

Perfectionism, Ego Defense Styles, and Depression: A Comparison of Self-Reports Versus Informant Ratings

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ABSTRACT The present study examined the associations among perfectionism, defense styles, and depression in an Israeli community sample of young adults. This study involved a comparison of self-reports and informant ratings on all measures. A community sample of 210 pairs of

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same-sex best friends from Israel completed the Multidimensional Perfectionism Scale, the Defense Styles Questionnaire – 40, and a depression measure. Analyses confirmed that socially prescribed perfectionism is associated with depression, not only in terms of self-reports but also in terms of informant ratings. In addition, informant ratings revealed a link between other-oriented perfectionism and depression. Both self-reports and informant ratings also indicated that socially prescribed perfectionism is associated with immature defense styles and neurotic defense styles. Further simultaneous Structural Equation Modeling (SEM) analyses of self-reports and informant ratings showed that maladaptive defense styles mediate the link between socially prescribed perfectionism and depression. The practical and theoretical implications of these findings are discussed.

The role of perfectionism as a vulnerability factor in depression is one of the most predominant themes in the burgeoning literature on personality and maladjustment. Research with multidimensional measures of perfectionism has shown that there is a consistent association between depression and certain aspects of the perfectionism construct. Specifically, concern over mistakes and socially prescribed perfectionism have been linked with depression (Frost, Marten, Lahart, & Rosenblate, 1990; Hewitt & Flett, 1991a, 1991b). Moreover, these factors have been associated with depression in a variety of samples. For instance, socially prescribed perfectionism has been associated with depression in adolescents (e.g., Hankin, Roberts, & Gotlib, 1997), university students (e.g., Flett, Hewitt, Garshowitz, & Martin, 1997), and current psychiatric patients with diagnosed depression (Enns & Cox, 1999; Flett, Hewitt, Blankstein, & Gray, 1998; Hewitt & Flett, 1991a). Other perfectionism dimensions such as self-oriented perfectionism have also been linked with depression (e.g., Hewitt & Flett, 1991a), but this association is not always evident across studies (see Chang & Sanna, 2001; Enns & Cox, 1999; Flett, Russo, & Hewitt, 1994; Hewitt & Flett, 1991a) or in samples within the same study (see Sherry, Hewitt, Flett, & Harvey, 2003). For instance, in one recent investigation, Sherry et al. (2003) found that self-oriented perfectionism was correlated significantly with depression in a sample of psychiatric patients, but these variables were not correlated significantly in samples of female university students and male university students. Some authors have suggested that self-oriented perfectionism is linked with depression among individuals who have experienced significant life events or who

have maladaptive coping styles, as likely would be the case in a sample composed of severely debilitated psychiatric patients (for a summary, see Hewitt & Flett, 2002). In addition, dysphoric affect is elevated among self-oriented perfectionists who experience failure feedback in performance situations (see Besser, Flett, & Hewitt, 2004).

Although much has been learned about the association between perfectionism and depression, a significant limitation that applies to the vast majority of research investigations with the perfectionism construct is that the findings are based exclusively on participant self-reports, and it is acknowledged widely that self-reports may be influenced by numerous biases (Wiggins, 1973). Thus, in this particular instance, one of the most fundamental issues in the perfectionism area has not been addressed. That is, to what extent is the association between depression and perfectionism dimensions, such as socially prescribed perfectionism, a reflection of relying on self-reports and the tendency for distressed individuals to rate themselves negatively on both personality features and measures of maladjustment? Negative mood states may influence self-ratings of personality. This is a vital issue with respect to socially prescribed perfectionism because a recent investigation of the relative stability of perfectionism over time in depressed patients found that even though there is substantial evidence to indicate that socially prescribed perfectionism reflects a personality trait, there is also some evidence indicating that socially prescribed perfectionism is elevated among patients when they are in the depressive state, and socially prescribed perfectionism is significantly lower when the depression has remitted (see Cox & Enns, 2003). Contemporary research with the perfectionism subscale of the Dysfunctional Attitudes Scales also suggests mood state dependence such that the experience of depression contributes to elevated perfectionism scores (see Beevers & Miller, 2004).

The need to go beyond self-reports has been documented both in the depression literature (e.g., Flett, Vredenburg, & Krames, 1997) and in the literature on dysfunctional personality characteristics (see Besser & Priel, 2003; Klein, 2003), yet perfectionism researchers, for the most part, have not utilized alternative forms of assessment. It is generally accepted that informant ratings are a valuable supplement to self-reports when examining maladaptive aspects of personality and their links with maladjustment (Peselow, Sanfilippo, & Fieve, 1994; Ready & Clark, 2002; Zimmerman, 1994), but, at present, informant ratings have not been used extensively in the perfectionism field.

Accordingly, a central goal of the current investigation was to use a more extensive assessment approach to reexamine the association between depression and the trait dimensions of perfectionism assessed by the Multidimensional Perfectionism Scale (Hewitt & Flett, 1991b, 2004). Specifically, the self-report data gathered from our participants were supplemented by peer ratings. This enabled us to examine the key issue of whether the association between socially prescribed perfectionism and depression could be detected when data are in the form of peer evaluations.

Perfectionism, Coping, and Defense Styles

Another goal of the current research was to investigate the link between dimensions of perfectionism and ego defense styles. In general, it is important to examine perfectionism and defense styles because perfectionists have been described as people with anxious temperaments (Flett, Hewitt, Oliver, & Macdonald, 2002), and the purpose of defense styles or defense mechanisms is unconsciously to ward off the anxiety associated with conflicts and ego threats (Vaillant, 1977). At the theoretical level, regarding the possible association between dimensions of perfectionism and defense styles, a link between perfectionism and neurotic defense styles would be expected on the basis of the seminal conceptualizations by Horney (1950). Horney discussed at length the association between perfectionism and neurotic disturbances, and she posited explicitly that perfectionism is part of the expansive solution that involves a search for mastery that can come to characterize all aspects of the perfectionist's life. In her discussion of "the tyranny of the shoulds," Horney (1950) observed that the defense style of perfectionists is dominated by a neurotic tendency to externalize inner conflicts. She suggested that awareness of imperfections is highly threatening to the extent that when the perfectionist discovers that "he [sic] is not the perfect lover, or is caught in a lie, he may angrily turn against those he failed and build up a case against them" (Horney, 1950, p. 78). Horney went on to observe that neurotic defenses often underscore perceptions of socially imposed expectations. Specifically, she observed,

Again he [sic] may primarily experience his expectations of himself as coming from others. And, whether these others actually do expect

something or whether he merely thinks they do, their expectations then turn into demands to be fulfilled. In analysis he feels that the analyst expects the impossible from him. He attributes to the analyst his own feelings that he should always be productive, should always have a dream to report, should always talk about what he thinks the analyst wants him to discuss, should always be appreciative of help and show it by getting better” (Horney, 1950, p. 78).

The accuracy of Horney’s observations has not been tested in empirical investigations of the link between dimensions of perfectionism and defensive styles. However, research on the trait dimensions of perfectionism has found a consistent link between socially prescribed perfectionism and trait neuroticism (Hewitt, Flett, & Blankstein, 1991; Hill, McIntire, & Bacharach, 1997). In addition, socially prescribed perfectionism has been linked with borderline personality disorder (Hewitt, Flett, & Donovan, 1994), and this personality disorder typically involves primitive and immature defense styles such as splitting and projection (Arntz et al., 2003; Sammallahti & Allberg, 1995). Research has yet to establish the extent to which people characterized by high self-reported levels of socially prescribed perfectionism actually have social networks and surroundings that actually involve the imposition of perfectionistic expectations on the self. Thus, for at least some socially prescribed perfectionists, their personality style may reflect a hostile, paranoid tendency to project blame onto others. Paranoia and projection are generally believed to reflect immature defense styles (see Cramer, 2002; Vaillant, 1994).

In addition to Horney’s observations, previous theory and research by Blatt and his associates on self-criticism and its close ties with perfectionism also suggests an association between perfectionism and the use of immature and neurotic defenses. Blatt (1995) described a self-critical form of perfectionism, and empirical work has found that socially prescribed perfectionism is the trait perfectionism dimension that is associated most strongly with self-critical perfectionism (see Blankstein & Dunkley, 2002; Dunkley, Zuroff, & Blankstein, 2003). According to Blatt and Shichman (1983), self-criticism is part of an introjective orientation that involves protecting and promoting the self through the use of defenses such as projection and externalization (also see Cramer, Blatt, & Ford, 1988). Thus, to the extent that socially prescribed perfectionism involves elements of self-criticism and negative introjects, this perfectionism dimension should

be linked with these maladaptive defense styles. Collectively, then, previous theoretical statements and empirical findings converge on the notion that socially prescribed perfectionism will be linked with neurotic and immature defenses. This possibility was investigated in the current study. Explicit predictions about the possible associations between defense styles and other-oriented perfectionism and self-oriented perfectionism cannot be formulated on the basis of the existing literature, though it could be argued that other-oriented perfectionism could reflect a defensive attempt to draw attention away from the self and blame others for threatening personal outcomes.

