Personality and Individual Differences 139 (2019) 295–300

Contents lists available at ScienceDirect

Personality and Individual Differences

journal homepage: www.elsevier.com/locate/paid

Multidimensional perfectionism, depression, and anxiety: Tests of a social support mediation model

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ARTICLE INFO

Keywords:
Perfectionism
Social support
Depression
Anxiety

ABSTRACT

This study examined the relationship between multidimensional perfectionism, social support, and two outcomes (depression and anxiety) in a sample of 1785 undergraduate students. Perfectionistic concerns had a negative relationship with social support, and perfectionistic strivings had a positive relationship with social support. The relationships between both dimensions of perfectionism and both outcomes were mediated by social support.

1. Introduction

Perfectionism is a multidimensional personality construct that continues to receive attention (e.g., Ashby & Gnilka, 2017; Suh, Gnilka, & Rice, 2017). One area of particular interest is the role social support plays in the relationship between perfectionism and psychological distress (e.g., Hewitt, Flett, Sherry, & Caelian, 2006; Sherry et al., 2013).

While there are differing theories of perfectionism (e.g., Hewitt & Flett, 1991; Slaney, Rice, Mobley, Trippi, & Ashby, 2001), a number of factor analytic studies (e.g., Dunkley, Zuroff, & Blankstein, 2003) and comprehensive reviews of the literature (e.g., Stoeber & Otto, 2006) suggest two dimensions of perfectionism: perfectionistic concerns (self-criticalness about performance) and perfectionistic strivings (setting high performance standards). These two dimensions have been linked to various psychological outcomes. For example, perfectionistic concerns has been linked to increased levels of depression (Nepon, Flett, Hewitt, & Molnar, 2011; Smith, Sherry, McLarnon, et al., 2018), anxiety (Gnilka, Ashby, & Noble, 2012; Smith, Vidovic, Sherry, Stewart, & Saklofske, 2018), binge eating (Smith et al., 2017) and perceived stress (Ashby & Gnilka, 2017; Smith, Saklofske, Yan, & Sherry, 2017). In contrast, perfectionistic strivings has been associated with lower levels of depression (Rice, Tucker, & Desmond, 2008), anxiety (Gnilka et al., 2012), and stress (Ashby & Gnilka, 2017).

While the link between both dimensions of perfectionism and various psychological outcomes has been explored, there is interest in investigating mediators between both dimensions of perfectionism and various psychological outcomes such as depression and anxiety. One promising mediator is perceived social support which is defined as the belief that the availability of people that care about us is available if needed (e.g., Calvete & Connor-Smith, 2006) and has been linked to decreased levels of both depression and anxiety (Baumeister & Leary, 1995; Pettit, Roberts, Lewinsohn, Seeley, & Yaroslavsky, 2011). The perfectionism social disconnection model (PSDM) is one framework for explaining the connection between the perfectionistic concerns dimension and various psychological outcomes (Hewitt et al., 2006). The PSDM suggests that individuals with higher levels of perfectionistic concerns are more likely to experience less social support (i.e., feeling excluded, rejected, or unwanted by others) which leads to increased levels of depression. This suggestion has been supported by body of research that has indicated that perfectionistic concerns has been shown to have a negative association with perceived social support (Barnett & Johnson, 2016; Dunkley, Sanislow, Grilo, & McGlashan, 2006; Molnar, Sadava, Flett, & Colautti, 2012; Nepon et al., 2011; Sherry, Law, Hewitt, Flett, & Besser, 2008; Smith, Sherry, McLarnon, et al., 2018; Stoeber, Noland, Mawenu, Henderson, & Kent, 2017; Zhou, Zhu, Zhang, & Cai, 2013), size of an individual's social support network (Molnar et al.), and the perception that others are satisfied with them socially (Sherry et al., 2013). Individuals high in perfectionistic concerns are more likely to perceive themselves as being rejected by others and not meeting the expectations of others socially (Stoeber et al., 2017). This lower level of social support makes individuals with high levels of perfectionistic concerns vulnerable to depression (e.g., Sherry et al., 2013) and suicidal ideation (Smith, Vidovic, Sherry, & Saklofske, 2017; Smith, Sherry, Chen et al., 2018).

