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Recommended Citation
Dunkley, D. M., Sanislow, C. A., Grilo, C. M., & McGlashan, T. H. (2006). Perfectionism and depressive symptoms 3 years later: negative social interactions, avoidant coping, and perceived social support as mediators. *Comprehensive Psychiatry, 47(2)*, 106-115.

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Comprehensive Psychiatry 47 (2006) 106–115

Comprehensive PSYCHIATRY

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Perfectionism and depressive symptoms 3 years later: negative social interactions, avoidant coping, and perceived social support as mediators

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Abstract

Although research has demonstrated perfectionism to have a negative impact on the treatment of depression, little research has examined the mechanisms or processes through which perfectionism predicts subsequent depressive symptoms in clinical populations over time. Using data from a prospective, 3-year study of a clinical sample (N = 96), hierarchical regression analyses indicated that perfectionism, assessed by the Dysfunctional Attitude Scale (Weissman AN, Beck AT. Development and validation of the Dysfunctional Attitude Scale: a preliminary investigation. Paper presented at the 86th annual convention of the American Psychological Association, Toronto, Ontario, Canada; 1978), is distinguished from major depression and neuroticism for its relations to depressive symptoms and interpersonal maladjustment 3 years later. Drawing from the model of Dunkley et al (*J Couns Psychol* 2000;47:437-53), path analysis indicated that Dysfunctional Attitude Scale perfectionism was related to depressive symptoms 3 years later through a number of persistent maladaptive tendencies, including negative social interactions, avoidant coping, and negative perceptions of social support.
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1. Introduction

In the past decade, perfectionism, assessed by the Dysfunctional Attitude Scale (DAS) [1], has emerged as an important cognitive personality factor that is relatively resistant to change [2] and has a negative impact on the treatment of depression [3-5]. Although research has demonstrated DAS perfectionism to be an important patient variable that influences treatment process and outcome, and is a factor in depression maintenance, little research has examined the mechanisms or processes through which this variable predicts subsequent depressive symptoms in clinical populations over time.

In considering why perfectionists are prone to experience depressive symptoms, Dunkley, Blankstein, and colleagues [6-8] have distinguished between self-critical (SC) and personal standards (PS) dimensions of perfectionism. Contrary to the prevailing assumption that DAS perfectionism primarily refers to high PS and motivation to attain perfection [9], DAS perfectionism recently has been demonstrated to more closely reflect SC perfectionism than PS perfectionism [10,11]. In relation to the 5-factor model of personality [12], DAS perfectionism and other SC perfectionism measures have been related to neuroticism, introversion, and antagonism, whereas PS perfectionism measures are most closely associated with conscientiousness [13-15]. DAS perfectionism also has a stronger, more consistent relation with depressive symptoms than do measures that represent PS perfectionism [10,11], similar to measures that reflect the SC perfectionism dimension [16,17]. Thus, we regarded SC perfectionism rather than PS perfectionism to be pertinent to a consideration of why DAS perfectionism might predict later depressive symptoms.

Dunkley et al [6,8] emphasized 3 critical mediators to explain the relation between SC perfectionism and depressive symptoms. Self-critical perfectionism influences both actual and perceived daily stress (or hassles), avoidant coping, and low social support, which, in turn, predict depressive symptoms. First, SC perfectionists are assumed to generate high levels of daily stress because they engage in rigorous self-evaluations and magnify the negative aspects of events such that even mundane trials can be interpreted as

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0010-440X/$ – see front matter © 2006 Elsevier Inc. All rights reserved.
doi:10.1016/j.comppsych.2005.06.003

major threatening stressors [18]. Self-critical perfectionists also experience high levels of daily stress because they are concerned about rejection and the loss of respect from others. This becomes manifested in a defensive interpersonal style that elicits actual negative reactions from other people [19-22]. Second, SC perfectionists are assumed to have an avoidant coping style, which stems from their preoccupation with their deficiencies and lack of confidence in their abilities in handling stressful situations [8]. Self-critical perfectionists' tendency to engage in avoidant coping undercuts alleviation of the depressive symptoms associated with stressful situations [23]. Third, SC perfectionists perceive that others are unwilling or unavailable to help them in times of stress. Thus, SC perfectionists lack a critical buffer against the experience of depressive symptoms [24].