We decided that the topic of perfectionism and defense styles is particularly well suited to a methodological approach that includes both self-reports and peer evaluations, given that the less mature defense styles are conceptualized as unconscious responses to life stressors and only more mature defenses are accessible in conscious awareness (see Paulhus, Fridhandler, & Hayes, 1997). Nevertheless, the less mature defense styles are often assessed subjectively via self-report questionnaires. A similar problem applies to other research on individual differences in phenomena that reflect intrapsychic processes (e.g., the use of self-report measures to assess self-deception). Various authors have been critical of self-report measures of defense mechanisms and have recommended the inclusion of observer ratings (see Davidson & MacGregor, 1998; Perry & Ianni, 1998). Accordingly, in the current study, we had both our target participants and peer observers provide assessments of defense styles so that we could examine the extent to which defense styles are observable by peers and test the related issue of the link between perfectionism and defense styles without having to restrict our focus to self-reports.

To our knowledge, there are no published investigations assessing the link between perfectionism and defense styles. However, several investigations have tested the association between perfectionism and ways of coping (e.g., Dunkley, Blankstein, Halsall, Williams, & Winkworth, 2000; Dunkley et al., 2003; Hewitt, Flett, & Endler, 1995). This research has shown consistently that socially prescribed perfectionism is associated with maladaptive coping styles (Dunkley et al., 2000, 2003; Hewitt et al., 1995). Moreover, there are further indications that maladaptive coping mediates the link between socially prescribed perfectionism and psychological distress (Blankstein & Dunkley, 2002; Dunkley & Blankstein, 2000; Dunkley et al., 2000; Dunkley et al., 2003), and this points to the possibility that

maladaptive defense styles will also mediate the link between socially prescribed perfectionism and depression. Some additional recent evidence suggests that certain coping variables may also moderate the link between certain dimensions of perfectionism and psychological distress (Hewitt et al., 1995; O'Connor & O'Connor, 2003; Sherry et al., 2003). For instance, Hewitt et al. (1995) showed in a sample of psychiatric patients that the interaction of self-oriented perfectionism and trait emotion-oriented coping predicted unique variance in depressive symptoms in a psychiatric sample. As expected, elevated depression was reported by participants with both high self-oriented perfectionism and high emotion-oriented coping. Accordingly, in the current study, we also evaluated the possibility that maladaptive defense styles act as either mediators or moderators¹ of the link between perfectionism and depressive symptoms in our participants.

The need to supplement research on perfectionism and coping with research on perfectionism and defense styles is underscored by the fact that there are some important differences between coping styles and defense styles (see Cramer, 1998). Both are important in terms of how individuals respond to stressful situations, but whereas coping styles are seen as conscious ways of reacting to stressors, immature defense styles are often unconscious and certain defense styles may be beyond an individual's level of conscious awareness (see Cramer, 1998; Vaillant, 1992). Thus, it becomes all the more important to determine the extent to which observers can detect individual differences in defense styles.

Consistent with much of the research on defense styles, the current investigation was based on Vaillant's (1977, 1992) hierarchical model of defense mechanisms. According to this model, defense styles vary in terms of their relative levels of maladaptiveness versus adaptiveness, as well as their associated levels of developmental maturity. The four levels described by Vaillant (1994) are psychotic defenses (i.e., delusions and distortions), immature defenses (i.e., projection, denial), neurotic defenses (i.e., reaction formation), and mature de-

1. In line with Baron and Kenny (1986), we used the term *moderator* to refer to a variable Z (e.g., maladaptive defense styles) that qualifies the effect of a predictor variable X (e.g., socially prescribed perfectionism) on a criterion variable Y (e.g., depression), and the term *mediator* is used to refer to a variable Z (e.g., maladaptive defense styles) that accounts for the effect of a predictor variable X (e.g., socially prescribed perfectionism) on a criterion variable Y (e.g., depression).

fenses (i.e., sublimation). Whereas immature defenses are evident early in development (Cramer, 1987), when mature defenses do emerge, they are believed to occur later in development (for a summary, see Punamaki, Kanninen, Qouta, & El-Sarraj, 2002). Clearly, however, some adults continue to retain an immature defense style that renders them vulnerable to various forms of psychological distress (Vaillant & Vaillant, 1992).

A growing literature has shown that depression is associated with the presence of immature and neurotic defenses and with the relative absence of mature defenses (see Kennedy, Schwab, & Hyde, 2001; Kwon & Lemon, 2000; Watson, 2002). Moreover, recovery from depression as a result of therapy has been associated with a shift away from immature defenses toward more mature defenses (Akkerman, Lewin, & Carr, 1999; Kneepkens & Oakley, 1996). More generally, immature and neurotic defenses have been implicated in the experience of various forms of maladjustment, including personality disorders (Devens & Erichson, 1998; Johnson, Bornstein, & Krukonis, 1992; Sinha & Watson, 1999) and anxiety disorders (Andrews, Singh, & Bond, 1993; Kennedy et al., 2001).

In summary, the purpose of the current study was to examine the associations among dimensions of perfectionism, defense style, and depression with a multisource approach that involved the use of self-report data and observer ratings (i.e., the target's best friend). A multifaceted self-report measure of defense styles, the Defense Style Questionnaire-40, was used in the current investigation. The Defense Style Questionnaire was created by Bond and associates (see Bond, 1992; Bond, Gardner, Christian, & Sigal, 1983). We used the abbreviated 40-item version developed by Andrews et al. (1993) to assess a variety of immature, neurotic, and mature defenses.

The main hypotheses that were tested are as follows: First, consistent with past research, it was hypothesized that socially prescribed perfectionism would be associated with depression, both in terms of self-reports and peer ratings of these constructs. Second, it was predicted that dimensions of perfectionism (in particular, socially prescribed perfectionism) would be associated with neurotic and immature defense styles. Third, in keeping with research on mediational models of perfectionism, coping, and depression (e.g., Blankstein & Dunkley, 2002) and models of perfectionism, stress, and coping (e.g., Hewitt & Flett, 2002), we hypothesized that immature and neurotic defense styles would moderate or mediate,

either partially or fully, the association between perfectionism and depression.

METHOD

Participants

Our sample included 210 pairs of same-sex best friends ($N = 420$) including 105 male pairs and 105 female pairs (Israeli community sample). Participants responded to our call for volunteers to take part in a study on “best-friend perceptions.” Participants were a community sample of young adults in their mid-20s ($M = 23.50$, $SD = 3.09$ for target and $M = 23.58$, $SD = 3.02$ for best friends); target-best friend pairs were known to each other for about 7 years ($M = 7.20$, $SD = 5.01$). Participants had more than 12 years of formal education ($M = 12.50$, $SD = 1.10$ for target and $M = 12.49$, $SD = 1.05$ for best friends). No significant differences were obtained for targets and their friends in terms of age or formal years of education.

Measures and Procedure

Participants were contacted initially through advertisements in workplaces asking for volunteers to take part in a study of best friends’ perceptions. Participants were young Israeli adults who had been released from their service in the Israeli army and were in the process of making the transition back to civilian life and perhaps attending university. Participants were from different regions in Israel but had traveled to the area in southern Israel where they were recruited. Participants obtained work in this summer vacation city in a variety of locations (e.g., clubs, hotels, restaurants, shops, etc.). Former members of the military are encouraged to take these jobs as they are deemed to be essential to the tourism industry. The released member of the military is eventually eligible for a money allowance for taking one of these jobs. The participants in our study had already worked for the required amount of time but had stayed in the area to accumulate more money for either attending university or for traveling around the world.

Target and best-friend pairs were invited at the same time. Participants had to know each other for a minimum of 5 years. Initially, 220 pairs responded to our call, but 10 did not complete the study, either because one of the members of the pair failed to show up at the appointed time (four pairs) or one or both members changed their mind about participating (six pairs).

Each pair member was assigned randomly to serve as target or best friend informant. Targets and best friends completed the questionnaire package while seated in separate rooms. This procedure was adopted in an attempt to increase the veridicality of responses. After each pair member completed the background questionnaire, the target participant completed the self-report CES-D, DSQ-40 and the MPS, and the best-friend participant completed the report about the target on the CES-D, DSQ-40 and the MPS. These will be referred to as target reports (i.e., self-reports) and best friend or informant reports (i.e., the best friend's report of the target's socially prescribed perfectionism, self-oriented perfectionism and other-oriented perfectionism, defense styles, and depressive symptoms), respectively. The within and between pairs' order of presentation of the questionnaires was randomized.