While the PSDM has been used to explain the connection between perfectionistic concerns and depression, few studies have examined other outcomes such as anxiety. Given the connection between perfectionistic concerns and anxiety (e.g., Burgess & DiBartolo, 2016;

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https://doi.org/10.1016/j.paid.2018.11.031
Received 17 August 2018; Received in revised form 20 November 2018; Accepted 21 November 2018

Gnilka et al., 2012) and the significant overlap between depression and anxiety (e.g., Renner, Hock, Bergner-Köther, & Laux, 2016), the PSDM is a promising model that could further explain the link between perfectionistic concerns and anxiety. This was echoed by Burgess and DiBartolo in a comprehensive review of perfectionism and anxiety concluding that the PSDM was a compelling framework that investigators should explore in more detail. Therefore, one purpose of this study was to extend the PSDM by looking at anxiety as an outcome.

While the PSDM has explained the connection between perfectionistic concerns and depression and shows promise with anxiety, Sherry, MacKinnon, and Gautreau (2016) and Hewitt, Flett, and Mikail (2017) have asserted that the PSDM should apply to all perfectionism traits suggesting that all forms of perfectionism should lead to social disconnection and interpersonal difficulties. A review of the literature does not fully support their assertions. For example, Sherry et al. (2008) found that perfectionistic strivings (called Self-oriented Perfectionism) had no relationship with perceived social support. A longitudinal study over a five-month period by Smith, Sherry, McLarnon, et al. (2018) found a similar result in that two social support pathways (i.e., interpersonal discrepancies and social hopelessness) were not significant mediators between perfectionistic strivings and depression (both mediators were significant in the case of perfectionistic concerns however).

Other studies have found a positive relationship between perfectionistic strivings and various measures of social support. Sherry et al. (2013) found that perfectionistic strivings (called Personal Standards) was positively correlated with perceived social support. In a more recent study, Stoeber et al. (2017), using three separate undergraduate samples, concluded that perfectionistic strivings (called Self-oriented Perfectionism) was positively related to social connection and did not have higher levels of interpersonal hostility compared to non-perfectionists. Other studies have found mixed findings. For example, Nepon et al. (2011) found that perfectionistic strivings (called Self-oriented Perfectionism) had a positive relationship with rumination about an interpersonal offense while concurrently having a negative relationship with perceived frequency of destructive feedback from others.

Given the mixed findings between perfectionistic strivings and perceived social support, additional studies are needed that use different measures of perfectionism. This has been echoed by multiple other researchers Chang, Sanna, Chang, and Bodem (2008) and Stoeber et al. (2017) whom asserted that future researchers should consider using alternative measures of perfectionism to determine the generalizability of these findings. Therefore, another purpose of this study was to extend previous studies by utilizing items from the Short Almost Perfect Scale (SAPS; Rice, Richardson, & Tueller, 2014) to measure perfectionism dimensions.

In summary, studies suggest perfectionistic concerns is negatively associated with social support which, in turn, leads to increased levels of depression and potentially other negative emotional outcomes such as anxiety. There is consistent evidence for the PSDM for perfectionistic concerns in which the lack of social support leads to vulnerability for negative psychological outcomes. For perfectionistic strivings, there is mixed evidence for the mediating role of social support as either non-significant or potentially beneficial. The purpose of this study was to extend earlier studies and to investigate the relationships between both dimensions of perfectionism (i.e., perfectionistic strivings and concerns), social support, and two outcomes (i.e., depression and anxiety).

Specifically, we hypothesized that:

1) Social support would mediate the relationship between perfectionistic concerns and depression (i.e., perfectionistic concerns would be negatively associated with social support, which in turn would lead to higher depression levels).
2) Social support would mediate the relationship between perfectionistic concerns and anxiety (i.e., perfectionistic concerns would be negatively associated with social support, which in turn would lead to higher anxiety levels).
3) Social support would mediate the relationship between perfectionistic strivings and depression (i.e., perfectionistic strivings would be positively associated with social support, which in turn would lead to lower depression levels).
4) Social support would mediate the relationship between perfectionistic strivings and anxiety (i.e., perfectionistic strivings would be positively associated with social support, which in turn would lead to lower anxiety levels).