In summary, SC perfectionists are believed to be prone to experience depressive symptoms because they have a tendency to experience high levels of daily stress (eg, negative social interactions), give up or disengage from stressful situations, and believe they have less social support available to them in times of stress [6,8]. In a cross-sectional study, Dunkley et al [6] used structural equation modeling to cross-validate a model in which SC perfectionism (referred to as evaluative concerns perfectionism in that article) was related to hassles, avoidant coping, and low perceived social support, which, in turn, were all uniquely related to depressive symptoms and fully explained the relation between SC perfectionism and depressive symptoms. Whereas Dunkley et al [6] assessed these mediators as stable, traitlike characteristics of perfectionism using retrospective, dispositional self-report measures, Dunkley et al [8] performed a more rigorous test of the model by aggregating situation-specific, daily assessments over a 7-day period. Dunkley et al [8] demonstrated that high daily stress, avoidant coping, and low perceived social support were pervasive across a variety of stressful situations for SC perfectionists and explained SC perfectionism's association with high negative affect and low positive affect, a combination that has been linked to depression.

The present study draws from the final cross-validated model of Dunkley et al [6] to explain the relation between DAS perfectionism and later depressive symptoms but expands on this study in 5 ways. First, because the findings of Dunkley et al [6] were based on a college student population, we examined these hypotheses in a clinical sample. This is important because the generalizability of findings from college student populations to clinical populations continues to be a contentious issue [25]. Second, in considering daily stress, we focused on negative social interactions, a construct that is conceptually and empirically similar to but distinguishable from hassles [26]. The negative effect of perfectionism on therapeutic outcome was mediated by perfectionists' inability to contribute to the therapeutic alliance [27] and their dissatisfaction with social relations [28].

Third, although Dunkley et al [8] examined stress, avoidant coping, low perceived social support, and depressive affect as stable, traitlike characteristics of SC perfectionism over the period of 1 week, further tests of the relation between perfectionism and maladaptive functioning over a substantially longer period are needed. Data from the Collaborative Longitudinal Personality Disorders Study (CLPS) [29] were used to test our hypotheses over a 3-year period. This sample of patients, most of whom were characterized by a persisting pattern of maladaptive traits and had been in treatment at entry to the study, represented a unique opportunity to examine traitlike qualities as explanations for the relation between perfectionism and later depressive symptoms.

Fourth, an important issue is the unique predictive utility of personality variables independent of their overlap with depression [22,30,31]. We controlled for the presence of major depression at time 1 in examining the relation between perfectionism and maladjustment at time 2 three years later. Finally, theoretical writings have concentrated on perfectionism as a pervasive neurotic style [32-34]. There is a need to demonstrate the unique contribution or incremental predictive validity of specific traits such as perfectionism over and above broader source traits such as neuroticism [22,30,35]. Thus, we sought to distinguish perfectionism from neuroticism in its unique relations with later negative social interactions, avoidant coping, perceived social support, and depressive symptoms. Previous studies have distinguished SC perfectionism measures from neuroticism for unique relations with, for example, negative interpersonal traits [13,14] and depressive symptoms [17,22,36,37].

In summary, we examined negative social interactions, avoidant coping, and low perceived social support as harmful aspects of SC perfectionism that explain the relation between DAS perfectionism and subsequent depressive symptoms 3 years later in a clinical sample. The findings of this study might provide pointers to influential maintaining processes and could contribute to identifying specific targets for clinical interventions across a broad range of clinical entities. Fig. 1 depicts the hypothesized relations based on the previous theoretical discussion and the final structural model of Dunkley et al [6] for the mediation of subsequent depressive symptoms: (*a*) time 1 DAS perfectionism will predict avoidant coping, low perceived social support, and negative social interactions at time 2; and (*b*) avoidant coping, perceived social support, and negative social interactions will predict depressive symptoms at time 2. We also tested 3 additional hypotheses: (1) avoidant coping elicits criticism from network members and contributes to high levels of negative social interactions [38]; (2) negative social interactions reduce perceptions of support availability [26]; and (3) low perceptions of social support trigger demoralization and avoidant coping [24]. Finally, an exploratory aspect of the modeling was to examine the relative predictive validity of time 1 DAS perfectionism controlling for the effects of time 1 major