Measures

The Multidimensional Perfectionism Scale. The Multidimensional Perfectionism Scale (MPS; Hewitt & Flett, 1991b, 2004) has three subscales of 15 items each. Respondents make 7-point ratings of statements reflecting self-oriented perfectionism (e.g., One of my goals is to be perfect in every thing I do (self-report); One of my best friend's goals is to be perfect in everything he or she does (best friend's rating), other-oriented perfectionism (e.g., "If I ask someone to do something, I expect it to be done flawlessly" (self-report); "If my best friend asks someone to do something, he/she expects it to be done flawlessly" (best friend's rating), and socially prescribed perfectionism (e.g., "My family expects me to be perfect" [self-report]; "My best friend's family expects him/her to be perfect" [friend's rating]). A growing amount of evidence indicates that the MPS subscales have adequate reliability and validity (Cox & Enns, 2003; Flett et al., 1998; Flett, Sawatzky, & Hewitt, 1995; Frost, Heimberg, Holt, Mattia, & Neubauer, 1993; Hewitt, Flett, Turnbull-Donovan, & Mikail, 1991). The respective alpha coefficients in the current study were .80, .84, and .80 for self-reported levels of self-oriented, other-oriented, and socially prescribed perfectionism, respectively. The respective alpha coefficients in the current study were .76, .75, and .83 for best friends' ratings of self-oriented, other-oriented, and socially prescribed perfectionism, respectively.

The Defense Style Questionnaire. The Defense Styles Questionnaire-40 (DSQ-40; Andrews et al., 1993) is a 40-item abbreviated version of a previous 88-item self-report instrument developed initially by Bond, Gardner, Christian, and Sigal (1983) and then refined by Andrews, Pollock, and Stewart (1989). The DSQ-40 (Andrews et al., 1993) consists of 20 two-item subscales. The 20 subscales reflect three factors involving

mature defense styles (e.g., anticipation, humor, rationalization, sublimation, and suppression), neurotic defense styles (e.g., idealization, passive aggression, pseudoaltruism, reaction formation, and undoing), and immature defense styles (e.g., acting out, autistic fantasy, denial, devaluation, displacement, dissociation, isolation, projection, somatization, and splitting). A factor analysis of the DSQ-40 confirmed the presence of three higher-order factors representing mature defense, neurotic defense, and immature defense factors (Andrews et al., 1993). Additional results indicated that the factors comprising the short form are correlated at .93 or higher with the original factor scores from the longer version.

Extensive evidence attests to the reliability and validity of the DSQ-40 and its subscales (e.g., Andrews et al., 1993; Bond, 1995). For instance, a recent investigation used the 20 DSQ-40 subscales as predictors of membership in personality disorder clusters as a means of distinguishing among personality disorder clusters (see Sinha & Watson, 2004).

Our data analyses focused on the three higher-order factors. In the current study, the respective alpha coefficients based on self-reports were .80 for the mature defense factor, .82 for the neurotic defense factor, and .91 for the immature defense factor. The respective alpha coefficients based on best friends' ratings were .89 for the mature defense factor, .86 for the neurotic defense factor, and .79 for the immature defense factor.

Center For Epidemiological Studies Depression Scale (CES-D). The CES-D is a 20-item inventory with items that measure the affective and somatic symptoms of depression (Radloff, 1977). Participants make 4-point ratings (0 to 3) of the symptoms experienced during the past week. Although the scale is typically used as a continuous measure, a score of 16 or higher is regarded as the clinical cutoff for at least a mild case of depression (Radloff, 1977). Extensive evidence in a variety of samples attests to the psychometric properties of the CES-D (see Eaton, Muntaner, Smith, Tien, & Ybarra, 2004). Eaton et al. (2004) observed recently that there are over 900 papers in the published literature that have involved the CES-D. In the current study, the respective alpha coefficients were .87 for self-reports and .84 for best friends' ratings.

RESULTS

Comparisons of Mean Scores for Targets and Best Friend's Ratings

Our initial analyses explored possible mean differences between self-reports and best friend's ratings in overall levels of the variables (see

Table 1). The first set of analyses examined possible differences in reported levels of defense styles. It was found that targets reported higher levels of mature defenses than was reported by their best friends. Similarly, analysis of the immature defense scores showed that the target self-reports were significantly lower than observer ratings for immature defense scores. Thus, the general pattern was that the participant self-reports were more favorable to the self. However, there was no significant difference in levels of neurotic defenses.

Similarly, there was no significant difference in rated levels of depression. Nevertheless, it is worth noting that the obtained overall CES-D means substantially exceed the cutoff of 16 that is used commonly to indicate the presence of at least a mild level of depression. In fact, closer analysis revealed that 127 participants (60.5%) had scores of 16 or more, both in terms of self-reports and informant ratings, so the overall level of distress in this sample was elevated. These elevated levels of distress are likely a reflection of numerous factors, including the participants' transitional stage of life, attendant uncertainty about their individual futures, more general factors involving issues that reflect economic difficulties, as well as ongoing concerns about physical safety.

We also computed comparisons of the MPS means for self-reports and observer ratings. Rating differences emerged for all three subscales. Self-reports were significantly higher than observer ratings for self-oriented perfectionism, and they were marginally higher for socially prescribed perfectionism. In contrast, observers reported higher levels of other-oriented perfectionism.

Correlational Analyses

Concordance of target and best-friend reports. Gender differences in the correlations were not postulated but were nevertheless explored, given that past research on perfectionism and maladjustment has seldom distinguished the results for males versus females, and past evidence suggest that the correlates of defense style may differ for males and females (Cramer, 2002). Preliminary correlation analyses revealed only one clear gender difference—analyses of peer ratings showed that other-oriented perfectionism in female targets was not linked with defense style measures, but other-oriented perfectionism in male targets was associated with neurotic and immature defenses. Moreover, the preliminary correlation analyses for the remaining

Table 1
Mean Differences Between Self-reports and Best Friend's Ratings

Variable	Self-reports				Friend's ratings				95% CI of the differences				Statistics			
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	Lower	Upper	<i>t</i> (209)	<i>p</i> (2-tailed)	Mean difference	<i>SD</i>	Power ¹	Effect size Cohen's <i>d</i> ²		
MPS																
Self-oriented	70.54	15.85	74.67	15.30	6.68	1.57	3.19	3.19	.002	-4.1	18.7	*88.7%	.44			
Socially prescribed	53.18	11.02	51.70	10.73	3.10	.15	1.79	1.79	.075	1.48	11.92	40%	.25			
Other-oriented	55.34	6.48	56.47	6.86	0.062	2.21	2.08	2.08	.038	-1.13	7.90	66%	.29			
DEQ-40																
Mature	11.02	2.46	10.48	2.51	0.17	0.89	3.02	3.02	.003	0.54	2.58	*100%	.42			
Immature	7.62	1.95	8.04	1.84	0.73	0.12	2.74	2.74	.007	-0.42	2.23	*100%	.38			
Neurotic	8.89	2.49	8.98	2.51	.48	.29	.50	.50	.62	-0.09	3.43	7%	.07			
Depression																
CES-D	21.21	7.40	21.08	7.81	1.33	1.07	.21	.21	.83	0.13	8.88	5%	.03			

Note. One goal of the proposed study was to test the null hypothesis that the mean difference (or change) within pairs is 0. We used Power and Precision for a paired *t*-test (Version 2.0; Borenstein, Rothstein, & Cohen, 2001) with the given sample size of 210 pairs and the criterion for significance (alpha) set at 0.050. The test is two-tailed, which means that an effect in either direction was interpreted.

¹Power to yield a statistically significant result with a sample size of 210 pairs of cases with * indicate sufficient power.

²Computed according to Cohen (1988). As can be seen, the results indicate that effect sizes range from low to medium effects.

correlations revealed that the results for the correlations were very similar for male dyads and female dyads ($N = 105$ for each), and comparisons of the correlations for male dyads versus female dyads were nonsignificant. Therefore, the results are presented for the combined sample of men and women ($N = 210$). The correlations among the perfectionism dimensions based on self-reports and peer ratings are shown in Table 2 for the total sample.

Concordance between self- and best friend reports. It can be seen in Table 2 that zero-order correlations among the concordant variables for target and best-friend reports indicated positive significant correlations between target reports and their best friends' perceptions of the following: (1) *Personality vulnerability* (MPS socially prescribed perfectionism $r(210) = .40, p < .001$; self-oriented perfectionism $r(210) = .27, p < .0001$ and other-oriented perfectionism $r(210) = .30, p < .0001$), and (2) *Defense styles factors* (DSQ-40 Immature, $r(210) = .31, p < .0001$, Neurotic, $r(210) = .36, p < .0001$, and Mature, $r(210) = .46, p < .0001$ defense factors). These findings indicate significant moderate congruence between self-reports and best friend reports of targets' perfectionism dimensions and defense styles. The association between self-reports and peer ratings for *depressive symptomatology* (CES-D scores) was $r(210) = .32, p < .0001$. Thus, there was moderate congruence for depression as well.

Parenthetically, it should be noted that the MPS subscales were significantly intercorrelated for both self-reports and peer ratings, and this is typically the case (see Hewitt & Flett, 2004). However, the magnitude of the intercorrelations among the MPS subscales tended to be lower with the peer ratings, relative to the self-reports. Statistical tests of the differences between correlations found that the only significant difference ($Z = 2.86, p < .004$) involved a stronger correlation between self-oriented perfectionism and socially prescribed perfectionism in term of self-reports ($r = .50$) versus peer ratings ($r = .26$).