2. Methods

2.1. Procedure

The present study utilized data from the Spit for Science study (S4S), an ongoing university-wide longitudinal research project that assesses a combination of genetic, environmental, emotional, and behavioral characteristics (Dick et al., 2014). The research project follows a representative majority of undergraduate students at a large urban university. Between 2011 and 2014, all incoming 1st year students age 18 or older were invited to participate with approximately 70% voluntarily participating. Follow-up surveys were administered each spring semester while enrolled as a student and following graduation.

A University Institutional Review Board approved all study procedures. REDCap (Research Electronic Data Capture), a secure web-based application designed exclusively to support data capture for research studies (Harris et al., 2009) was utilized for this study. Participants received $10 and a t-shirt for their involvement in the study.

2.2. Participants

Participants for the current analysis included 1785 students (858 freshmen, 749 sophomores, 137 juniors, and 41 seniors) who completed the S4S Spring 2017 online survey. Age of the participants ranged from 18 to 26 years (M = 20.54, SD = 1.79). 69.3% of the participants were female. 43.2% of the participating students self-identified as White, 22.3% were African American, 6.0% were Hispanic, 20.8% were Asian, and 7.7% were of other racial backgrounds (e.g., American Indian, Native Hawaiian, more than one race).

2.3. Instruments

Given the large-scale nature of the S4S study, measures were necessarily abbreviated to reduce participant burden. Further detail regarding the rationale to reduce the survey length can be found in Dick et al. (2014). Below are descriptions of each of the constructs measured in the study in addition to the specific items.

2.3.1. Social support [SS]

Social support was measured using three items from a modified version of the Medical Outcomes Study module (Sherbourne & Stewart, 1991). The three items asked about the past 12 months and included: "How often was someone available to give good advice about a crisis?" (str4a), "How often was someone available to get together with you for relaxation?" (str4b), and "How often was someone available to confide in or talk about your problems?" (str4c). Responses were made on a Likert-type scale of 1 ("*none of the time*") to 4 ("*all of the time*"), with higher scores representing greater perceived social support. The validity and reliability of the social support survey in the MOS has been demonstrated in previous studies (Sherbourne & Stewart, 1991).

2.3.2. Perfectionism

Two perfectionism dimensions (perfectionistic strivings [PS] and perfectionistic concerns [PC]) were measured by using six items from the Short Almost Perfect Scale (SAPS) that had the highest loadings from Rice et al.'s (2014) study. Given the length of the overall survey and constructs covered, the number of items that could be included was

limited to a maximum of 6-items. This is not an uncommon approach for larger studies that obtain a large amount of information across multiple variables across a population. Three items were used from the SAPS Standards subscale that measures an individual's personal standards. The three items for the Standards subscale included: "I have high expectations for myself." (per66), "I set very high standards for myself." (per68), and "I expect the best from myself" (per70). Three items were also used form the SAPS Discrepancy subscale that measures the distress caused by the discrepancy between an individual's actual performance and standards. The three items for the Discrepancy subscale included: "Doing my best never seems to be enough." (per67), "My performance rarely measures up to my standards." (per69), and "I am hardly ever satisfied with my performance." (per71). Responses were made on a Likert-type scale from 1 ("*strongly disagree*") to 7 ("*strongly agree*"), with higher scores representing greater levels on the respective perfectionism dimension. Due to a clerical error, two of the Likert-type items were reversed (5 = "*agree*" and 6 = "*slightly agree*"); therefore, we ran two separate analyses, one with the scales as is and one with the items switched. All analyses were similar.

2.3.3. Depression [DE] and anxiety [AE]

Depression and anxiety were measured by four items each from the depression and anxiety subscales of the Symptom Checklist 90 (SCL-90; Derogatis & Cleary, 1977). The four items measuring depression included: "Feeling blue." (hea1c), "Worrying too much about things." (hea1d), "Feeling no interest in things." (hea1e), and "Feeling hopeless about the future." (hea1g). The four items measuring anxiety included: "Nervousness or shakiness inside." (hea1a), "Suddenly scared for no reason." (hea1b), "Feeling fearful." (hea1f), and "Spells of terror or panic." (hea1h). The SCL-90 asks participants to describe their symptoms regarding the last 30 days and are answered using a Likert-type scale from 1 ("*not at all*") to ("*extremely*") with higher scores representing increased levels of depression or anxiety. A large body of research supports the reliability and validity of the SCL-90 (Derogatis, 1989; Derogatis & Cleary, 1977).