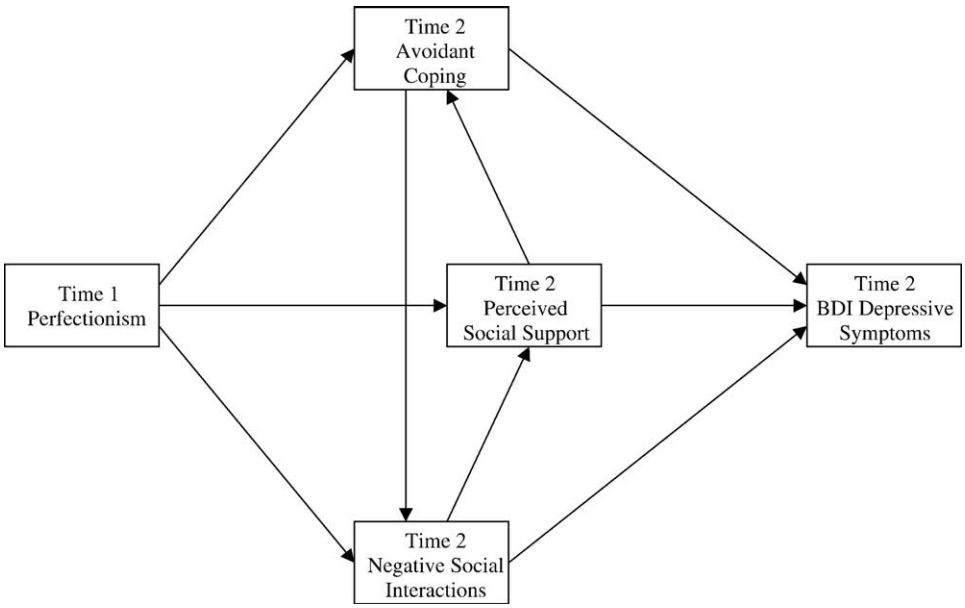

Fig. 1. Hypothesized structural model, based on the model of Dunkley et al [6], relating perfectionism, avoidant coping, negative social interactions, perceived social support, and BDI depressive symptoms.

depression and neuroticism. Thus, time 1 major depression and neuroticism were included in the model and tested as relative predictors of negative social interactions, avoidant coping, perceived social support, and depressive symptoms at time 2. The major depression and neuroticism variables and their combined 8 tested paths are not shown in Fig. 1 to distinguish these exploratory tests from the hypothesized relations based on theory and previous findings [6] to be confirmed in the present clinical sample.

2. Method

2.1. Participants

Participants were 96 patients from a larger sample of 168 patients recruited for the New Haven site of the CLPS, a National Institutes of Mental Health–funded, multiple-site, longitudinal, repeated-measures study of personality disorders [29]. Participants participated voluntarily after a human investigation committee approved the study and informed consent was obtained. All participants were treatment seekers or treatment consumers from multiple clinical settings at entry to the CLPS. Recruitment of participants was targeted for patients meeting the *Diagnostic and Statistical Manual of Mental Disorders*, *Fourth Edition* (*DSM-IV*) [39], criteria for at least 1 of 4 personality disorders or major depressive disorder without personality disorder. The present study initiated at the 24-month and 36-month CLPS follow-ups consisted only of participants who completed both the relevant personality measures at time 1 and the stress, coping, social support, and depression measures at time 2 approximately 3 years later. The final sample of 96 participants (36 men, 60 women) had a mean age of 34.32 ± 8.21 years at time 1. Most participants were white (84%, n = 81), with 12% African American (n = 11), 3% Hispanic (n = 3), and 1% Asian (n = 1). The Hollingshead-Redlich socioeconomic status profile indicated a balanced distribution.

Axis I diagnoses were assessed at time 1 using the LIFE-PS [40]. Thirty-one percent of the sample met current criteria for major depression, and an additional 6% met criteria for some other form of mood disorder (ie, dysthymia, depressive disorder not otherwise specified) at time 1. Forty-two percent of the sample met criteria for an anxiety disorder, 14% met criteria for an eating disorder, and 14% met criteria for a substance use disorder. Axis II diagnoses were assessed using the Diagnostic Interview for *DSM-IV* Personality Disorders [41], which has demonstrated acceptable interrater reliability [42]. Fifty-five percent of the sample met criteria for 1 or more personality disorders, the most prevalent of which were avoidant personality disorder (30%), obsessive-compulsive personality disorder (25%), and borderline personality disorder (21%).

2.2. Procedure

All study measures were administered to participants at 2 points in time separated by approximately 3 years (3.05 ± 0.15 years). Seventy-seven participants completed a battery of questionnaires that included the DAS and revised NEO Personality Inventory (NEO-PI-R) [12] at their 24-month CLPS follow-up and, approximately 3 years later, completed measures of negative social interactions, avoidant coping, perceived social support, and depression at their 60-month CLPS follow-up. An additional 19 participants completed the DAS and NEO-PI-R at their 36-month CLPS follow-up and, approximately 3 years later, completed the measures of

negative social interactions, avoidant coping, perceived social support, and depression at their 72-month CLPS follow-up. The results of *t* tests suggested that there were no differences on any of the study measures between participants completing the measures at their 24- and 60-month follow-ups and participants completing the measures at their 36- and 72-month follow-ups.

2.3. Measures

2.3.1. Perfectionism

The DAS [1] was used to assess perfectionism. The perfectionism scale was derived based on the factor analytic results of Imber et al [43], who found that 15 items (eg, "If I fail at my work, then I am a failure as a person") loaded substantially on perfectionism. Dysfunctional Attitude Scale perfectionism has displayed considerable relative stability over an 18-month period [3]. Consistent with Imber et al [43], the items with high loadings were summed in the present study, and the resulting composite had high internal consistency (α = .89).

