Probing the interaction indicated that maladaptive perfectionism had a significant effect on fear of scrutiny at low levels of standards until reaching a moderator value of 1.96 ($p = .05$). The same pattern as in Fig. 1 emerged: Low personal standards and high maladaptive perfectionism predicted the highest levels of fear of scrutiny. The interaction had a small to moderate effect size predicting social interaction anxiety (part $r = -.08$, $b^* = -.07$, $p = .072$), and showed the same pattern with fear of scrutiny as the outcome.

3. Preliminary conclusions: Study 1

Our results suggest that a combination of self-reported personal standards and maladaptive perfectionism does predict social

anxiety, though not as in the originally theorized direction: low personal standards and high maladaptive perfectionism predicted the highest levels of social anxiety. This finding is consistent with our hypothesis that, in self-report, high personal standards will not magnify the effects of maladaptive evaluative concerns. In the next study, we examined whether results from Study 1 would hold in a sample of individuals diagnosed with SAD.

4. Methods: Study 2

4.1. Participants

Participants were 180 individuals combined across two datasets with a principal diagnosis of SAD. Individuals in the first dataset ($n = 150$) filled out the measures described below before participation in a treatment study in two Northeastern cities. Participants were diagnosed using the Anxiety Disorder Interview Schedule (Di Nardo, Brown, & Barlow, 1994) or Structured Clinical Interview for DSM-IV Axis I Disorders (SCID-I/P; First, Spitzer, Gibbon, Williams, 1996). All participants had a principal diagnosis of SAD. Diagnostic interviews were administered by doctoral psychologists or doctoral students in clinical psychology who had completed training as outlined by Brown, Di Nardo, Lehman, and Campbell (2001) or by physicians or experienced assessors who had completed parallel training. Participants at both sites applied for treatment based on physician or mental health provider referral based on the reputations of the sites in their respective communities. Other participants were recruited through the sites' web pages, as well as print and online advertising about the availability of a clinical trial. Most participants were men ($n = 90$; 60%), with a median age of 30.00 ($SD = 11.45$). Ethnicities reported were White ($n = 72$; 48.0%), Black ($n = 32$; 21.3%), Other ($n = 26$; 17.3%), Asian ($n = 19$; 12.7%), and one participant reported his ethnicity as not listed (0.7%). Current comorbid anxiety and Major Depressive Disorder are as follows: Major Depressive Disorder ($n = 15$; 10.0%); Obsessive Compulsive Disorder ($n = 12$; 8.0%); Panic Disorder ($n = 5$; 3.0%); PTSD ($n = 4$; 2.7%); Generalized Anxiety Disorder ($n = 29$; 19.3%) and Specific Phobia ($n = 9$; 6.0%).

Participants in the second dataset ($n = 30$) filled out the measures before most participants completed a computer task as reported in Rodebaugh et al. (2013). All participants in this dataset were diagnosed with generalized SAD using the Mini International Neuropsychiatric Interview Version 5.0.0 (MINI; Sheehan et al., 1998) and the Liebowitz Social Anxiety Scale (LSAS; Liebowitz, 1987). Diagnostic interviews were completed by a doctoral psychologist or doctoral students in psychology. Inter-rater reliability from a random sample of participants was perfect as reported on in Rodebaugh et al. (2013). Participants were recruited through advertisement by website and flyers posted in public and at clinics in a Midwest metropolitan area. Most participants were women ($n = 19$; 63.3%) with a median age of 34.50 ($SD = 12.29$). Ethnicities reported were White ($n = 19$; 63.3%), Black ($n = 8$; 26.7%), and multi-racial ($n = 3$; 10.0%). Comorbid anxiety and Major Depressive disorders

Table 2
Means and zero-order correlations between social anxiety and perfectionism in Study 2.

	Mal Perf	High standards	SIAS-S	SPS
Mean (SD)	56.36 (16.91)	38.47 (4.13)	44.39 (11.57)	34.92 (16.06)
Mal Perf	.94			
High Standards	.24*	.93		
SIAS-S	.32*	-.01	.90	
SPS	.20*	-.09	.52*	.92

Note: Mal Perf, Maladaptive Perfectionism; SIAS-S, Straightforward Social Interaction Anxiety Scale; SPS, Social Phobia Scale. Cronbach's α is on the diagonal.

* $p < .05$.

** $p < .001$.

are as follows: Lifetime Major Depressive Disorder ($n = 15$; 50%); current Panic Disorder ($n = 4$; 13.3%); Obsessive Compulsive Disorder ($n = 8$; 16.6%), Generalized Anxiety Disorder ($n = 17$; 56.7%) and PTSD ($n = 5$; 16.7%).

4.2. Measures

The Social Interaction Anxiety Scale and the Social Phobia Scale were used (as described in Study 1). Internal consistencies were excellent (α s = .90, .92). In addition to measure perfectionism, we used the:

The Almost Perfect Scale-Revised (APS-R) (Slaney, Rice, Mobley, Trippi, & Ashby, 2001). The APS-R contains three subscales: Discrepancy (12 items), Personal Standards (7 items), and order (4 items), measured on a Likert-type scale ranging from 1 (*strongly disagree*) to 7 (*strongly agree*). The APS-R was designed to measure both maladaptive (discrepancy subscale) and adaptive (personal standards and order subscales) elements of perfectionism. The discrepancy subscale assesses how far apart high standards and eventual outcomes tend to be (e.g., "I am seldom able to meet my own high standards for performance"). The APS-R has good convergent validity and reliability (Rice & Ashby, 2007). In the current study we used the discrepancy subscale as a measure of *maladaptive perfectionism* and the personal standards subscale as a measure of *personal standards*. Therefore, to align with the theory of clinical perfectionism (Shafran et al., 2002), we conceptualized clinical perfectionism as the interaction between Discrepancy (maladaptive perfectionism) and personal standards. We utilized the APS in this study because it is theorized to measure similar constructs of maladaptive perfectionism and personal standards and these two scales are often both utilized in perfectionism research (Shumaker & Rodebaugh, 2009). In other words, both the APS and FMPS purport to measure the same underlying constructs and therefore results should align when utilizing either measure. Internal consistencies were excellent (α s = .94, .93).