2.4. Statistical methods

Statistical analysis was conducted using Stata 14.2 (StataCorp, 2015) and MPlus 8.00 (Muthén & Muthén, 2017). Confirmatory factor analysis (CFA) was used to examine the measurement properties and construct validity of the hypothesized latent constructs. Structural equation modeling (SEM) was used to examine the direct relationship between the Standards and Discrepancy, the two measured dimensions of perfectionism, and the two outcomes, Anxiety and Depression. Finally, a second SEM model was used to determine whether Social Support functions as a mediator of the relationship between Standards and Discrepancy and Anxiety and Depression. To test the significance of the mediated pathways, we drew 1000 bootstrap samples with replacement from the full dataset (Shrout & Bolger, 2002). These samples were then used to construct a 99% confidence interval for the indirect effects. If this interval did not contain zero, the indirect effect was significant at $p < .01$.

2.5. Checking assumptions and model fit

Prior to analysis we tested the data on the assumption of multivariate normality using the *mvtest* procedure in Stata. Results of both Mardia's (1970) test and Doornik and Hansen's (2008) omnibus test suggested that the data did not completely satisfy the multivariate normal assumption. To account for this, we used the robust maximum likelihood procedure (MLR in MPlus) and used the Satorra-Bentler scaled chi-square (S-B χ^2) to examine model fit for all CFA and SEM models. In addition to the S-B χ^2, we also used the comparative fit index (CFI), standardized root-mean-square residual (SRMR), and root-mean-square error of approximation (RMSEA) with a 90% confidence interval. We adopted Hu and Bentler's (1999) guidelines for assessing acceptable model fit, which include *CFI* ≥ 0.95, *SRMR* ≤ 0.08, and *RMSEA* ≤ 0.06. In cases where the *CFI* value was below the suggested threshold, we then used Hu and Bentler's (1999) recommendation to simultaneously evaluate SRMR and RMSEA, with *RMSEA* ≤ 0.06 and *SRMR* ≤ 0.10 indicating an acceptable model fit.

Table 1
Descriptive statistics and correlations for study subscales (N = 1785).

	M	SD	α	1	2	3	4	5
1. Standards	18.11	3.19	0.81	–				
2. Discrepancy	12.28	4.57	0.81	−0.03	–			
3. Social support	9.15	2.21	0.86	0.13*	−0.30*	–		
4. Depression	9.83	4.11	0.86	−0.14*	0.50*	−0.30*	–	
5. Anxiety	7.15	3.50	0.87	−0.10*	0.35*	−0.22*	0.72*	–

Note. Standards = Short Almost Perfect Scale (SAPS) Standards Subscale; Discrepancy = SAPS Discrepancy Subscale; Social Support = Medical Outcomes Study (MOS); Depression = Symptom Checklist – 90 (SCL-90); Anxiety = Symptom Checklist – 90 (SCL-90).
* $p < .05$.

3. Results

3.1. Initial analysis

Descriptive statistics, Cronbach's coefficients alphas, and bivariate correlations are reported in Table 1. Cronbach's coefficient alphas were consistent with previous studies and above the 0.80 threshold. Correlations between the various subscales appear in Table 1.

3.2. Test for the direct effect of PS and PC on AX and DE

Following initial analyses, and confirmatory factor analysis was used to examine the construct validity of the latent variables being used. This CFA model included PS, PC, AX, DE, and SS. The fit statistics for the five-factor model were as follows: S-B $\chi^2(109, N = 1755) = 616.65$, $p < .001$, *CFI* = 0.95, *SRMR* = 0.04, *RMSEA* = 0.06, and 90% CI [0.056, 0.064]. Table 2 presents standardized factor loadings for each latent variable which were consistently above 0.70. Overall, the model was found to have strong measurement properties for the five-factor model.