2.3.2. Neuroticism and trait depression

Neuroticism and trait depression were assessed using the NEO-PI-R [12], a self-report questionnaire designed to provide a comprehensive assessment of the 5-factor model of personality. The neuroticism domain scale is defined by 6 eight-item facet scales, including trait depression. Costa and McCrae [12] reported extensive evidence supporting the internal consistency and validity of the neuroticism and trait depression scales, as well as temporal stability over periods spanning several years. The α coefficients for the neuroticism and trait depression scales were .86 and .87, respectively, in the present study.

2.3.3. Negative social interactions

A revised 24-item version of the Test of Negative Social Exchange (TENSE) [38,44] was used to measure negative social interactions. Participants rated how often they had experienced different types of negative interactions over the past month on a 10-point scale ranging from 0 (not at all) to 9 (frequently). Items on the TENSE are designed to measure anger (eg, "lost his or her temper with me"), insensitivity (eg, "took my feelings lightly"), and interference ("tried to get me to do something that I did not want to do"). Reliability and validity evidence for the TENSE has been reported [38,44]. In the present study, the coefficient α for the composite scale was .96.

2.3.4. Avoidant coping

Participants completed selected 4-item scales from the dispositional version of the COPE Inventory (COPE) [23]. The denial, behavioral disengagement, and mental disengagement subscales of the COPE were added together to form an avoidant coping variable, consistent with the factor analytic findings of Dunkley et al [6,8]. These selected COPE scales have demonstrated moderate internal consistencies (with only mental disengagement having a low coefficient α) and convergent and discriminant validity [6,23]. In the present study, the α coefficients of behavioral disengagement, mental disengagement, and denial were .71, .58, and .75, respectively. The α coefficient of the avoidant coping composite scale was .79.

2.3.5. Perceived social support

Three 4-item scales from the Social Provisions Scale (SPS) [45] were summed to represent the perceived available social support construct. The SPS is a 24-item measure designed to assess the extent to which participants feel that each of 6 provisions of social relationships is currently available to them. We used the reliable alliance, attachment, and guidance scales to represent perceived social support, as did Dunkley et al [6,8]. The selected SPS scales have demonstrated moderate internal consistencies and construct validity [6,45]. In the present study, the α coefficients were .78 for reliable alliance, .75 for attachment, .66 for guidance, and .88 for the total perceived social support score.

2.3.6. Beck Depression Inventory

The 21-item Beck Depression Inventory (BDI) [46] was used to assess the severity of current depressive symptoms in the previous week. The BDI is a widely used measure with considerable support for its reliability and validity across a variety of samples [47]. The coefficient α for the BDI was .89 in the present study.

3. Results

3.1. Preliminary analyses

Means, SDs, and intercorrelations are presented in Table 1. Time 1 major depression scores ranged from 1 (no symptoms present) to 6 (with 5 representing presence of major depression and 6 representing presence of severe major depression) based on the LIFE-PS psychiatric symptom rating. A skewed distribution was found for negative social interactions and perceived social support. Square root transformations were applied to these scores to better approximate a normal distribution for the analyses involving these variables. Dunkley et al [14] reported the correlations between perfectionism and neuroticism, and perfectionism and trait depression using a larger sample that included but was not limited to the participants of the present study. The correlations between perfectionism and neuroticism, and perfectionism and trait depression reported here are based only on the participants of the present study. Time 1 perfectionism, major depression, trait depression, and neuroticism were each significantly related to avoidant coping, perceived social support, and BDI depression at time 2 approximately 3 years later. Of the time 1 variables, only perfectionism and neuroticism were significantly related to time 2 negative social interactions. Furthermore, the hypothesized mediator variables (eg, negative social interactions) were significantly related to BDI depressive symptoms.

Table 1
Descriptive statistics and intercorrelations

Variables	1	2	3	4	5	6	7	8
1. T1 perfectionism	–							
2. T1 major depression	.24*	–						
3. T1 trait depression	.51[a],***	.42***	–					
4. T1 neuroticism	.63[a],***	.41***	.85***	–				
5. T2 neg soc interact	.41***	.07	.10	.25*	–			
6. T2 avoidant coping	.31**	.22*	.31**	.41***	.21*	–		
7. T2 perc soc support	−.40***	−.24*	−.25*	−.34***	−.35***	−.31**	–	
8. T2 BDI	.48***	.37***	.44***	.51***	.44***	.49***	−.45***	–
Mean ± SD	46.23 ± 16.47	2.69 ± 1.87	28.19 ± 6.88	156.18 ± 27.63	5.76 ± 3.06	19.66 ± 5.58	6.39 ± 0.49	9.78 ± 8.59

N = 96. T1 indicates time 1; T2, time 2; neg, negative; soc, social; interact, interactions; perc, perceived.