4.3. Data analytic procedure

We followed the same data analytic procedure as described for Study 1.

5. Results: Study 2

5.1. Descriptive statistics and zero-order correlations

All variables had low skew ($-.71$ to $.30$). Kurtosis values ranged from $-.48$ to $.30$. All variables were normally distributed as determined by the Q-Q plots. Mean levels of social anxiety and perfectionism are presented in Table 2. Maladaptive perfectionism (discrepancy) was significantly correlated with both social interaction anxiety and fear of scrutiny. Personal standards were not significantly correlated with either type of social anxiety.

5.2. Simultaneous multiple regression analyses

As in Study 1, over and above personal standards (part $r = -.15$, $b^* = -.15$, $p = .087$) and discrepancy (or maladaptive perfectionism: part $r = .23$, $b^* = .24$, $p = .006$) the interaction between personal standards and maladaptive perfectionism (i.e., a potential effect for clinical perfectionism: part $r = .16$, $b^* = .16$, $p = .072$) had a trend-level, moderate effect size. However, with only adequate power to detect the effect, it should be noted that the effect size exceeded the estimate from the larger undergraduate sample. We had to exclude one case in the analysis due to high SDbeta values. Participants with low personal standards had the highest levels of social anxiety in general, whereas participants with high standards and low maladaptive perfectionism had the lowest levels of social anxiety. Probing the interaction revealed that maladaptive perfectionism had a significant effect on social anxiety only at medium and high standardized mean levels of personal standards (moderator value starting at and above -0.356 , $p = .05$).

As in Study 1, we conducted follow-up analyses testing fear of scrutiny and social interaction anxiety as separate outcomes. As can be seen in Fig. 2, the interaction significantly predicted fear of scrutiny (part $r = .21$, $b^* = .22$, $p = .009$), such that participants with high personal standards and low maladaptive perfectionism had lower levels of fear of scrutiny than all other participants. Probing the interaction indicated that maladaptive perfectionism had a significant effect on fear of scrutiny only at high levels of standards (moderator value starting at $.090$, $p = .05$). This effect, although reminiscent of the clinical perfectionism hypothesis, does not support the contention that the combination of high standards and high maladaptive perfectionism contributes specifically to symptom severity because symptom levels were just as high for participants with *low* levels of each construct.

The interaction representing a possible clinical perfectionism effect again was of moderate size when predicting social interaction anxiety (part $r = -.14$, $b^* = -.14$, $p = .084$). As can be seen in Fig. 2, this interaction looks almost identical to the interaction in the undergraduate sample: Participants with high levels of maladaptive perfectionism and *low* standards had the highest levels of social interaction anxiety. Probing the interaction revealed that maladaptive perfectionism had a significant effect on social interaction anxiety at all levels of standards, except for very high levels (moderator value starting at and below 1.32 , $p = .05$).

5.3. Post hoc analyses

To test what might explain the differences between fear of scrutiny and social interaction anxiety as outcomes, we used two regression equations including the other social anxiety variable as a covariate. We used each social anxiety variable as a covariate to test if there was something specific about the interaction that predicts

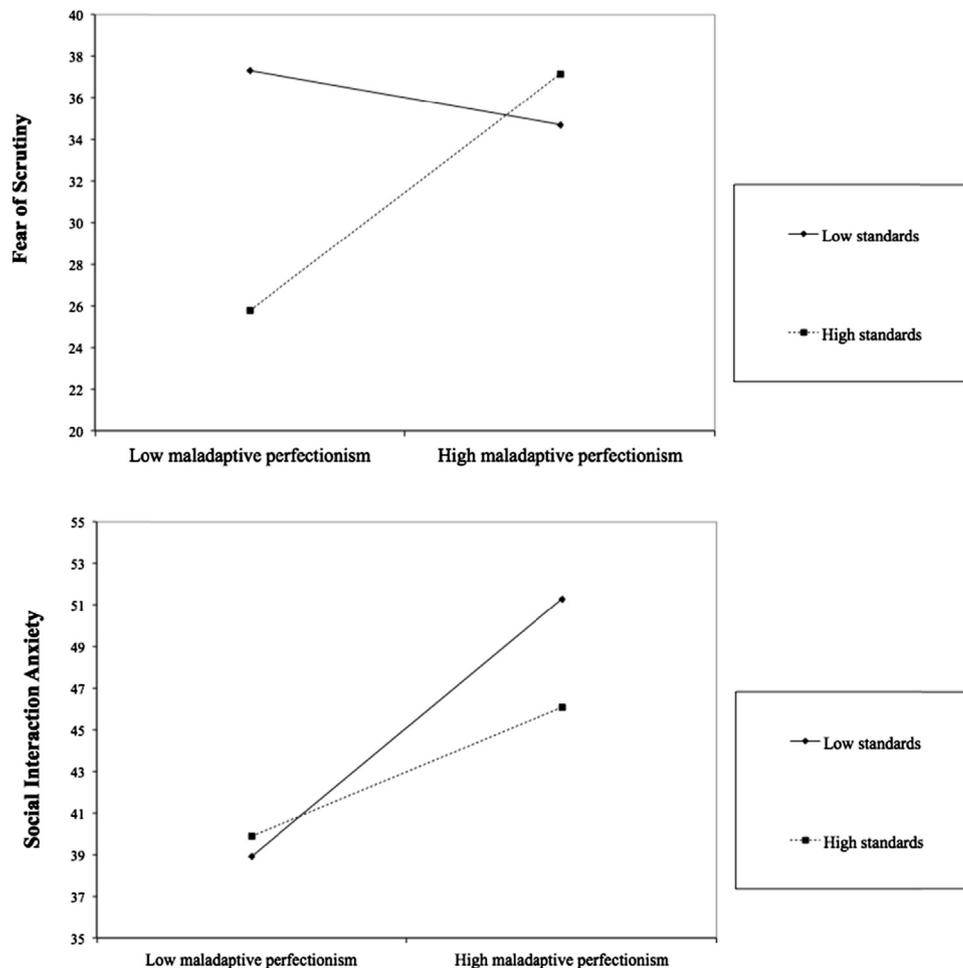


Fig. 2. The interaction between maladaptive perfectionism and personal standards in Study 2 predicting fear of scrutiny and social interaction anxiety.