After performing CFA, we then analyzed the direct effects of PS and PC on both AX and DE (see Fig. 1). For this and all subsequent models, we present results from covariate-adjusted models. Covariates included race/ethnicity, gender, and age which were found not to change the magnitude or significance of the paths in this study. We also include a residual correlation between AX and DE in all models, given the strong correlation between these outcomes.

The direct effects model demonstrated strong model fit: S-B $\chi^2(161, N = 1755) = 890.00$, $p < .001$, *CFI* = 0.94, *SRMR* = 0.03,

Table 2
Standardized factor loadings for indicators of latent constructs.

Construct	No. indicators	Min. loading	Mean loading	Max loading
Standards	3	0.76	0.77	0.79
Discrepancy	3	0.71	0.77	0.79
Social support	3	0.80	0.82	0.88
Anxiety	4	0.76	0.80	0.83
Depression	4	0.75	0.79	0.82

Note. Standards = Short Almost Perfect Scale (SAPS) Standards Subscale; Discrepancy = SAPS Discrepancy Subscale; Social Support = Medical Outcomes Study (MOS); Depression = Symptom Checklist – 90 (SCL-90); Anxiety = Symptom Checklist – 90 (SCL-90).

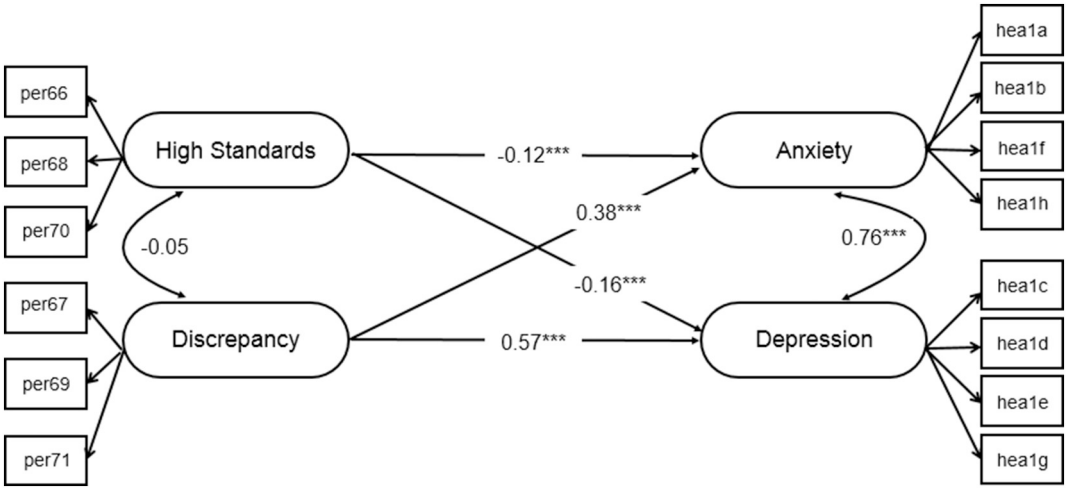

Fig. 1. Direct effect from perfectionism to anxiety and depression. High Standards = Short Almost Perfect Scale (SAPS) Standards Subscale; Discrepancy = SAPS Discrepancy Subscale; Depression = Symptom Checklist – 90 (SCL-90); Anxiety = Symptom Checklist – 90 (SCL-90). $^{***}p < .001$.

RMSEA = 0.02 and 90% CI [0.021, 0.024]. The standardized path coefficients from PS to AX (β = −0.12, *S.E.* = 0.03, $p < .001$) and DE (β = −0.16, *S.E.* = 0.03, $p < .001$) were both negative and statistically significant. The path coefficients from PC to AX (β = 0.38, *S.E.* = 0.03, $p < .001$) and DE (β = 0.57, *S.E.* = 0.02, $p < .001$) were both positive and statistically significant. The direct effects model with covariates explained about 38% of the total variation in DE, and 21% of the total variation in AX.

3.3. Test for the mediating effect of SS

Building from the direct effects model, which established significant direct paths between both covariates of interest and both outcomes, we then used a mediation model to test whether social support mediates the relationship between either PS or PC and AX and DE (see Fig. 2). This model demonstrated acceptable to strong fit: S-B $\chi^2(217, N = 1755) = 885.44$, $p < .001$, *CFI* = 0.94, *SRMR* = 0.04, *RMSEA* = 0.05, and 90% CI [0.045, 0.051]. We found that SS partially mediated the relationship between both PS and PC and AX and DE.