[a] Dunkley et al [14] reported this correlation using a larger sample that included but was not limited to the participants of the present study. The finding reported here is based only on the participants of the present study.

* $P < .05$.

** $P < .01$.

*** $P < .001$.

3.2. Perfectionism as a predictor of negative social interactions, avoidant coping, perceived social support, and BDI depression over and above major depression and neuroticism

A series of hierarchical multiple regression analyses addressed the question of whether time 1 perfectionism could predict unique variance in time 2 negative social interactions, avoidant coping, perceived social support, and BDI depression scores over and above the variance predicted by time 1 major depression and neuroticism. Four analyses predicted time 2 negative social interactions, avoidant coping, perceived social support, and BDI depression with time 1 major depression entered in the first block, time 1 neuroticism entered in the second block, and time 1 perfectionism entered in the third block.

In predicting time 2 negative social interactions, time 1 major depression accounted for a nonsignificant amount of variance (0%). The subsequent entry of time 1 neuroticism in the second block accounted for significant incremental variance over and above time 1 major depression in predicting 6% additional variance in time 2 negative social interactions scores ($F_{1,93\ \text{change}} = 5.74$, $P < .05$, $R^2_{\text{change}} = 0.06$). Finally, the subsequent entry of time 1 perfectionism in the third block accounted for significant incremental variance over and above time 1 major depression and neuroticism in predicting 11% additional variance in negative social interactions scores ($F_{1,92\ \text{change}} = 11.63$, $P < .001$, $R^2_{\text{change}} = 0.11$).

In predicting time 2 avoidant coping, time 1 major depression accounted for 5% of the variance in avoidant coping scores ($F_{1,94} = 4.58$, $P < .05$, $R^2 = 0.05$). The subsequent entry of time 1 neuroticism in the second block accounted for significant incremental variance over and above time 1 major depression in predicting 13% additional variance in time 2 avoidant coping scores ($F_{1,93\ \text{change}} = 14.17$, $P < .001$, $R^2_{\text{change}} = 0.13$). Finally, perfectionism did not account for a significant amount of additional variance in avoidant coping scores over and above major depression and neuroticism.

In predicting time 2 perceived social support, time 1 major depression accounted for 6% of the variance in perceived social support scores ($F_{1,94} = 5.70$, $P < .05$, $R^2 = 0.06$). The subsequent entry of time 1 neuroticism in the second block accounted for significant variance over and above time 1 major depression in predicting 7% additional variance in perceived social support scores ($F_{1,93\ \text{change}} = 7.50$, $P < .01$, $R^2_{\text{change}} = 0.07$). Finally, the subsequent entry of time 1 perfectionism in the third block accounted for significant incremental variance over and above time 1 major depression and neuroticism in predicting 6% additional variance in perceived social support scores ($F_{1,92\ \text{change}} = 6.41$, $P < .05$, $R^2_{\text{change}} = 0.06$).

In predicting time 2 BDI depressive symptoms, time 1 major depression accounted for 14% of the variance in BDI scores ($F_{1,94} = 14.74$, $P < .001$, $R^2 = 0.14$). The subsequent entry of time 1 neuroticism in the second block accounted for a significant 15% additional variance over and above time 1 major depression in predicting BDI scores ($F_{1,93\ \text{change}} = 19.82$, $P < .001$, $R^2_{\text{change}} = 0.15$). Finally, the subsequent entry of time 1 perfectionism in the third block accounted for a significant 4% additional variance over and above time 1 major depression and neuroticism in predicting BDI scores ($F_{1,92\ \text{change}} = 5.87$, $P < .05$, $R^2_{\text{change}} = 0.04$).

We also tested the incremental predictive validity of DAS perfectionism relative to the trait depression facet of neuroticism, given findings demonstrating the adverse effect of perfectionism after controlling for depressive personality disorder features [5]. Perfectionism predicted significant increments in variance over and above major depression and trait depression for 3 of the 4 outcomes, negative social interactions (17%), perceived social support (9%), and BDI depressive symptoms (8%). It is noteworthy that the incremental predictive validity of perfectionism over and above major depression and trait depression was greater than the predictive increments of perfectionism over and

above major depression and neuroticism. Thus, controlling for time 1 major depression and neuroticism in the following path analysis was a more stringent test of the incremental predictive validity of perfectionism than controlling for time 1 major depression and trait depression.