each specific form of social anxiety when accounting for the variance in the other. Including social interaction anxiety as a covariate, the interaction between personal standards and maladaptive perfectionism (part $r = .20$, $b^* = .18$, $p = .020$) uniquely predicted fear of scrutiny over and above social interaction anxiety (part $r = .48$, $b^* = .49$, $p < .01$). The interaction exhibited the same pattern as in Fig. 2. When fear of scrutiny was included as a covariate predicting social interaction anxiety, the interaction was non-significant (part $r = -.14$, $b^* = -.12$, $p = .111$).

6. Preliminary conclusions: Study 2

In a clinical sample of individuals diagnosed with SAD, we found conflicting results for the role of clinical perfectionism. Similar to Study 1, we found that the combination of low personal standards and high maladaptive perfectionism was related to high levels of social interaction anxiety (though it should be noted that this interaction had a moderate, non-significant effect with only adequate power). When predicting social anxiety symptoms and fear of scrutiny, high personal standards and high maladaptive perfectionism predicted high levels of social anxiety, as did low standards combined with low maladaptive perfectionism. These findings are partially, but not fully consistent with the theory of clinical perfectionism described by Shafran et al. (2002).

Taken together, these findings suggest that as theorized, clinical perfectionism may relate to fears of being scrutinized by others specifically, but not to social interaction fears. However, low levels

of clinical perfectionism (low levels of both maladaptive perfectionism and personal standards) appears to be as problematic as high levels, which is not consistent with the theory that clinical perfectionism produces a notable exacerbation of symptoms, or increased vulnerability to symptoms. Notably, the findings regarding social interaction anxiety are consistent with results from Shim and Fletcher (2012), who found that concern over mistakes was more strongly related to social approach goals (i.e., demonstrating social desirability: such as being seen as having lots of friends) when standards were low. It seems plausible that social approach goals would be related to social interaction anxiety because these goals both involve interactions with others (versus specific fears of scrutiny during performance settings).

Given somewhat inconsistent results across the first two studies that generally do not support the original theory of clinical perfectionism we were testing, we turned to our hypothesis that alternative methods of measuring clinical perfectionism would better capture the theorized constructs. Therefore, in the final study, we tested if informant-report of personal standards and maladaptive perfectionism may better capture clinical perfectionism. Given that individuals high in social anxiety perceive themselves and their experiences more negatively than individuals with lower social anxiety (Moscovitch et al., 2009), we can imagine that individuals with SAD are likely to report that they have low standards, whereas others actually perceive them as having high standards. It may be this discrepancy between self and other report of high standards that explains the contradictory findings relevant to self-reported clinical perfectionism.

7. Methods: Study 3

7.1. Participants

Primary participants were 134 undergraduates at a private Mid-western University who participated as part of a study to develop a behavioral correlate of perfectionism. Participants received course credit for their participation. More than half of participants were women ($n = 84$, 62.7%) and Caucasian ($n = 73$; 54.5%), and the median age was 19.00 ($SD = 1.17$).

7.2. Measures

As described in Studies 1 and 2, we used the Social Interaction Anxiety Scale, Almost Perfect Scale-Revised, and Frost Multidimensional Perfectionism Scale. Internal consistencies were good to excellent ($\alpha s = .82-.95$). All internal consistencies are on the diagonal of Table 3.

7.3. Procedure

Participants completed self-report measures of perfectionism and social anxiety. Participants then completed a computer task not reported on here. After debriefing, each participant was asked to list the name of up to three close friends and two parents who would be asked to complete a brief online survey using SurveyMonkey™, which involved rating the participant's levels of perfectionism as well as other personality measures not discussed here. Informants were specifically asked to rate participants' level of concern over mistakes and personal standards using the relevant FMPS items, adapted to ask about the primary participant.

7.4. Data analytic procedure

Missing data (e.g., for informant data, many participants had missing data: $n = 35$ or 26.1%) were estimated using multiple imputation via the Amelia package in R. Missing data was plausibly missing completely at random because missing data was due to occasional participant non-response on an item or, more frequently, informants happening not to respond to the invitation to participate. We used Amelia to impute five datasets, which were then combined in Mplus version 7 (Muthén & Muthén, 1998–2013). Structural equation modeling (SEM) in Mplus utilizing the WLSMV estimator was used to estimate several latent factors (self-only, informant-only, and shared) in a variance decomposition model (or bifactor model; Brown, 2006), as well as to output plausible values for these latent factors. We utilized plausible values instead of factor scores because Mplus cannot estimate factor scores with

multiple imputation. For more information and a visual representation of this type of model please see Rodebaugh, Gianoli, Turkheimer, and Oltmanns (2010). Importantly, we should note that in this model, self-report is a latent variable of self-only variance whereas informant-report (of parents and peers) is a latent variable of informant-only variance. Finally, shared-report is the variance shared across items, reflecting tendencies across both self and informant responses. In other words, this model divides each item into variance contributed by the particular respondent (self-only or informant-only, depending on the item), and variance in the items that are shared between the self and informant (shared). For example, the informant-only latent variable of personal standards is the variance attributed to personal standards that is unrelated to self-report. In this case, a high score on the informant-only personal standards factor would indicate that the informant rated that person higher on personal standards than would be expected given self-report.