Correlations among perfectionism, defense styles, and depression among targets' reports (self-reports). As can be seen in Table 2, self-oriented perfectionism scores were not associated significantly with depression or with immature or neurotic defense styles. In contrast, there was a small but significant association between self-oriented perfectionism and mature defense styles. Other-oriented

Table 2
Correlations Among the Study Variables for the Sample as a Whole (N = 210 pairs of same sex best friends)

Variables	1	2	3	4	5	6	7	8	9	10	11	12	13	14
Perfectionism														
1. Self-Oriented (Self)	—													
2. Socially prescribed (Self)	.50***	—												
3. Other-oriented (Self)	.24**	.30***	—											
4. Self-Oriented (Peer)	.27***	.06	.01	—										
5. Socially prescribed (Peer)	.28***	.40***	.14*	.26***	—									
6. Other-oriented (Peer)	.03	.05	.30***	.15*	.25***	—								
Defenses														
7. Mature (Self)	.14*	.16*	.23***	-.07	.08	-.05	—							
8. Neurotic (Self)	.09	.28***	.15*	-.02	.05	-.04	.36***	—						
9. Immature (Self)	.08	.38***	.22***	-.07	.19**	.08	.40***	.55***	—					
10. Mature (Peer)	.01	.07	.10	.07	.10	.00	.46***	.15*	.25***	—				
11. Neurotic (Peer)	.00	.10	-.02	.14	.14*	.08	.06	.36***	.19**	.26***	—			
12. Immature (Peer)	-.03	.13	.16*	-.00	.34***	.21**	.12	.14*	.31***	.31***	.44***	—		
Depression														
13. Depression (Self)	-.03	.21**	.11	-.07	.13	.04	.18**	.39***	.49***	.16*	.30***	.28***	—	
14. Depression (Peer)	.08	.17**	.16*	-.04	.22***	.21**	.06	.24***	.21***	-.00	.36***	.45***	.32***	—
<i>M</i>	74.67	53.18	55.34	70.54	51.70	56.47	11.02	8.89	7.62	10.48	8.98	8.04	21.21	21.08
<i>SD</i>	15.30	11.02	6.48	15.85	10.73	6.86	2.46	2.49	1.95	2.51	2.49	1.84	7.40	7.81

Note. * $p < .05$; ** $p < .01$; *** $p < .001$, two-tailed

perfectionism was not significantly associated with depression. However, other-oriented perfectionism was found to be associated significantly with immature and neurotic defense styles and also with mature defense styles. Only socially prescribed perfectionism was found to be associated significantly with depression. Socially prescribed perfectionism was also associated significantly with immature and neurotic defense styles and with mature defense styles. Self-reported immature and neurotic defense styles were correlated, and each was correlated significantly with depression. Finally, in contrast to previous research, there was a positive association between depression and mature defenses.

Correlations among perfectionism, defense styles, and depression among best friends' reports. The correlational results based on peer ratings of perfectionism and defense styles showed that whether the correlations were comparable to those obtained based on analyses of self-reports varied depending on the MPS dimension in question (see Table 2). It can be seen that, as was the case with the self-report data, peer ratings showed that there were significant correlations between immature defenses and both socially prescribed perfectionism and other-oriented perfectionism. There was also a small but significant correlation between socially prescribed perfectionism and neurotic defenses, as was the case with the self-report data. The most striking differences involved the mature defenses factor. This factor was not related significantly to any of the MPS dimensions based on peer ratings, but when data were in the form of self-reports, then the mature defenses factor was linked positively with all three MPS dimensions (see Table 2). Statistical tests of the differences between correlations found that the only significant difference ($Z = 2.35, p < .02$) involved a significant correlation between other-oriented perfectionism and mature defenses factor in term of self-reports ($r = .23$) versus low non-significant peer ratings correlation ($r = .00$).

It was found for both members of the dyad (i.e., self-reports and peer ratings) that only socially prescribed perfectionism (predictor) met the initial requirements for mediation (i.e., socially prescribed perfectionism was associated with both depression [outcome/criterion] and defenses [mediator]). Thus, the mediational analysis was performed and presented for socially prescribed perfectionism only (for initial requirements for testing a mediation, see Baron & Kenny, 1986).

Moderational/Mediation Analyses

Initially, a series of Hierarchical Multiple Regressions with interactions terms² (Cohen & Cohen, 1983) was performed to examine the moderational hypothesis (i.e., that perfectionism dimensions interact with defense styles to predict elevated depression). These analyses provided no evidence of significant interaction effects, so our analyses focused on tests of mediational effects. Specifically, do maladaptive defense styles (i.e., high immature and high neurotic defenses) mediate the effect of socially prescribed perfectionism on depression? This question was explored using a Structural Equation Modeling (SEM; Hoyle & Smith, 1994) strategy that allows for the simultaneous evaluation of both the direct and mediating effects among the variables obtained from both raters while assessing measurement errors in the dependent and independent variables. All SEM analyses were performed with the AMOS software (Version 4.0, Arbuckle, 1999) using the maximum-likelihood method.

We used the χ^2 statistic as a fit index to evaluate how the “proposed” model (i.e., the model being evaluated) fit the data as compared to the “saturated” model (i.e., the baseline model that represents perfect model fit). A nonsignificant χ^2 has traditionally been used as a criterion for not rejecting an SEM model; a nonsignificant χ^2 indicates that the discrepancy of the matrix of the parameters estimated based on the model being evaluated is not different from the one based on the empirical data. However, this is a very strict, sensitive criterion that is influenced by the number of variables and participants (Landry, Smith, Swank, & Miller-Loncar, 2000). We therefore used additional fit indices³: the chi-square/df

2. Variables were centered (represented as deviations from their own sample means) prior to the computation of the product (interaction) terms by multiplying together the relevant variables.

3. In evaluating the overall goodness-of-fit for the path models, the following criteria were used: (a) the chi-square/df ratio, for which a value in the range of 2–5 indicates a good fit; (b) the Robust Comparative Fit Index (*CFI*; Bentler, 1990); and (c) the Tucker-Lewis Index (*TLI*; 1973). These indices adjust for sample size and specify the amount of covariation in the data that is accounted for by the hypothesized model relative to a null model that assumes independence among variables. For the *CFI*, where 1.0 indicates a perfect fit, a cutoff of 0.90 is generally accepted as indicating a good fit, and for the *RMSEA* (Browne & Cudeck, 1993), an adequately fitting model will have an *RMSEA* index between 0.00 and 0.06 with confidence intervals between 0.00 and 0.08 (Hu & Bentler, 1999). We chose to

ratio, the Root Mean Square Error of Approximation (RMSEA), the Comparative Fit Index (CFI), and the Tucker-Lewis Index (TLI; Tucker & Lewis, 1973). In addition, Hu and Bentler (1999) proposed a more rigorous approach and suggested some additional criteria based on their analyses of rejection rates for indices under various conditions of nonnormality and type of mis-specification (i.e., underspecified only). They found that all indices rejected too few mis-specified models (Type II error), and some indices rejected too many correct models (Type I error). Hu and Bentler (1999) suggested a combinatorial rule, and their recommended criteria (for ML): $SRMR \leq .08$ AND (CFI $\geq .95$ OR RMSEA $\leq .06$) should be satisfied before a conclusion can be drawn that there is a relatively good fit between the hypothesized model and the observed data. Although cautions have been raised about the generalizability of these criteria (see Hu & Bentler, 1998; Marsh, Hau, & Wen, 2004), in accordance with these recent advances, these more stringent guidelines were employed in the current study. The unit of analysis (Kenny, 2003; Kenny & Judd, 1986) was the two sources of information ($N = 210$ pairs).

Analysis of the Mediating Model Analytic Strategy

Initially, we followed Baron and Kenny's (1986) criteria for mediation, according to which: (a) there must be a significant association between the predictor and criterion variables, and (b) in an equation including both the mediator and the criterion variable, there must be a significant association between the predictor and mediator, and the mediator must be a significant predictor of the criterion variable. If the significant direct relationship between the predictor and the criterion variables in the equation, including both the mediator and the predictor variable, declines, the obtained pattern is consistent with the mediation hypothesis. If the direct association approaches zero, the mediator can be said to fully (although not necessarily exclusively) account for the relation between predictor and criterion (Baron & Kenny, 1986).

We followed Baron and Kenny's (1986) recommendations regarding the procedure used to test for mediation; thus, in the following

accept a model in which the chi-square/df ratio is ≤ 2 or in which the *CFI* and *TLI* are greater than 0.95. These moderately stringent acceptance criteria will clearly reject inadequate or poorly specified models, while accepting models that meet real-world criteria for reasonable fit and representation of the data (Kelloway, 1998).

analyses, we first analyzed the direct effects of socially prescribed perfectionism on self-reports and peer ratings of depression (see Figure 1). Then, the direct and indirect effects model of raters' reports of socially prescribed perfectionism on depression through raters' reports of defense styles were specified (see Figure 2a). Both models were analyzed while controlling for the correlations among targets' self-reports and best friends' reports about targets for all variables defined in the models. However, although Baron and Kenny's (1986) recommendations are influential and highly cited, some recent criticisms have been raised (see MacKinnon, Lockwood, Hoffman, West, & Sheets, 2002), especially for their test of the significance of the indirect effect by the use of Sobel's (1982) large sample test. Therefore, in the following analyses, we tested the significance of the mediation by including two other statistics; the Goodman I and Goodman II tests. Finally, we also evaluated our proposed mediational model by studying the sampling variability of estimates of the indirect effect, using the bootstrap framework recently implemented for mediation in SEM by Shrout and Bolger (2002).