3.3. Mediational analyses

A path analysis was conducted using AMOS (Version 4.0; Small Waters Corporation, Chicago, Ill) [48] to examine negative social interactions, avoidant coping, and perceived social support at time 2 as mediators of the relation between time 1 perfectionism and time 2 BDI depressive symptoms. AMOS uses the maximum likelihood estimation method to examine the fit of the hypothesized model (see Fig. 1) to the data. Consistent with the recommendation of Hoyle and Panter [49], we considered multiple indexes of fit that provided different information for evaluating model fit (ie, absolute fit, incremental fit relative to a null model, fit adjusted for model parsimony). That is, we considered the ratio of the χ^2 value to the *df* in the model (absolute fit), with ratios in the range of 2 to 1 suggesting better fitting models [50]. We also considered the goodness-of-fit index (GFI; absolute fit) [51], incremental fit index (IFI; incremental fit) [52] and the comparative fit index (CFI; incremental fit) [53], with values .90 or higher indicating better fitting models [49]. Finally, we considered the Root Mean Square Error of Approximation (RMSEA; parsimony-adjusted fit) [54], with values of .08 or less indicating adequate fit [55].

When estimating the hypothesized model shown in Fig. 1, we also included time 1 major depression and neuroticism as covariates of perfectionism and controlled for their effects on the time 2 mediator and dependent variables. This model was estimated and resulted in an acceptable fit ($\chi^2_{1,N\,=\,96}$ = 0.93, not significant [NS]; χ^2/df = 0.93; GFI = 0.99; IFI = 1.00; CFI = 1.00; RMSEA = 0.00). Next, to improve model parsimony, paths that did not contribute significantly to the model on the basis of Wald tests were removed one at a time, and the model was reestimated each time. The nonsignificant paths from perfectionism to avoidant coping, neuroticism to negative social interactions, major depression to avoidant coping, major depression to negative social interactions, avoidant coping to negative social interactions, neuroticism to perceived social support, and major depression to perceived social support were deleted one at a time. The final model had these acceptable fit indices: $\chi^2_{8,N\,=\,96}$ = 5.23, NS; χ^2/df = 0.65; GFI = 0.99; IFI = 1.00; CFI = 1.00; and RMSEA = 0.00.

To test whether the relation between time 1 perfectionism and time 2 BDI depressive symptoms was fully mediated, this fully mediated model was compared with a partially mediated model, which included a path from perfectionism to BDI depression [56]. The partially mediated model was not a significantly better fit to the data than the fully mediated model ($\chi^2_{1,N\,=\,96\ \text{difference}}$ = 0.93, NS) and the path from perfectionism to BDI depression (β = .10) was not significant. Thus, the relation between time 1 perfectionism and time 2 BDI depressive symptoms was considered fully mediated.

Fig. 2 presents the significant standardized parameter estimates of the final structural model. The residual arrows indicate the proportion of variance in each variable unaccounted for by other variables in the model. The results can be grasped by referring to Fig. 2 and considering the paths leading from time 1 perfectionism to time 2 BDI depression. Time 1 perfectionism was related to time 2

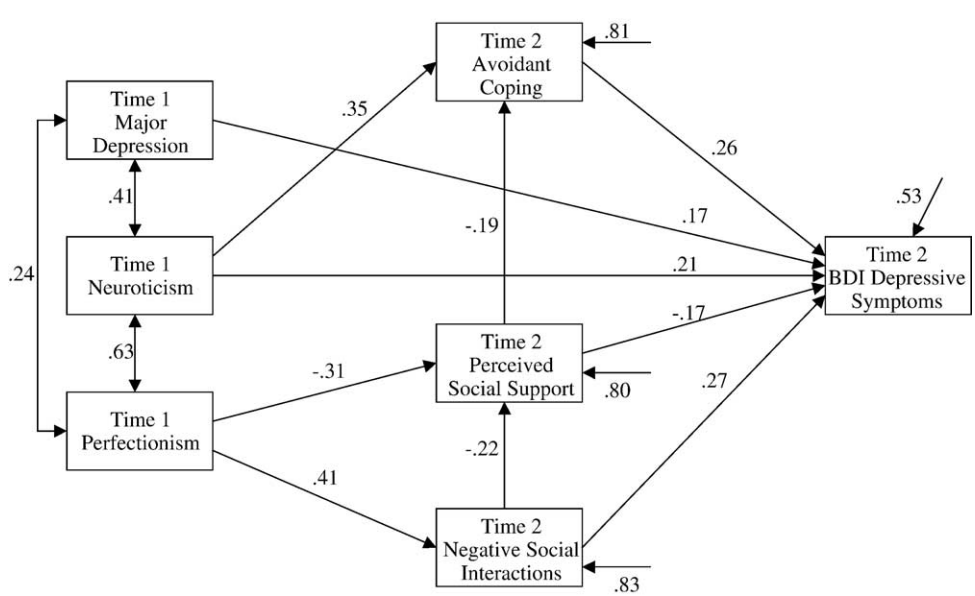

Fig. 2. Standardized parameter estimates of the final structural model relating perfectionism, neuroticism, major depression, avoidant coping, negative social interactions, perceived social support, and BDI depressive symptoms. The residual arrows denote the proportion of variance in the variable that was unaccounted for by other variables in the model.