We consulted the following fit indices to determine global model fit: (a) Tucker–Lewis incremental fit index (TLI) (Tucker & Lewis, 1973), (b) comparative fit index (CFI) (Bentler, 1990), and the (c) root mean square error of approximation (RMSEA) (Steiger & Lind, 1980). For all fit indices, we used the Swain correction factor for small samples implemented in the RGui to account for the small size of the sample (Boomsma & Herzog, 2013). We estimated plausible values for personal standards and concern over mistakes from self-only, informant-only, and shared report (variance shared between self and informant). Plausible values are imputed values for latent variables and can be thought of similarly to factor scores (Asparouhov & Muthén, 2010). The plausible values function in Mplus creates both mean and median imputed values. We used mean values in our analyses. Then, in multiple regression, we tested the interaction between the plausible values of high standards and concern over mistakes.

8. Results: Study 3

8.1. Descriptive statistics and zero-order correlations

All variables had low skew ($-.71$ to $.48$). Kurtosis values ranged from $-.62$ to $.20$. All variables were normally distributed as determined by the Q–Q plots. Mean levels of social anxiety and perfectionism are presented in Table 3. Social interaction anxiety was significantly positively related to maladaptive perfectionism across both scales (FMPS and APS-R). Additionally, informant-report of personal standards was significantly positively related to self-report of personal standards across both scales, and informant-reported concern over mistakes was positively related

Table 3

Means and zero-order correlations between perfectionism, social anxiety, and informant report in Study 3.

	FMPS-Mal	FMPS-HS	FMPS-CM	APS-Mal	APS-PS	Inform-CM	Inform-PS	SIAS-S
Mean (SD)	54.07 (14.67)	17.19 (4.27)	22.03 (6.09)	42.46 (15.73)	40.89 (5.40)	22.03 (6.59)	19.03 (3.13)	17.36 (9.73)
FMPS-Mal	.92							
FMPS-HS	.36*	.87						
FMPS-CM	.83**	.49**	.87					
APS-Mal	.57**	.16	.55**	.82				
APS-PS	.18	.65**	.06	.03	.95			
Inform-CM	.22 [†]	.09	.26*	.15	.06	.90		
Inform-PS	.07	.28**	.24*	.00	.28**	.33**	.86	
SIAS-S	.29**	.10	.26**	.30**	-.06	.19	.03	.89

Note: FMPS-Mal, Frost Multidimensional Perfectionism Scale Maladaptive Perfectionism; FMPS-HS, Frost Multidimensional Perfectionism Scale High Standards; FMPS-CM, Frost Multidimensional Perfectionism Scale Concern over Mistakes; APS-Mal, Almost Perfect Scale Revised Discrepancy Scale; APS-PS, Almost Perfect Scale Revised Personal Standards; Inform-CM, Informant reported concern over mistakes; Inform-PS, Informant reported personal standards; SIAS-S, Straightforward Social Interaction Anxiety Scale. Cronbach's αs are on the diagonal.

[†] $p < .05$.

** $p < .01$.

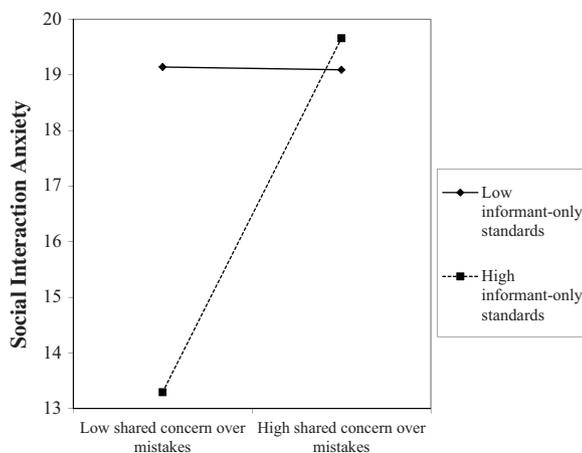


Fig. 3. The interaction between shared concern over mistakes and peer report of high standards.

to self-reported maladaptive perfectionism from the FMPS, but not the APS-R.

8.2. Simultaneous multiple regression analyses: FMPS and APS-R

Next, we tested if the interaction between maladaptive perfectionism and high standards would predict social interaction anxiety using the raw subscales from the FMPS and then from the APS-R, as done in the first two studies. As in Study 1, using the FMPS, the interaction between personal standards and maladaptive perfectionism (part $r = -.15$, $b^* = -.15$, $p = .084$) had a moderate effect size, such that low personal standards and high maladaptive perfectionism displayed a trend toward an association with the highest levels of social interaction anxiety. One case was removed due to a high SD_{beta} value. Using the APS-R, the only significant predictor of social interaction anxiety was the maladaptive perfectionism (discrepancy) scale (part $r = .29$, $b^* = .31$, $p = .001$). The interaction between discrepancy and personal standards was not significant ($p = .768$).

8.3. Variance decomposition model

Model fit. We tested a model of self-only, informant-only, and shared variance for personal standards and concern over mistakes averaged across all five imputed data sets. Note that this model was only possible for these subscales because informants were not administered all of the relevant FMPS and APS-R items. Model fit for personal standards ranged from acceptable to good (CFI = .97, TLI = .95, RMSEA = .09). The Swain correction factor for small sample sizes yielded the following slight improvement in fit indices (CFI = .97; TLI = .95; RMSEA = .08; 90% CI = .05–.12). Model fit for concern over mistakes was acceptable (CFI = .92, TLI = .90, RMSEA = .08). The Swain correction factor for small sample sizes yielded the following slight improvement in fit indices (CFI = .93; TLI = .91; RMSEA = .07; 90% CI = .06–.10).