The direct effect model. This model included direct paths between targets' reports and best friends' reports about targets' socially prescribed perfectionism as predictors and the two raters' reports of depressive symptomatology as criterion. We also specified and controlled for the associations between the outcome variables (targets and best-friend reported depression).⁴ The specified direct effect model (see Figure 1) resulted in the following acceptable indices of fit: $RMSEA = .000$ (CI, $.000 - .040$); $\chi^2[2, N = 210] = 2.67$; $\chi^2_{df} = 1.33$; $p > .26$; $CFI = .99$; $TLI = .97$. As can be seen in Figure 1, while controlling for raters' reports of socially prescribed perfectionism and depression, results indicated that high target self-reports of socially prescribed perfectionism were significantly associated with targets' self-reports of high scores on depression ($\beta = .18, t = 2.74, p < .006$); in addition, high scores on socially prescribed perfectionism reported by targets' best friends were significantly associated with best friend reports of the target as more depressed ($\beta = .21, t = 3.16, p < .002$).

4. It should be noted that the models estimated are highly conservative, because the accuracy paths were estimated with the high correlations among the CES-D, MPS, and DSQ variables within reporter being simultaneously controlled (i.e., controlled for their associations relating to the same report source).

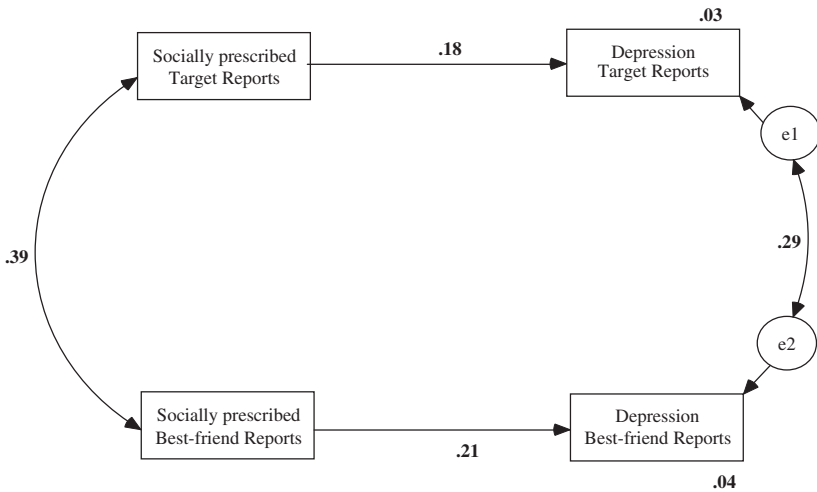


Figure 1

Direct effects of socially prescribed perfectionism on depression: A multisource approach.

Note. Rectangles indicate measured variables. Small circles (e) reflect residuals; numbers nearby endogenous variables represent the amount of variance explained (R^2). Bidirectional arrows depict correlations, and unidirectional arrows depict hypothesized directional, or “causal,” links. Standardized maximum likelihood parameters are used. Bold estimates are statistically significant.

We reanalyzed the model presented in Figure 1 in order to compare the path from Socially Prescribed Target Reports to Depression Target Reports (.18) with the path from Socially Prescribed Best-Friend Reports to Depression Best-Friend Reports (.21), with the added constraint that the causal paths be identical for self-report and peer report. Results indicated that the structural parameters (causal paths) were not significantly different for the two data sources, ($\Delta\chi^2 [df = 1] = 0.226, ns$), indicating that the association among these variables does not differ for self-reports and peer ratings.

Mediational effect model. A mediational model was specified with targets’ self-reports and best friend reports about targets’ socially prescribed perfectionism as predictors and the two raters’ reports of depression as the criterion (as in the direct effect model), as well as the indirect effect of the two reporters’ socially prescribed perfectionism on depression through their effect on the raters’ reports defense mechanism latent variable (high immature and high neurotic styles). The specified mediational effect model (see Figure 2a) resulted in the

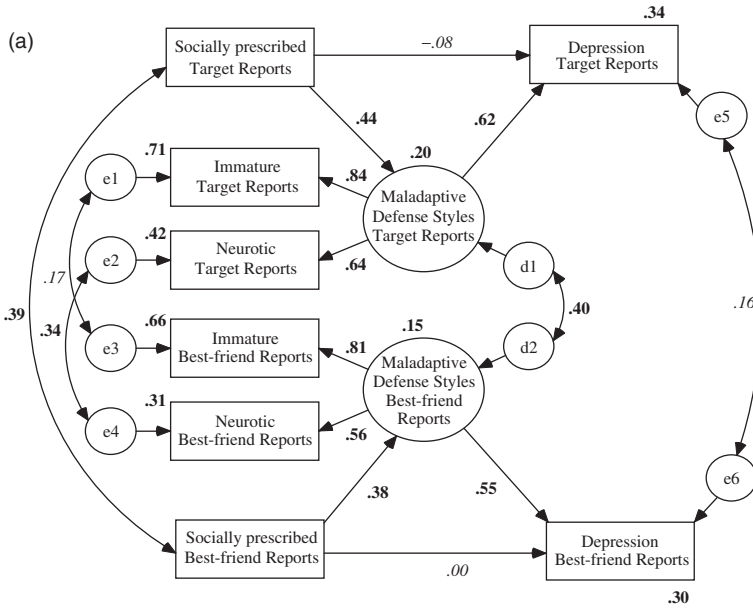


Figure 2a

Mediating role of maladaptive defenses in the association between socially prescribed perfectionism and depression: A multi-source approach.

Note. Rectangles indicate measured variables, and large circles represent latent constructs. Small circles (e) reflect residuals or (d) disturbances; numbers above or nearby endogenous variables represent the amount of variance explained (R²). Bidirectional arrows depict correlations, and unidirectional arrows depict hypothesized directional, or “causal,” links. Standardized maximum likelihood parameters are used. Bold estimates are statistically significant.

following acceptable indices of fit: RMSEA = .000 (CI, .000 – .050); $\chi^2[13, N = 210] = 20.9$; $\chi^2/df = 1.61$; $p > .08$; CFI = .98, TLI = .97.

As can be seen in Figure 2a, participants high in socially prescribed perfectionism were reported as being high in their maladaptive defense levels ($\beta = .44, t = 6.21, p < .0001$), which, in turn, was found to be associated with high depression self-reports ($\beta = .62, t = 5.82, p < .0001$). In addition, simultaneously in the same model, participants who were perceived by their best friends as high in socially prescribed perfectionism were also reported as high in maladaptive defense styles ($\beta = .38, t = 4.90, p < .0001$), and the maladaptive

defense styles construct, in turn, was associated with the best friend perceptions of targets' depression scores ($\beta = .55$, $t = 4.57$, $p < .0001$).

We also reanalyzed the model presented in Figure 2a in order to compare the factor loadings for the two latent variables (Maladaptive Defense Styles for Target and Best-Friend), with the added constraint that the causal paths be identical and the factor loadings for the two latent variables constrained to be invariant for self-report and peer report. Results indicated that structural parameters (causal paths) and factor loadings were not significantly different for the two data sources, ($\Delta\chi^2$ [$df = 4$] = 1.847, *ns*), indicating that the association among these variables does not differ for self-reports and peer ratings.

Finally, we examined whether there were significant links between informant reports of socially prescribed perfectionism and target reports of defenses and depression, as well as between informant ratings of defenses and target reports of depression. Adding these three paths to our model resulted in the following acceptable indices of fit: RMSEA = .000 (CI, .000 – .030); χ^2 [10, $N = 210$] = 12.3; $\chi^2_{/df} = 1.23$; $p > .27$; CFI = .99, TLI = .98. This model significantly improved the fit over the previous model ($\Delta\chi^2$ [$df = 3$] = 8.64, $p < .01$) with a nonsignificant effect of friend report of socially prescribed perfectionism and target report of defenses ($\beta = .02$, *ns*) or depression ($\beta = -.05$, *ns*) and a significant effect of friend report of defenses and target report of depression ($\beta = .27$, $p < .01$). Participants who were perceived by their best friends as high in socially prescribed perfectionism were also perceived as using more immature defenses and then were also reported as more depressed. It is important to note here that adding the links between target reports of socially prescribed perfectionism and best friends' reports of defenses and depression, as well as between targets' reports of defenses and best friends' reports of depression, did not improve the fit of the model, and all three paths were approximately zero ($\beta = .02$, .05, and .08 for target reports of socially prescribed perfectionism and best friend reports of defenses and depression and for target reports of defenses and best friend reports of depression, respectively). We therefore removed the nonsignificant paths and retained the significant effect of the informant ratings of immature defenses on target's depression (see Figure 2b), resulting in the following acceptable indices of fit: RMSEA = .000 (CI, .000 – .020); χ^2 [12, $N = 210$] = 12.84; $\chi^2_{/df} = 1.07$; $p > .38$; CFI = 1.0, TLI = 1.0.