The standardized path coefficient from PS to SS was statistically significant and positive (β = 0.11, 99% CI [0.05, 0.17]), while the coefficient from PC to SS was statistically significant and negative (β = −0.16, 99% CI [−0.23, −0.14]). The paths from SS to AX (β = −0.15, 99% CI [−0.26, −0.04]) and DE (β = −0.23, 99% CI [−0.35, −0.11]) were both statistically significant and negative. The direct paths from PS to AX (β = −0.09, 99% CI [−0.16, −0.04]) and DE (β = −0.14, 99% CI [−0.21, −0.07]) both remained negative and statistically significant, and the direct paths from PC to AX (β = 0.22, 99% CI [0.17, 0.28]) and DE (β = 0.38, 99% CI [0.33, 0.44]) remained positive and statistically significant. The mediation model with covariates explained about 40% of the total variation in DE, and 22% of the total variation in AX, and 17% of the total variation in SS.

To confirm that mediation had occurred, we also tested the total and total indirect effects for the mediated paths from PS and PC through SS to AX and DE. This test was performed using bootstrap estimation in MPlus with 1000 replications. Results can be found in Table 3. In all cases, both the total and total indirect effects are statistically significant (at $p < .01$), confirming that SS functions as a partial mediator of both PS and PC.

4. Discussion

The purpose of this study was to investigate to what extent social support mediated the relationships between both dimensions of

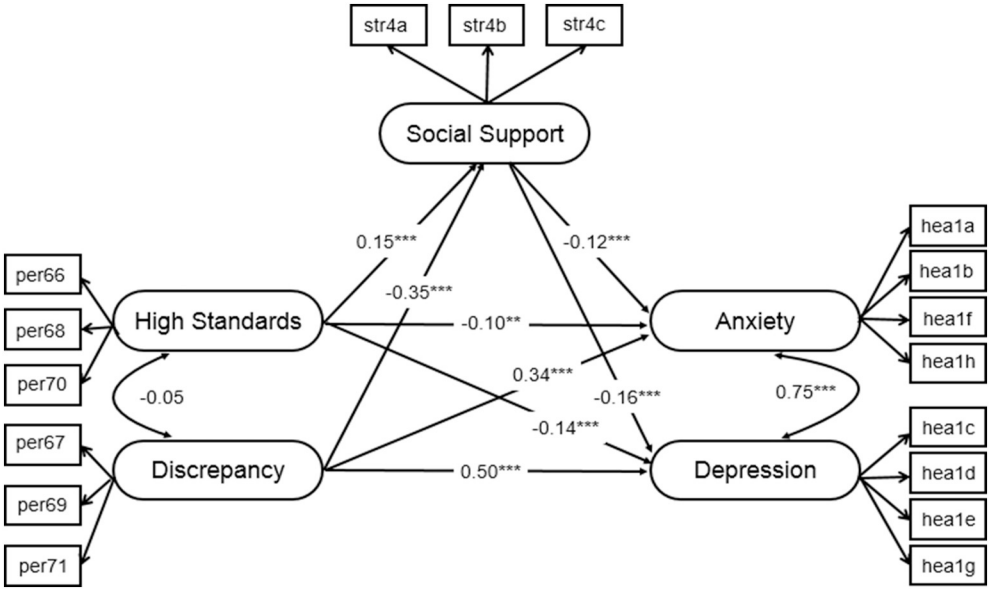

Fig. 2. Social support as a mediator of the relationship between perfectionism and anxiety/depression. High Standards = Short Almost Perfect Scale (SAPS) Standards Subscale; Discrepancy = SAPS Discrepancy Subscale; Social Support = Medical Outcomes Study (MOS); Depression = Symptom Checklist – 90 (SCL-90); Anxiety = Symptom Checklist – 90 (SCL-90). $^{**}p < .01$. $^{***}p < .001$.

Table 3
Test of total indirect effects for standards and discrepancy through social support.