Interaction between shared and informant report. We calculated plausible values (imputed factor scores for latent variables) for personal standards and concern over mistakes. We conducted a regression that included self-only, informant-only, and shared personal standards and concern over mistakes and all possible interactions of those variables predicting social interaction anxiety. The only significant predictor in this regression was, as hypothesized, an interaction between shared report of concern over mistakes and informant-only report of personal standards (part $r = .19$, $b^* = .20$, $p = .043$). As can be seen in Fig. 3, high shared (between self and informant) report of concern over mistakes and

high informant-only personal standards (i.e., high personal standards the primary participant does not see as high standards) were related to higher levels of social interaction anxiety than the other potential combinations of variables. Probing the interaction revealed that informant-only personal standards had a significant effect on social interaction anxiety at low levels of shared concern over mistakes (moderator value at or below -0.45 , $p = .05$), suggesting that personal standards has an inverse relationship with social anxiety only if shared report of concern over mistakes is low. When probed in the opposite direction (with personal standards as the moderator), shared concern over mistakes had a significant effect on social interaction anxiety at high levels of personal standards (moderator value starting at and above -0.22 , $p = .05$).

9. General discussion

Across three samples using two different measures of perfectionism, we found that a combination of personal standards and maladaptive evaluative concern was related to social anxiety, but that this relationship was dependent on the measure used, type of sample, and person reporting (i.e., self versus informant). The original theory of clinical perfectionism we tested specifies that high personal standards combined with high evaluative concern (maladaptive perfectionism) would be associated with the greatest levels of psychological distress (Shafran et al., 2002). Alternatively, we speculated that using self-report alone, we would find that low standards combined with high maladaptive perfectionism would be associated with high social anxiety. Indeed, in most instances, especially those relying on self-report, we found that low personal standards and high maladaptive perfectionism predicted the highest levels of social anxiety. For undergraduates this finding was consistent across social interaction anxiety, fear of scrutiny, and a combination of the two types of social fears. These findings are consistent with research showing that a combination of low socially oriented perfectionism and high self-prescribed perfectionism are related to measures of impairment (e.g., Gaudreau & Verner-Filion, 2012).

In a clinical sample of individuals diagnosed with SAD, this relationship was less consistent, perhaps reflective of the problems of reliance on self-report alone. Low personal standards and high maladaptive perfectionism predicted high levels of social interaction anxiety, consistent with findings from the undergraduate sample. However, both high and low standards in combination with high maladaptive perfectionism were associated with high levels of fear of scrutiny and the highest levels of fear of scrutiny were associated with low maladaptive perfectionism and low standards. Why might low standards in particular be associated with higher social anxiety? Perhaps the prolonged experience of difficulty with social anxiety leads individuals to lower (or perceive their standards as lower) their standards for themselves, even as individuals continue to expect (and fear) the standards of others. This idea is consistent with research by Wallace and Alden (1995) who found that socially anxious individuals believe that, after a success, their abilities will not meet others expectations. A report of low personal standards may reflect a low sense of one's abilities rather than a preference for low personal standards per se.

Thus, only one finding in regard to self-report alone was consistent with the original theory (high personal standards and high maladaptive perfectionism predicting social anxiety), and this finding still did not fully support the theory. However, when we considered informant-only report of personal standards and concern over mistakes, the picture became somewhat clearer. Specifically, the combination of informant-only report of high personal standards and shared report of high concern over mistakes was associated with high social interaction anxiety. In other words,

high standards that were not perceived by the primary participants, but were perceived by an informant, interacted with views shared between informant-only and self-only of concern over mistakes (shared concern over mistakes).

To the extent that having high standards is a positive personal-identity feature, this result is consistent with research suggesting that individuals high in social anxiety perceive themselves and their experiences more negatively than individuals with lower social anxiety (Moscovitch et al., 2009). Alternatively, it may simply be the case that people are relatively unaware of how their standards appear to others. Whatever the source, in our results, participants who did not see themselves as having high levels of personal standards, but were perceived by informants as having high personal standards, had the most difficulty with social anxiety when shared concern over mistakes was high (when both the participant and informant reported concern about mistakes). Alternatively, participants had the least amount of difficulty when shared concern over mistakes was low. This result is consistent with the idea that in the absence of evaluative concerns, high personal standards can be adaptive (Frost et al., 1993; Terry-Short et al., 1995). This result is also partially consistent with the theory of clinical perfectionism that speculates that individuals who hold high personal standards for themselves and have concerns about evaluation are likely to suffer impairment from perfectionism (Shafran et al., 2002). However, it is also notable that informant-only low standards, regardless of level of shared concern over mistakes, was also related to fairly high levels of social anxiety. This result was found in a modest sample of undergraduate participants and informants and needs further replication in larger, clinical samples. However, we think that measurement of informant and shared perfectionistic concerns is a starting point toward refining both the theory of clinical perfectionism and tests of that theory in the context of social anxiety.

These findings have several implications for the theory of clinical perfectionism. For SAD, it may be that self-report of low personal standards strengthens the relationship between maladaptive perfectionism and at least some forms of social anxiety. However, informant-only report of high personal standards in the context of high shared concern over mistakes may be related to higher social anxiety. Therefore, it seems important to account for both self and informant reports of perfectionism both in research and in clinical settings. For example, it may be that therapists perceive high standards in clients with SAD, whereas the clients themselves do not. Certainly, several of the authors have had this experience clinically. Perhaps this idea may explain why the original theory of clinical perfectionism hypothesizes that high personal standards may enhance the effects of evaluative perfectionism. This relationship might seem apparent to the clinician, yet be challenging to detect using self-report alone, perhaps specifically within individuals with high levels of social anxiety. Of course, these findings do not negate the idea that self-reported high personal standards combined with evaluative concern may be important for other disorders. Specifically, Shafran et al. (2002) discuss this type of perfectionism as important for eating disorders. Future research will need to determine if low standards and high evaluative concerns are relevant for other disorders, such as eating disorders, in addition to SAD.