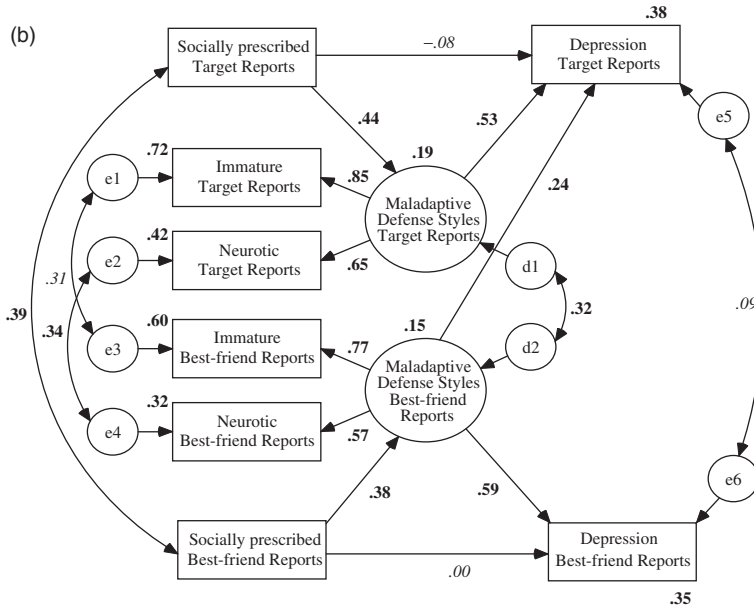


Figure 2b

The effect of best friends' ratings of defenses on targets' depression.

Note. Rectangles indicate measured variables, and large circles represent latent constructs. Small circles (e) reflect residuals or (d) disturbances; numbers above or nearby endogenous variables represent the amount of variance explained (R^2). Bidirectional arrows depict correlations, and unidirectional arrows depict hypothesized directional, or "causal," links. Standardized maximum likelihood parameters are used. Bold estimates are statistically significant.

Note: The model examined the effect of informant reports of socially prescribed perfectionism on target reports of defenses and depression, as well as between informant ratings of defenses and target reports of depression by adding these three paths to the model presented in Figure 2a. Figure 2b presents the final model, including the only obtained significant effect of informant ratings of immature defenses on target's depression.

Statistical Tests of the Indirect Effect

Mediation occurs when the indirect effect of a predictor through a mediator significantly reduces the predictor's direct effect (Baron & Kenny, 1986). As can be seen in Figure 1, the direct paths from socially prescribed perfectionism to depression were significant for both raters. In Figure 2a and 2b, however, these paths approached zero ($\beta = -.08, ns$ and $\beta = .00, ns$ for target and best friend reports,

respectively). The drops in the coefficients of the direct paths from socially prescribed perfectionism to depression, once the defense mechanisms mediator was controlled (see Figure 2a and 2b), were significant according to statistical tests (for target reports: Sobel's $Z = 4.25$, $p < .0001$; Goodman (I) test = 4.22, $p < .0001$; Goodman (II) test = 4.28, $p < .0001$ and for best friend reports: Sobel's $Z = 3.34$, $p < .001$; Goodman (I) test = 3.30, $p < .001$; Goodman (II) test = 3.38, $p < .001$).

Thus, following these initial tests, according to both raters, maladaptive defense mechanisms almost completely (though not necessarily exclusively) mediate the association between high socially prescribed perfectionism and high depression scores. Nevertheless, there has been considerable controversy about the best way to estimate the standard error used in the significance test. There are numerous approaches to calculation of standard errors, and a recent paper by MacKinnon et al. (2002) gives a thorough review and comparison of the approaches. This paper reports the results from a Monte Carlo study of a variety of methods for testing the significance of indirect effects and examines the Type I and Type II error rates of each. Although most of the approaches controlled Type I errors well, they did differ on statistical power. An alternative approach recently proposed by Shrout and Bolger (2002) uses bootstrapping for standard errors and may have greater power.

Bootstrapping Distributions of Effects

Bootstrapping is a computationally intensive simulation approach. It treats the original sample as a stand-in for the data population and draws many bootstrap samples from it by sampling with replacement. Each bootstrap sample is used to obtain a new set of parameter estimates. The distribution of each parameter estimate across bootstrap samples is used to obtain empirical estimates of its estimation bias, standard error, and confidence intervals. The bootstrap can be used to estimate the standard error using an empirical approach, rather than an explicit application of a formula. Using options in AMOS, we implemented this procedure on the model presented in Figure 3; note, however, that we kept the direct path from best friends' ratings of socially prescribed perfectionism to targets' depression in order to be able to accurately estimate the indirect effect found from best friends' rating of socially prescribed perfec-

tionism to target depression through best friends' rating of defense styles. This final model resulted in the following acceptable indices of fit: RMSEA = .000 (CI, .000 – .025); $\chi^2[11, N = 210] = 12.41$; $\chi^2/df = 1.13$; $p > .33$; CFI = 1.0, TLI = .99 (see Figure 3).

The path coefficients were estimated with 1,000 bootstrapping samples being drawn. It was found that 100% of the bootstrap samples converged. As can be seen in Table 3, it is evident that the 95% confidence intervals and the CI based on the bias-corrected bootstrap for the parameters estimated in our model and for the indirect effect are consistent with the conclusion that the indirect effects are significantly different from zero. The results obtained suggest that the procedure led to a stable estimate of the distributions (see Table 3).

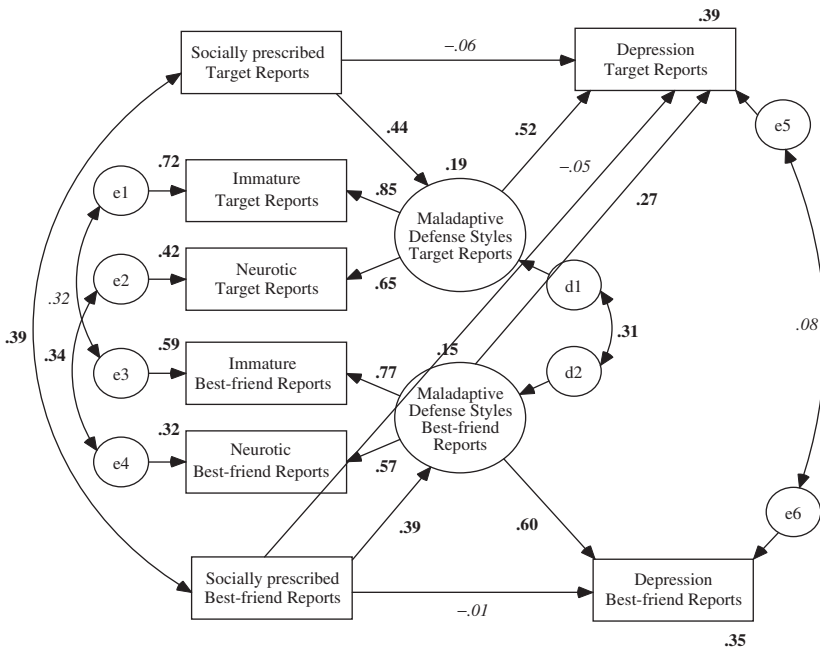


Figure 3

The final multisource approach mediational model.

Note. Rectangles indicate measured variables, and large circles represent latent constructs. Small circles (e) reflect residuals or (d) disturbances; numbers above or nearby endogenous variables represent the amount of variance explained (R^2). Bidirectional arrows depict correlations, and unidirectional arrows depict hypothesized directional, or “causal,” links. Standardized maximum likelihood parameters are used. Bold estimates are statistically significant.