Mediated path	Estimate	99% CI
HS → SS → DE	−0.03	[−0.04, −0.01]
HS → SS → AX	−0.02	[−0.03, −0.001]
DI → SS → DE	0.04	[0.02, 0.07]
DI → SS → AX	0.02	[0.01, 0.05]

Note. HS = Short Almost Perfect Scale (SAPS) Standards Subscale; DI = SAPS Discrepancy Subscale; SS = Medical Outcomes Study (MOS); DE = Symptom Checklist – 90 (SCL-90); AX = Symptom Checklist – 90 (SCL-90).

perfectionism and two outcomes: depression and anxiety. For the first hypothesis, social support was found to be a partial mediator between perfectionistic concerns and depression providing additional support for the PSDM. Individuals with higher perfectionistic concerns have difficulty maintaining supportive social relationships with others due to the combination of perceiving themselves as not good enough for others to support them leading them to isolate themselves from others. This isolation and self-doubt is connected to increased levels of depression and is consistent with earlier studies (Sherry et al., 2013; Smith, Sherry, McLarnon, et al., 2018; Stoeber et al., 2017).

The second hypothesis was also supported which found that social support partially mediated the relationship between perfectionistic strivings and depression. This finding is consistent with earlier studies that suggest that the perfectionistic strivings dimension is positively associated with social support (e.g., Stoeber et al., 2017) and in contrast to other studies that have found no significant relationship (Molnar et al., 2012; Sherry et al., 2008; Smith, Sherry, McLarnon, et al., 2018). This suggests that individuals with higher levels of perfectionistic strivings perceive more social support from others when needed and the ability to believe others would be supportive of them. This increased social support, in turn, lead to lower levels of depression. This finding suggests that not all dimensions of perfectionism should be viewed as pathological and may actually be beneficial (e.g., Suh et al., 2017). This finding also seems to suggest that the PSDM may not apply to the perfectionistic strivings dimension in contrast to the assertions of Hewitt et al. (2017) and Sherry et al. (2016).

For the third hypothesis, social support was found to partially mediate the relationship between perfectionistic concerns and anxiety. This extended earlier findings of the PSDM by investigating anxiety as a potential outcome variable along with earlier studies that have explored depression (e.g., Nepon et al., 2011), alcohol use (Sherry et al., 2012), and physical health (Molnar et al., 2012). Individuals may have difficulty maintaining supportive social relationships and reaching out when support is needed. As a result, this increased sense of social isolation potentially leads to multiple negative emotional and physical outcomes.

Regarding the forth hypothesis, social support was found to partially mediate the relationship between perfectionistic strivings and anxiety. In other words, perfectionistic strivings lead to small (but statistically significant) increase in social support which had a strong negative relationship with anxiety. This finding again provides additional support that the dimension of perfectionistic strivings may not be pathological. Individuals who have higher levels of perfectionistic strivings may perceive increased social support in addition to no higher levels of hostility when compared to non-perfectionists (Stoeber et al., 2017).

Lastly, there were significant direct effects from both dimensions of perfectionism to both outcomes. This direct effect suggests that future researchers should consider more complex models that include additional potential mediating variables such as coping in addition to social support (e.g., Ashby & Gnilka, 2017; Dunkley et al., 2003).

The current study has several limitations. First, this study was made up of undergraduate students from one university located in the southeast. Future studies should consider replicating these findings using community and clinical based samples to see if the same relationships between the variables a found. Second, this was a cross-sectional study. Future researchers should continue to utilize longitudinal designs to help better determine the relationships between perfectionism, social support, and various emotional outcomes. Third, this study used self-report measures; future researchers may want to consider controlling for self-management. Lastly, future studies should consider to exploring other potential mechanisms that link both dimensions of perfectionism and various emotional outcomes.

Acknowledgements

Spit for Science has been supported by Virginia Commonwealth University, P20 AA017828, R37AA011408, K02AA018755, and P50 AA022537 from the National Institute on Alcohol Abuse and Alcoholism, and UL1RR031990 from the National Center for Research Resources and National Institutes of Health Roadmap for Medical Research. We would like to thank the Spit for Science participants for making this study a success, as well as the many University faculty, students, and staff who contributed to the design and implementation of the project.

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