Several clinical implications stem from this research. First, instead of immediately addressing overly high personal standards in therapy, clinicians may be better served by helping clients clarify the nature of their standards for themselves. Thus, this research is a step toward clarifying which aspects of perfectionism should be targeted when working with individuals with SAD, especially since perfectionism has been shown to be a maintaining factor for SAD (Egan, Wade, & Shafran, 2011). Research that has explored treatment of perfectionism in conjunction with SAD has reported that perfectionism scores among SAD patients significantly declined

after CBT (Lundh & Öst, 2001). Most striking, results from this same study show that treatment non-responders had significantly higher baseline levels of perfectionism than responders, suggesting that perfectionism may need to be targeted as part of CBT for SAD. That is, although one study found that CBT improved perfectionism, perfectionism still impaired treatment response. Indeed, other data suggest that targeting perfectionism directly in treatment of a variety of disorders (a subset of these participants were diagnosed with SAD) leads to subsequent reduction of Axis I symptoms (e.g., anxiety, depression) (Egan & Hine, 2008; Glover, Brown, Fairburn, & Shafran, 2007; Riley, Lee, Cooper, Fairburn, & Shafran, 2007). Treatment response may improve if current treatment protocols for perfectionism (e.g., as in Egan, Wade, Shafran, & Antony, 2014) could be refined to focus specifically on SAD and aspects of perfectionism relevant for SAD.

Our results should be considered within the limitations of the current studies. Our results are cross-sectional and therefore we cannot determine if clinical perfectionism leads to social anxiety or maintains social anxiety, though other research suggests it may be a maintaining factor (Lundh & Öst, 2001). Future research should assess clinical perfectionism and social anxiety over time and whether increasing (or increasing realistic perceptions of) personal standards and decreasing evaluative concerns decreases social anxiety. Future research could test if the closeness of the informant influences their report of their friend. Future research should also continue to clarify the role of clinical perfectionism in different domains of social anxiety to replicate the informant-reported outcomes in our third study. Additionally, future research could test a conceptualization of clinical perfectionism as an interaction term versus other approaches, such as using cluster analysis to identify participants who are identified as *perfectionists* (as in Rice & Ashby, 2007). We also did not utilize the same measurement of perfectionism across studies and it is possible that we would find less conflicting results if we had concentrated on one measure. For example, there may be other, more recently developed, assessments that could better capture clinical perfectionism, such as measures designed specifically to assess only pathological perfectionism and not a combination of two dimensional measures of perfectionism (e.g., Dickie, Surgenor, Wilson, & McDowall, 2012). However, we should note that both scales we used purport to measure very similar perfectionism constructs (Frost et al., 1990; Slaney et al., 2001). Furthermore, our data was from several different universities, which could have influenced how participants responded to measures and we did not assess inter-rater reliability in all of the clinical participants. Finally, in two of the studies our participants were primarily female, whereas in one study participants were primarily male. Future research should test if gender impacts the relationship between social anxiety and clinical perfectionism. Nevertheless, we hope that the current research will help the field move toward a consensus of what type of measurement can best inform our understanding of clinical perfectionism. Of course future research is needed to replicate the results found here in larger samples.

Overall, we found support for the idea that two distinct combinations of standards and evaluative concerns are related to social anxiety: a combination of self-reported low standards and high evaluative concerns, as does informant-only reported high personal standards and shared report of high concern over mistakes. We did not find consistent empirical support for the original theory of clinical perfectionism applied to social anxiety when using only self-report. Our findings suggest that using multiple perspectives to define perfectionism may help to better understand how perfectionism leads to problems with social anxiety. We hope that future research can continue to clarify the role of clinical perfectionism in social anxiety and use this knowledge to refine treatments of SAD to alleviate the suffering associated with this disorder.