Table 3
Standard and Bootstrap Methods for Medication

Effect	Estimate			Bootstrap				PC confidence		BC confidence			
	S.E.	C.R.	<i>p</i>	SE	SE-SE	Bias	SE-Bias	Lower	Upper	<i>p</i>	Lower	Upper	<i>p</i>
Target Report													
a Socially → Defense	0.011	6.175	0.0001	0.011	0.000	0.000	0.000	0.043	0.089	0.002	0.044	0.090	0.001
b Defense → CES-D	0.444	5.203	0.0001	0.432	0.010	0.013	0.014	1.500	3.229	0.002	1.500	3.229	0.002
c' Socially → CES-D	0.051	-0.820	0.412	0.051	0.001	0.002	0.002	-0.148	0.062	0.416	-0.154	0.053	0.351
Indirect effect				0.040				0.082	0.24	0.002	0.086	0.245	0.001
Best Friend Report													
a Socially → Defense	0.011	4.772	0.0001	0.011	0.000	0.001	0.000	0.030	0.075	0.002	0.030	0.074	0.002
b1 Defense → CES-D	0.661	5.021	0.0001	0.809	0.018	0.057	0.026	1.888	5.206	0.002	1.842	5.019	0.002
c1' Socially → CES-D	0.055	-0.199	0.842	0.062	0.001	-0.003	0.002	-0.145	0.094	0.877	-0.142	0.095	0.912
Indirect effect				0.052				0.088	0.294	0.002	0.089	0.295	0.002
Best Friend on Target Report													
b2 Defense → target CES-D	0.548	2.554	0.011	0.606	0.014	0.028	0.019	0.356	2.751	0.008	0.421	2.927	0.006
c2' Socially → target CES-D	0.051	-0.654	0.513	0.054	0.001	-0.003	0.002	-0.148	0.066	0.471	-0.137	0.077	0.593
Indirect effect				0.030				0.019	0.142	0.008	0.026	0.158	0.004

Note: Based on 1,000 bootstrap samples.

PC confidence = Percentile Confidence Intervals (95%)

BC confidence = Biased-Corrected Confidence Intervals (95%)

Overall, our analyses indicated that, according to both self-reports and informant ratings, maladaptive defense mechanisms mediate the association between high socially prescribed perfectionism and high depression scores. Moreover, informant ratings of socially prescribed perfectionism in targets are related indirectly to targets' depression through informant ratings of maladaptive defenses in the targets.

DISCUSSION

To our knowledge, the current study is the first to examine perfectionism and depression with data provided both by the self and by an informant familiar with the target individual. The current investigation is also unique because it explores the untested association between dimensions of perfectionism and defense styles. These associations were investigated in a community sample of participants and their same-sex best friends.

The inclusion of informant ratings is noteworthy because it increases our confidence in the validity of previously established findings in the perfectionism literature, as well as certain findings that are unique to the current study. As noted above, a consistent finding emerging from research with self-report measures is that socially prescribed perfectionism is correlated positively with depression. The current results showed that it was indeed the case that socially prescribed perfectionism was associated significantly with depression, and this association was evident for both self-ratings and informant ratings when a relatively conservative analytic approach was employed: self and informant data were simultaneously analyzed. This finding indicates that the link between depression and socially prescribed perfectionism is *not* simply a by-product of the influence of depressive mood state on self-ratings of a maladaptive personality factor (i.e., shared self-report method variance) or is reflective of the impact of higher-order factors such as neuroticism or negative emotionality.

Additional results showed that there is a small but significant positive association between self-ratings of socially prescribed perfectionism and peer ratings of depression. These results further attest to the claim that the link between socially prescribed perfectionism and depression is not simply due to self-report biases.

One unanticipated but potentially illuminating finding is that peer ratings of other-oriented perfectionism were associated significantly with peer ratings of depression. Moreover, secondary analyses by

gender indicated that this significant association applied to women but not to men. It was also found, among women, that peer ratings of depression were associated with higher self-reported levels of self-oriented perfectionism, in addition to the association evident between peer ratings of depression and self-reported levels of socially prescribed perfectionism. These findings illustrate the potential usefulness of including peer ratings not only in perfectionism research but in general research on personality and depression (for a related discussion, see Flett, Hewitt, Endler, & Bagby, 1995).

Perfectionism and Defense Styles

Interesting findings also emerged from the analyses involving the measures of defense style. As expected, socially prescribed perfectionism was associated significantly with immature defenses, both in terms of self-reports and peer ratings. These data suggest that socially prescribed perfectionists rely on defense styles such as projection, denial, and displacement. Additional results showed that socially prescribed perfectionism was associated with neurotic defenses, especially in terms of self-report data. This finding provides support for Horney's (1950) observation that perfectionists tend to rely on neurotic defenses. As can be seen in Figure 2a and 2b, analyses with a latent construct consisting of both immature and neurotic defense style factors showed that there was a substantial association between socially prescribed perfectionism and maladaptive defense styles, and this was evident when analyzed simultaneously for both self-reports and best friends' ratings. Thus, young adults with elevated levels of socially prescribed perfectionism have a characteristic tendency to respond to stressful circumstances and ego threats with defense styles that are maladaptive and that often involve either a lack of action or engaging in inappropriate action (Valliant, 1977). Thus, our findings accord with past evidence linking socially prescribed perfectionism with a lack of constructive thinking (Flett et al., 1994), avoidant coping (Dunkley et al., 2000), and a maladaptive problem-solving orientation (Flett, Hewitt, Blankstein, Solnik, & Van Brunschot, 1996).

A central purpose of the current study was to evaluate the possibility that defense style moderates or mediates the link between perfectionism and depression. We found no evidence in support of a moderator model. However, our findings provided clear evidence in support of a mediational model involving socially prescribed per-

fectionism. As can be seen in Figure 2a and 2b, the maladaptive defense style construct, composed jointly of immature and neurotic defenses, mediated the link between socially prescribed perfectionism and depression, and this finding was evident simultaneously both in terms of self-reports and informant reports. This extends past research suggesting that trait coping mediates the link between socially prescribed perfectionism and distress (e.g., Dunkley et al., 2000; 2003) by indicating that another key factor is immature and neurotic defense styles that may be operating outside the conscious awareness of socially prescribed perfectionists; clearly, these defense styles are implicated in the distress experienced by these individuals. Once again, it is important to reiterate that our findings extend past research by showing that support for the mediational model is obtained not only with self-reports but also with informant ratings of perfectionism, defense styles, and depression.

As can be seen in Figure 3, additional findings indicate that informant ratings of socially prescribed perfectionism are related to the targets' self-reported depression through the association that informant ratings of socially prescribed perfectionism have with informant ratings of immature and neurotic defense styles. These data further highlight the need to take into account the mediational role of immature and neurotic defense style targets in the link between socially prescribed perfectionism and depression.

Unfortunately, we were not able to test a mediational model with mature defense style as the mediator of socially prescribed perfectionism because the initial zero-order correlations failed to detect a consistent negative association between the mature defense factor and socially prescribed perfectionism across self-reports and informant ratings. This pattern of findings accords with past research with the DSQ-40, suggesting that immature and neurotic defenses are not simply the converse of mature defenses, and the results may vary substantially for immature and mature defense styles (see Mahalik, Cournoyer, DeFranc, Cherry, & Napolitano, 1998).

Defense Styles in Other-Oriented Perfectionism and Self-Oriented Perfectionism

As for other-oriented perfectionism, the tendency to demand absolute perfection from others was associated with the use of immature defenses, both in terms of self-reports and informant ratings. How-

ever, other-oriented perfectionism was associated significantly with the use of mature defenses when analyses were conducted with self-report data, but no such association was evident when analyses focused on informant ratings. The fact that other-oriented perfectionists reported the joint use of mature and immature defenses, while the data from informants revealed a link only between other-oriented perfectionism and immature defenses, is very much in keeping with previous suggestions that the self-reports of other-oriented perfectionists may be overly positive and do not reflect the negative impact and impressions that other-oriented perfectionists may have on other people (Flett, Hewitt, Shapiro, & Rayman, 2003). It has been suggested by some authors that the absence of a link between other-oriented perfectionism and self-reported problems may reflect some sort of defensive tendency on the part of other-oriented perfectionists either to perceive or portray themselves in an overly positive manner. In fact, one study found that other-oriented perfectionism in the self was unrelated to self-reports of marital problems, but people who lived with other-oriented perfectionists tended to report numerous relationship problems (Hewitt, Flett, & Mikail, 1995). In the current study, a very different picture of other-oriented perfectionists emerged, depending on whether the data were in the form of self-reports or observer reports. If we had focused solely on self-reports, other-oriented perfectionism would seem unrelated to depression but linked with all of the three defense style factors, suggesting that these individuals had eventually developed a mature defense style to counteract a less mature defense style. In contrast, the best friends' reports were much less favorable and indicated that other-oriented perfectionists are characterized primarily by immature defense styles and depression in a manner that is in very much in keeping with evidence suggesting that other-oriented perfectionism is a negative interpersonal factor in the therapy context (see McCown & Carlson, 2004) and is related to hostile attributions involving a tendency to blame others (Hewitt & Flett, 1991b).

The benefits of including informant reports were underscored further by results showing that there were significant positive associations between self-reports of mature defenses and all three perfectionism dimensions, but no such associations were evident when analyses focused on peer ratings. Overall, tests of the link between self-oriented perfectionism and defense styles showed that

there were negligible associations, especially when informant ratings were considered. Although we did not explicitly predict significant associations between self-oriented perfectionism and defense styles, the absence of a substantial link between self-oriented perfectionism and a mature defense style is noteworthy because it does not accord with claims that self-oriented forms of perfectionism reflect “adaptive perfectionism” (see Enns, Cox, Sareen, & Freeman, 2001; Slaney, Rice, & Ashby, 2002). At least as far as defense styles are concerned, there was little evidence across both self-reports and observer ratings to suggest that self-oriented perfectionism has an adaptive component. Thus, apparent evidence of the adaptiveness of self-oriented perfectionism may be context-specific, and following suggestions by Cramer (1998), subsequent research should adopt a situational perspective and examine self-oriented perfectionism and defense styles in challenging situations that involve an element of ego threat. One important question is the extent to which self-oriented perfectionism involves the defense style of turning against the self. This maladaptive defense style was not investigated in the current study.