negative social interactions, which, in turn, was related to time 2 depressive symptoms directly and indirectly through low perceived social support at time 2. Perfectionism was also negatively related to perceived social support, which, in turn, was related to time 2 depressive symptoms directly and indirectly through time 2 avoidant coping. In addition, time 1 perfectionism was related to time 2 depressive symptoms partly through shared variance with time 1 neuroticism and major depression. Time 1 perfectionism was also related to avoidant coping partly through shared variance with neuroticism.

Although Fig. 2 represents 1 plausible representation of the data, we tested 2 other plausible alternative models that could fit the observed data equally well [57]. First, we tested an alternative model where the paths in the initial hypothesized model (Fig. 1) from time 2 avoidant coping to negative social interactions, negative social interactions to perceived social support, and perceived social support to avoidant coping were reversed in direction. The final model after deletion of nonsignificant paths fit the data as equally well as the final model derived from our target model ($\chi^2_{8,N=96} = 4.52$, NS; $\chi^2/df = 0.57$; GFI = 0.99; IFI = 1.00; CFI = 1.00; RMSEA = 0.00). Second, we tested an alternative model where the relation between time 1 perfectionism and time 2 negative social interactions, avoidant coping, and low perceived social support was fully explained by time 2 depressive symptoms and shared variance with time 1 major depression and neuroticism. This alternative model differed from the initial hypothesized model in that a path was added from time 1 perfectionism to time 2 depressive symptoms, the 3 paths from time 2 avoidant coping, negative social interactions, and perceived social support to time 2 depressive symptoms were reversed in direction, and the 3 paths from time 1 perfectionism to time 2 avoidant coping, negative social interactions, and perceived social support were deleted. The final model after deletion of nonsignificant paths resulted in an adequate fit to the data ($\chi^2_{11,N=96} = 17.69$, NS; $\chi^2/df = 1.61$; GFI = 0.95; IFI = 0.96; CFI = 0.96; RMSEA = 0.08); however, this model resulted in a poorer fit to the data than the final model derived from our target model ($\chi^2_{3,N=96\ \mathrm{diff}} = 12.46$, $P < .001$).

4. Discussion

The main goal of the present research was to build on previous research linking DAS perfectionism to negative therapeutic outcome [3-5] by pinpointing important processes that explain the relation between DAS perfectionism and later depressive symptoms. To our knowledge, no previous studies have examined the predictive importance of perfectionism over as long a period as 3 years. We examined the generalizability of the model of Dunkley et al [6] demonstrating daily stress, avoidant coping, and low perceived social support as mediators in the link between SC perfectionism and depressive symptoms in college students to explaining the relation between DAS perfectionism and depressive symptoms 3 years later in a clinical sample. Major depression and neuroticism assessed at time 1 were also controlled for in the prediction of subsequent maladjustment, which was important because both of these variables were unique predictors of time 2 BDI depressive symptoms.

Theoretical writings have concentrated on perfectionism as a pervasive neurotic style and debilitating problem [32-34]. We demonstrated that DAS perfectionism reflects this neurotic style in that it was strongly related to neuroticism, consistent with other measured indicators of SC perfectionism [13,15]. Moreover, DAS perfectionism was related to avoidant coping partly through shared variance with neuroticism. Neuroticism might be a critical factor in perfectionists' avoidance tendencies that precludes their active engagement of stressors.

An important contribution of our study was demonstrating that DAS perfectionism is not equivalent nor reducible to major depression and/or neuroticism (and the trait depression facet) in adverse effects on subsequent depressive symptoms and interpersonal adjustment 3 years later [30,35]. Time 1 DAS perfectionism predicted significant amounts of unique variance in time 2 BDI depressive symptoms over and above time 1 major depression and neuroticism, consistent with previous studies [17,22,36,37]. In addition, time 1 perfectionism was distinguished from time 1 major depression and neuroticism for its unique relations with other clinically significant variables, including time 2 negative social interactions and low perceived social support. This is in keeping with previous evidence suggesting that SC perfectionism can be distinguished from depressive symptoms and neuroticism in its negative interpersonal content [13,14,22]. Moreover, these findings are consistent with suggestions that interpersonal aspects of functioning are essential to perfectionism [58,59].