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References

- Alden, L. E., Ryder, A. G., & Mellings, T. (2002). Perfectionism in the context of social fears: toward a two-component model. In: Flett, L. Gordon, Hewitt, & L. Paul (Eds.), *Perfectionism: Theory, Research, and Treatment* (pp. 373–391). Washington, DC, USA: American Psychological Association.
- Antony, M. M., Purdon, C. L., Huta, V., & Swinson, R. P. (1998). Dimensions of perfectionism across the anxiety disorders. *Behaviour Research and Therapy*, 36, 1143–1154.
- Asparouhov, T., & Muthén, B. (2010). Weighted least squares estimation with missing data. *Mplus Technical Appendix*, 1–10.
- Bentler, P. M. (1990). Comparative fit indexes in structural models. *Psychological Bulletin*, 107, 238–246.
- Blatt, S. J., Quinlan, D. M., Pilkonis, P. A., & Shea, M. T. (1995). Impact of perfectionism and need for approval on the brief treatment of depression: the National Institute of Mental Health Treatment of Depression Collaborative Research Program revisited. *Journal of Consulting and Clinical Psychology*, 63, 125.
- Boomsma, A., & Herzog, W. (2013). *Correcting structural equation model statistics and indexes under small-sample and/or large-model conditions. R-function Swain*. Retrieved from <http://www.gmw.rug.nl/~boomsma/swain.pdf>
- Brown, T. A. (2006). *Confirmatory factor analysis for applied research*. Guilford Press.
- Brown, T. A., Di Nardo, P. A., Lehman, C. L., & Campbell, L. A. (2001). Reliability of DSM-IV anxiety and mood disorders: implications for the classification of emotional disorders. *Journal of Abnormal Psychology*, 110, 49.
- Clark, D. M., Ehlers, A., Mcmanus, F., Hackmann, A., Fennell, M., Campbell, H., et al. (2003). Cognitive therapy versus fluoxetine in generalized social phobia: A randomized placebo-controlled trial. *Journal of Consulting and Clinical Psychology*, 71, 1058–1067.
- Clark, D. M., Ehlers, A., Hackmann, A., Mcmanus, F., Fennell, M., Grey, N., et al. (2006). Cognitive therapy versus exposure and applied relaxation in social phobia: A randomized controlled trial. *Journal of Consulting and Clinical Psychology*, 74, 568–578.
- Cox, B. J., Enns, M. W., & Clara, I. P. (2002). The multidimensional structure of perfectionism in clinically distressed and college student samples. *Psychological Assessment*, 14, 365–373.
- Dibartolo, P., Li, C., & Frost, R. (2008). How do the dimensions of perfectionism relate to mental health? *Cognitive Therapy and Research*, 32, 401–417.
- Dibartolo, P. M., Frost, R. O., Chang, P., Lasota, M., & Grills, A. E. (2004). Shedding light on the relationship between personal standards and psychopathology: the case for contingent self-worth. *Journal of Rational-Emotive & Cognitive-Behavior Therapy*, 22, 237–250.
- Dickie, L., Surgenor, L. J., Wilson, M., & McDowall, J. (2012). The structure and reliability of the Clinical Perfectionism Questionnaire. *Personality and Individual Differences*, 52, 865–869.
- Di Nardo, P. A., Brow, T. A., & Barlow, D. H. (1994). *Anxiety disorders interview schedule for DSM-IV: life time version: client interview schedule*. Graywind.
- Dunkley, D. M., Blankstein, K. R., Masheb, R. M., & Grilo, C. M. (2006). Personal standards and evaluative concerns dimensions of “clinical” perfectionism: a reply to Shafran et al. (2002, 2003) and Hewitt et al. (2003). *Behaviour Research and Therapy*, 44, 63–84.
- Egan, S. J., & Hine, P. (2008). Cognitive behavioural treatment of perfectionism: a single case experimental design series. *Behaviour Change*, 25, 245–258.
- Egan, S. J., Wade, T. D., & Shafran, R. (2011). Perfectionism as a transdiagnostic process: a clinical review. *Clinical Psychology Review*, 31, 203–212.
- Egan, S. J., Wade, T. D., Shafran, R., & Antony, M. M. (2014). *Cognitive-behavioral treatment of perfectionism*. Guilford Publications.
- Fernandez, K. C., Piccirillo, M. L., & Rodebaugh, T. L. (2014). The status of the field and room for improvement. In *The Wiley Blackwell handbook of social anxiety disorder*.
- First, M. B., Spitzer, R. L., Gibbon, M., & Williams, J. (1996). *Structured Clinical Interview for DSM-IV Axis I Disorders-Patient Edition (SCID-I/P, Version 2.0)*. New York: Biometrics Research Department, New York State Psychiatric Institute.
- Frost, R. O., Glossner, K., & Maxner, S. (2010). Social anxiety disorder and its relationship to perfectionism. In: G. Hofmann, & P. M. DiBartolo (Eds.), *Social anxiety: clinical, developmental, and social perspectives* (pp. 119–145).
- Frost, R. O., Heimberg, R. G., Holt, C. S., Mattia, J. I., & Neubauer, A. L. (1993). A comparison of two measures of perfectionism. *Personality and Individual Differences*, 14, 119–126.
- Frost, R. O., Marten, P., Lahart, C., & Rosenblate, R. (1990). The dimensions of perfectionism. *Cognitive Therapy and Research*, 14, 449–468.
- Gaudreau, P., & Verner-Filion, J. (2012). Dispositional perfectionism and well-being: a test of the 2 × 2 model of perfectionism in the sport domain. *Sport, Exercise, and Performance Psychology*, 1, 29.
- Glover, D. S., Brown, G. P., Fairburn, C. G., & Shafran, R. (2007). A preliminary evaluation of cognitive-behaviour therapy for clinical perfectionism: a case series. *British Journal of Clinical Psychology*, 46, 85–94.
- Hayes, A. F. (2012). *PROCESS: a versatile computational tool for observed variable mediation, moderation, and conditional process modeling*. Retrieved from <http://www.afhayes.com/>
- Heimberg, R., Juster, H., Hope, D., & Mattia, J. (1995). Cognitive-behavioral group treatment: description, case presentation, and empirical support. In: M. B. Stein (Ed.), *Social phobia: clinical and research perspectives* (pp. 293–321). Washington, DC: American Psychiatric Association.
- Hewitt, P. L., Flett, G. L., Besser, A., Sherry, S. B., & McGee, B. (2003). Perfectionism is multidimensional: a reply to Shafran et al., 2002. *Behaviour Research and Therapy*, 41, 1221–1236.
- Juster, H. R., Heimberg, R. G., Frost, R. O., Holt, C. S., Mattia, J. I., & Faccenda, K. (1996). Social phobia and perfectionism. *Personality and Individual Differences*, 21, 403–410.
- Levinson, C. A., Rodebaugh, T. L., Menatti, A., & Weeks, J. W. (2013). Development and validation of the Social Exercise and Anxiety Measure (SEAM): assessing fears, avoidance, and importance of social exercise. *Journal of Psychopathology and Behavioral Assessment*, 35, 244–253.
- Levinson, C. A., Rodebaugh, T. L., White, E. K., Menatti, A., Weeks, J. W., Iacovino, J. M., et al. (2013). Social appearance anxiety, perfectionism, and fear of negative evaluation: distinct or shared risk factors for social anxiety and eating disorders? *Appetite*, 67, 125–133.
- Liebowitz, M. R. (1987). Social phobia. *Modern Problems of Pharmacopsychiatry*, 22, 141–173.
- Lundh, L. G. (2004). Perfectionism and acceptance. *Journal of Rational-Emotive & Cognitive-Behavior Therapy*, 22, 251–265.
- Lundh, L. G., & Öst, L. G. (2001). Attentional bias, self-consciousness and perfectionism in social phobia before and after cognitive-behaviour therapy. *Scandinavian Journal of Behaviour Therapy*, 30, 4–16.
- Lundh, L. G., Saboonchi, F., & Wängby, M. (2008). The role of personal standards in clinically significant perfectionism. A person-oriented approach to the study of patterns of perfectionism. *Cognitive Therapy and Research*, 32, 333–350.
- Mattick, R. P., & Clarke, J. C. (1998). Development and validation of measures of social phobia scrutiny fear and social interaction anxiety. *Behaviour Research and Therapy*, 36, 455–470.
- Moscovitch, D. A., Orr, E., Rowa, K., Reimer, S. G., & Antony, M. M. (2009). In the absence of rose-colored glasses: ratings of self-attributes and their differential certainty and importance across multiple dimensions in social phobia. *Behaviour Research and Therapy*, 47, 66–70.
- Muthén, L. K., & Muthén, B. O. (1998–2013). *Mplus user's guide* (7th ed.). Los Angeles, CA: Muthén & Muthén.
- Neter, J., Wasserman, W., & Kutner, M. H. (1989). *Applied regression models*. Homewood, IL: Irwin.
- Peters, L. (2000). Discriminant validity of the social phobia and anxiety inventory (SPAI), the social phobia scale (SPS) and the social interaction anxiety scale (SIAS). *Behaviour Research and Therapy*, 38, 943–950.
- Rapee, R. M., & Lim, L. (1992). Discrepancy between self-and observer ratings of performance in social phobics.
- Rapee, R. M., & Heimberg, R. G. (1997). A cognitive-behavioral model of anxiety in social phobia.
- Rice, K. G., & Ashby, J. S. (2007). An efficient method for classifying perfectionists. *Journal of Counseling Psychology*, 54, 72.
- Riley, C., Lee, M., Cooper, Z., Fairburn, C. G., & Shafran, R. (2007). A randomised controlled trial of cognitive-behaviour therapy for clinical perfectionism: a preliminary study. *Behaviour Research and Therapy*, 45, 2221–2231.
- Rodebaugh, T. L., Gianoli, M. O., Turkheimer, E., & Oltmanns, T. F. (2010). The interpersonal problems of the socially avoidant: self and peer shared variance. *Journal of Abnormal Psychology*, 119, 331.
- Rodebaugh, T. L., Shumaker, E. A., Levinson, C. A., Fernandez, K. C., Langer, J. K., Lim, M. H., et al. (2013). Interpersonal constraint conferred by generalized social anxiety disorder is evident on a behavioral economics task. *Journal of Abnormal Psychology*, 122, 39.
- Rodebaugh, T. L., Woods, C. M., & Heimberg, R. G. (2007). The reverse of social anxiety is not always the opposite: the reverse-scored items of the Social Interaction Anxiety Scale do not belong. *Behavior Therapy*, 38, 192–206.
- Rodebaugh, T. L., Woods, C. M., Heimberg, R. G., Liebowitz, M. R., & Schneier, F. R. (2006). The factor structure and screening utility of the social interaction anxiety scale. *Psychological Assessment*, 18, 231–237.
- Safren, S. A., Turk, C. L., & Heimberg, R. G. (1998). Factor structure of the social interaction anxiety scale and the social phobia scale. *Behaviour Research and Therapy*, 36, 443–453.
- Shafran, R., Cooper, Z., & Fairburn, C. G. (2002). Clinical perfectionism: a cognitive-behavioural analysis. *Behaviour Research and Therapy*, 40, 773–791.
- Shafran, R., Cooper, Z., & Fairburn, C. G. (2003). “Clinical perfectionism” is not “multidimensional perfectionism”: a reply to Hewitt, Flett, Besser, Sherry & McGee. *Behaviour Research and Therapy*, 41, 1217–1220.
- Sheehan, D. V., Lecrubier, Y., Sheehan, K. H., Amorim, P., Janavs, J., Weiller, E., et al. (1998). The Mini-International Neuropsychiatric Interview (MINI): the development and validation of a structured diagnostic psychiatric interview for DSM-IV and ICD-10. *Journal of Clinical Psychiatry*, 59, 22–33.
- Shim, S. S., & Fletcher, K. L. (2012). Perfectionism and social goals: what do perfectionists want to achieve in social situations? *Personality and Individual Differences*, 52, 919–924.