Implications of the Current Findings

Collectively, the current results have a number of significant implications, including methodological implications, theoretical implications, and practical implications pertaining to treatments and interventions designed for perfectionists. In terms of methodological implications, our findings illustrate the clear value of supplementing self-reports with observer ratings, not only in future research on perfectionism but also when assessing the levels of various dimensions of perfectionism in counseling and clinical contexts. Several findings that emerged from the self-reports were replicated in the analyses of informant ratings, but some key differences were apparent. We continue to believe that attempts to assess other-oriented perfectionism and maladjustment in particular will be strengthened considerably by including informant ratings supplied by others who are familiar with the target person. This observation is underscored by the fact that the concordance between self-ratings and informant ratings was only modest in the current study. Future research should explore factors that influence the degree of correspondence. In addition to factors found to be important in most research of this nature, such as the age of the participants, the perceived

ratability of the trait, and so on, other aspects of the perfectionism construct should also be considered. Specifically, it has been shown recently that certain perfectionists are highly invested in perfectionistic self-presentation, and these individuals are more likely to publicly display their perfectionistic characteristics and avoid situations that will involve revealing their mistakes to others (see Hewitt et al., 2003). Other perfectionists have less of a need to engage in perfectionistic self-presentation. This may influence the observability of perfectionism across participants, and this could have some impact on the degree of correspondence of self- and informant ratings.

As for theoretical implications, at the conceptual level, our results provided general support for models of perfectionism, stress, and coping (Hewitt & Flett, 2002), including mediational models that link perfectionism, maladaptive coping, and depression (see Blankstein & Dunkley, 2002; Hewitt & Flett, 2002). The current results constitute additional evidence for the usefulness of attempting to identify factors that may exacerbate or underscore the link between certain dimensions of perfectionism and psychological distress and well-being. It is especially important to consider the possibility that maladaptive responses to stress mediate the link between socially prescribed perfectionism and depression, given consistent evidence that perceived stress and daily hassles are associated with socially prescribed perfectionism (e.g., Chang & Rand, 2000; Hewitt & Flett, 1993; Sherry et al., 2003). In the current study, we found that a factor comprised jointly of immature and neurotic defense styles (i.e., maladaptive) was a potent mediator of the link between socially prescribed perfectionism and depression.

Finally, at the practical level, it is evident from our results that individuals characterized by elevated levels of the interpersonal perfectionism dimensions (i.e., other-oriented and socially prescribed perfectionism) should benefit from therapeutic interventions designed to help them develop a more mature or less maladaptive defense style. Research by Blatt and Zuroff and associates has shown that perfectionism is relatively difficult to treat and is best suited to long-term interventions (e.g., Blatt & Zuroff, 2002). Similarly, Chang and Rand (2000) cautioned that direct efforts to reduce socially prescribed perfectionism might not be appropriate for some students, depending on their cultural background. Perhaps then it is more advisable, at least in the initial stages of treatment, to focus counseling interventions on the maladaptive defense styles and fa-

cilitate an orientation composed of more mature defenses, and then, subsequently, focus directly on reducing levels of socially prescribed perfectionism. However, the development of mature defenses is likely to be no easy task. Vaillant (1994) observed that attempts to challenge irritating, but partly adaptive, immature defenses can cause substantial anxiety. Other authors have also observed that negative reactions may ensue from direct attempts to challenge maladaptive defenses. Instead, it may be preferable to facilitate the development of flexible coping skills (Ihilevich & Gleser, 1993; Mahalik et al., 1998). Vaillant (1994) cautioned that therapeutic efforts are best attempted with individuals who perceive, or actually have available, high levels of social support. This is an important suggestion for the treatment of perfectionists, given other evidence that social support mediates the link between socially prescribed perfectionism and psychological distress (Dunkley et al., 2000, 2003).

Another potentially useful suggestion that pertains to possible interventions can be derived from research on children by Cramer and Gaul (1988). They provided convincing evidence indicating that children who experience failure tend to rely on maladaptive and immature defenses while children who experience success tend to utilize more mature defenses. Accordingly, given that perfectionists are generally intolerant of failure and have elevated fears of failure (Flett et al., 1991), it follows that attempts to develop a more mature defense style among socially prescribed perfectionists will be more effective if these individuals begin to experience successful outcomes and develop a heightened sense of self-efficacy.

The Assessment of Perfectionism and Defense Styles

Although it was not our main focus, the design of the current study also provided another evaluation of the extent to which there is concordance between self-reports and observer ratings of trait levels of perfectionism. The initial psychometric work on the MPS included a focus on the link between self-reports and observer ratings (see Hewitt & Flett, 1991b; Study 2). Initial research showed substantial concordance, but this work was based on relatively small samples of university students ($N = 25$) and psychiatric patients ($N = 21$). Evidence of concordance was also obtained in a study by Vieth and Trull (1999) that was conducted with university students and their parents.

The current study is unique in that it is the first study to use a large sample to test the concordance issue in a community sample of young adults and their best friends. Our analyses indicated significant moderate concordance in terms of self-reports and best-friend (observer) ratings of the three trait MPS perfectionism dimensions. As was the case with the results obtained with the small sample of students in the Hewitt and Flett (1991b) study, the degree of concordance was greatest for socially prescribed perfectionism and lowest for self-oriented perfectionism; overall, it was generally the case that the correlations were lower in magnitude in the current study (r s ranging from .27 to .40) versus the previous study (r s ranging from .35 to .49). However, the current study is based on a substantially larger sample, so it is likely that the current results are more accurate.

The magnitudes of the correlations obtained in the current study are only slightly lower than the concordant correlations obtained in similar studies assessing the trait dimensions that comprise the Five-Factor Model. For instance, across four studies examining self-reports and informant reports, Kenny (1994) found that the median correlations for Neuroticism and Conscientiousness were .44 and .39, respectively. Other research has found self-other agreement of $r = .45$ for workaholism (Ready, Clark, Watson, & Westerhouse, 2000) and the workaholism includes perfectionism as one of its components (Spence & Robbins, 1992).

The fact that the correlations between self-reports and informant ratings were only modest in magnitude in our study may be attributable, at least in part, to the methods we employed, such as the use of only one informant. The use of multiple informants results in more accurate assessments, and, as a result, higher levels of concordance are obtained (see McCrae & Costa, 1987). Also, we did not adjust our results to take into account differences in the degree of acquaintance, which is a factor that influences the degree of concordance (Funder & Colvin, 1988; Funder, Kolar, & Blackmon, 1995). Nevertheless, it is apparent that there was at least moderate agreement, and this extended to the rating of defense styles that are hypothesized to be relatively unconscious but apparently detectable by one's peers.

Limitations of the Current Research

Certain limitations of the current study should be noted. First, even though we used data collection techniques that are more extensive than

have been used in most contemporary research on perfectionism, it is still the case that the current investigation was cross-sectional in nature and causal statements are not warranted. Prospective research is needed.

Second, our results are limited in that the informants were best friends, and some concerns have been raised about whether best friends will be entirely truthful in research of this nature (see Klonsky, Oltmanns, & Turkheimer, 2002). It is for this reason that we had the members of the dyad complete the questionnaires in separate locations. Future research on this topic and other issues in the perfectionism field would no doubt be improved by adopting the multitrait-multimethod approach outlined originally by Campbell and Fiske (1959) because our findings could still reflect common method variance attributable to the use of questionnaires. As shown by Biesanz and West (2004), it might be useful to conduct assessments across various occasions with multiple informants (e.g., peers and parents) and different methods.

Finally, it would be advisable in subsequent research to include multiple measures of depression. On a similar note, because measures of anxiety and other forms of negative affectivity were not included, it is not possible to determine whether the current findings are specific to depression or apply to psychological distress in general.

In summary, the present study represents the first attempt to study perfectionism and depression with both self-reports and informant ratings, and it is also the first study to investigate the role of defense styles in the association between perfectionism and depression. Our results replicated previous findings showing that socially prescribed perfectionism is associated with elevated levels of depression. Given that socially prescribed perfectionism is associated with depression, both in terms of self-reports and peer ratings, it is not the case that the link between this dimension of perfectionism and depression is due simply to a negativity bias or a general tendency for depression and dysphoria to influence personality self-reports. Additional results established that socially prescribed perfectionism is associated with maladaptive defense styles, and once again, this was demonstrated with both self-reports and peer ratings. The use of self- and observers' reports strengthens considerably the validity of these findings. Finally, evidence that maladaptive defense styles mediate the association between socially prescribed perfectionism and depression points to the possibility that socially prescribed perfectionism includes an important, active, intrapsychic component that regulates person-environment interactions.

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