Of particular importance is that we found that the cross-validated model of Dunkley et al [6] explaining the relation between SC perfectionism and depressive symptoms in college students applied to a clinical sample in explaining the relation between DAS perfectionism and subsequent depressive symptoms 3 years later. Specifically, the relation between perfectionism at time 1 and depressive symptoms at time 2 three years later was explained by avoidant coping (via neuroticism and low perceived social support), low perceived social support, and negative social interactions (see Fig. 2). This finding corroborates the previous findings by Dunkley et al [6,8], which suggest that the relation between SC perfectionism and depressive symptoms is mediated by the tendency of these individuals to experience higher levels of daily stress, to engage in avoidant kinds of coping (eg, disengagement, denial), and to negatively appraise the availability of social resources. In addition, time 1 perfectionism was related in part to time 2 depressive symptoms through shared variance with time 1 neuroticism and major depression, which suggests that perfectionism has a salient affective component.

There were 2 inconsistencies between secondary findings of Dunkley et al [6,8] and the present results. First, avoidant coping did not explain the relation between perfectionism and negative social interactions. This discrepant finding might be explained by that Dunkley et al [6,8] assessed daily stress with a measure of cumulative daily hassles in multiple domains (general, academic, social), whereas our operationalization of daily stress was more restricted in focusing only on negative social interactions. Second, in contrast to Dunkley et al [6,8], perceived social support was uniquely related to avoidant coping in the present study. Because the zero-order correlations between perceived social support and avoidant coping were comparable to those reported previously [6,8], it is likely that this discrepant finding is due to the weaker zero-order correlation between perfectionism and avoidant coping found in this study. Future research should clarify whether this difference might be attributed to sample differences (clinical vs student) or to different operationalizations of SC perfectionism that were used across studies.

It is important to consider the treatment implications of our findings, particularly in light of the previous research demonstrating DAS perfectionism to be a predictor of negative outcome in the treatment of depression [3-5]. The broad implication for intervention of our results is that reducing perfectionists' tendency to experience later depressive symptoms might be accomplished by decreasing their avoidant coping and negative social interactions, and increasing their perceptions of social support availability. Moreover, the present findings demonstrated the independent relations between perfectionism and both negative social interactions and perceived social support. Thus, these interpersonal variables might need to be viewed independently in considering the adverse impact of perfectionists' negative social context [28], consistent with evidence that negative social exchanges and low levels of perceived social support are unique social processes [38].

Although the longitudinal design of this study and addressing the role of perfectionism in a clinical sample expanded upon prior research, limitations of our findings and directions for future research should be noted. First, the BDI was not administered at time 1. Thus, we were unable to examine the relations between time 1 perfectionism and time 2 negative social interactions, avoidant coping, perceived social support, and BDI depressive symptoms controlling for time 1 BDI depressive symptoms. A strength of the model, however, was controlling for time 1 major depression and neuroticism. These 2 variables combined to account for a substantial amount (29%) of variance in time 2 BDI scores that is comparable, perhaps even superior, to the amount of variance that time 1 BDI scores would likely have accounted for in time 2 BDI scores. For example, Zuroff et al [2] found BDI at treatment termination to account for only 18% of the variance in BDI scores at follow-up more than a year later. Second, because the time 2 measures were completed concurrently, the mediational analyses do not demonstrate causal relations among negative social interactions, avoidant coping, perceived social support, and depressive symptoms. It is possible, for example, that depressive symptoms influenced the reports of negative social interactions, avoidant coping, and perceived social support, or that bidirectional relations exist among these variables. A prospective design study that assesses for all of the present measures at both time points would be helpful to further clarify the causal relations among these variables. Third, because these findings are all based on self-report questionnaires, replication with other methods of data collection (eg, diaries, interviews, behavioral observations) would be beneficial to elucidate both the objective and subjective aspects of perfectionists' stress, coping, and social support. Finally, we used a heterogeneous clinical sample that included a substantial portion of patients with *DSM-IV* personality disorder diagnoses but was not limited to patients with personality disorder diagnoses. Thus, it is important to examine the generalizability of the present results to other patient populations (eg, major depressive disorder patients) and different age groups.

In summary, our study indicates that perfectionism is a promising candidate variable for future prospective research. Our findings corroborate previous research [6,8] in suggesting that perfectionists are prone to experience depressive symptoms because they possess a number of persistent maladaptive tendencies, including high levels of daily stress (eg, negative social interactions), avoidant coping, and negative perceptions of social support.

Acknowledgments

The CLPS is an ongoing, longitudinal multisite follow-along study of personality disorders funded by National Institutes of Mental Health. Additional support for this work was provided by a fellowship from the Social Sciences and Humanities Research Council of Canada (Dr Dunkley) and by MH001654 (Dr McGlashan). The authors gratefully acknowledge Serrita Jane, Erin O'Brien, and Caminee Blake for their efforts in the data collection. This manuscript was approved by the CLPS publication committee. Adapted from the CLPS.

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