- Shumaker, E. A., & Rodebaugh, T. L. (2009). Perfectionism and social anxiety: rethinking the role of high standards. *Journal of Behavior Therapy and Experimental Psychiatry*, 40, 423–433.
- Slaney, R. B., Rice, K. G., Mobley, M., Trippi, J., & Ashby, J. S. (2001). *The Revised Almost Perfect Scale. Measurement and Evaluation in Counseling and Development* (34).
- Slaney, R. B., Rice, K. G., & Ashby, J. S. (2002). A programmatic approach to measuring perfectionism: the Almost Perfect Scales. In *Perfectionism: theory, research, and treatment*. Washington, DC: American Psychological Association.
- Steiger, J. H., & Lind, J. C. (1980). Statistically-based tests for the number of factors. In *Paper presented at the Annual Spring Meeting of the Psychometric Society Iowa City, Iowa*.
- Stoeber, J., & Otto, K. (2006). Positive conceptions of perfectionism: approaches, evidence, challenges. *Personality and Social Psychology Review*, 10, 295–319.
- Terry-Short, L. A., Owens, R. G., Slade, P. D., & Dewey, M. E. (1995). Positive and negative perfectionism. *Personality and Individual Differences*, 18, 663–668.
- Tucker, L. R., & Lewis, C. (1973). A reliability coefficient for maximum likelihood factor analysis. *Psychometrika*, 38, 1–10.
- Wallace, S. T., & Alden, L. E. (1995). Social anxiety and standard setting following social success or failure. *Cognitive Therapy and Research*, 19, 613–631.
- Wheeler, H. A., Blankstein, K. R., Antony, M. M., McCabe, R. E., & Bieling, P. J. (2011). Perfectionism in anxiety and depression: comparisons across disorders, relations with symptom severity, and role of comorbidity. *International Journal of Cognitive Therapy*, 4, 66–91.
- Zeller, R. A., & Carmines, E. G. (1980). *Measurement in the Social Sciences: The Link Between Theory and Data*. New York: Cambridge University Press.
- Zuroff, D. C., Blatt, S. J., Sotsky, S. M., Krupnick, J. L., Martin, D. J., Sanislow, C. A., et al. (2000). Relation of therapeutic alliance and perfectionism to outcome in brief outpatient treatment of depression. *Journal of Consulting and Clinical Psychology*, 68, 114–124.