

## INTRODUCTION

- Perfectionism has been implicated in the development and maintenance of a wide variety of mental disorders, to the extent that it is conceptualized as a transdiagnostic phenomenon (Egan, Wade, & Shafran, 2011).
- Findings supporting its predictive validity and stability suggest that it may act as a predisposing variable to psychological distress.
- These research findings may be explained by the cognitive vulnerability stress-interaction model, which is an integrated cognitive model that focuses on factors contributing to the development, maintenance, and recurrence of psychological issues. According to this model, cognitive distortions mediate the relationship between a vulnerability (i.e., perfectionism) and psychological distress.
- The first aim of this study was to clarify the nature of perfectionism, namely its role as a predisposing factor, or vulnerability, and the way it interacts with stress, based on a cognitive vulnerability framework.
- The second aim was to extend the current body of literature by determining if cognitive distortions mediate the relationship between the proposed vulnerability (i.e., perfectionism) and psychological distress.

## METHODS

- Participants:** 352 graduate students from a Northeastern medical school were asked to participate during the summer and fall 2015 terms; 147 students completed measures at Time 1 and Time 2. Participants were surveyed early in an academic trimester during a time of low stress and then again immediately following an academic stressor (i.e., a midterm or final exam). This enabled us to evaluate the stability and predictive validity of perfectionism and cognitive distortions as a mediator.
- Measures:** We assessed perfectionism, cognitive distortions, stressors, and symptoms of psychological distress using the following self-report measures: Clinical Perfectionism Questionnaire (CPQ), Cognitive Distortions Scale (CDS), Life Experiences Survey (LES), and Brief Symptom Inventory-18 (BSI-18).
- Analyses:** 1) A paired-samples *t* test was conducted to examine the stability of perfectionism measured at Time 1 and Time 2; 2) A multiple regression was performed to evaluate the predictive validity of perfectionism and its interaction with stress; 3) A repeated measures MANOVA was conducted to compare low, average, and high levels of perfectionism on the CDS, BSI-18, and LES; 4) Bootstrapping and the Sobel test were used to test whether cognitive distortions mediated the relationship between perfectionism and psychological distress.

## RESULTS: Perfectionism as a Vulnerability

- Participant scores on the CPQ were moderately correlated at Time 1 and Time 2 ( $r = .64, p < .001$ ). Mean scores on the CPQ obtained at Time 1 ( $M = 25.00, SD = 5.22$ ) were different from scores obtained at Time 2 ( $M = 27.07, SD = 4.65$ ). This difference,  $-2.06$  BCa 95% CI  $[-2.75, -1.37]$ , was significant ( $t(145) = -5.89, p < .001$ ) and represented a small to medium effect size,  $d = .44$ .
- After controlling for Time 1 distress, results from a hierarchical multiple regression indicated that perfectionism significantly predicted psychological distress but stress did not. The interaction was also not significant.

Table 1. Hierarchical Regression Analysis Summary for Perfectionism and Stress (n = 147)

	b	SEB	$\beta$
Step 1			
(Time 1) BSI-18	-.87 [-1.59, -.29]	.31	-.33**
Step 2			
(Time 1) BSI-18	-.99 [-1.64, -.48]	.19	-.37**
CPQ	.67 [.36, .97]	.17	.26***
LES	.13 [-.006, .54]	.12	.19
Step 3			
(Time 1) BSI-18	-.98 [-1.61, -.47]	.29	-.36**
CPQ	.54 [.11, 1.01]	.23	.26*
LES	.15 [.007, .55]	.12	.23
CPQ x LES	-.02 [-.07, .04]	.02	-.13

Note:  $R^2 = .11, p = .000$ ; Step 2  $\Delta R^2 = .16, p = .000$ ; Step 3  $\Delta R^2 = .01, p = .14$ ; \* $p < .01$ ; \*\* $p < .05$ ; \*\*\* $p < .001$

- Participants were sorted into low, middle, or upper tertiles based on their Time 1 score on the CPQ to examine the effects of perfectionism over time and to compare participants with low, average, and high levels of perfectionism.
- Results from the overall MANOVA using Pillai's Trace, revealed a significant difference between the low, middle, and high groups of perfectionists ( $V = .35, F(6, 130) = 4.55, p < .001$ ).
- There were no significant effects of time ( $V = .03, F(3, 64) = .76, p = .52$ ) or interaction with level of perfectionism and time ( $V = .07, F(6, 130) = .78, p = .59$ ).
- There were significant between-group differences on each dependent measure (BSI-18  $F(2, 66) = 12.36, p < .001$ , CDS  $F(2, 66) = 9.67, p < .001$ , LES  $F(2, 66) = 6.89, p = .002$ ).
- On the BSI-18, there were significant mean differences between the participants scoring in the upper tertile compared to participants scoring in the low tertile ( $M = 12.89, p < .001$ ) and middle tertile ( $M = 12.21, p < .001$ ).
- On the CDS, there were significant mean differences between participants scoring in the upper tertile compared to participants scoring in the low tertile ( $M = 21.60, p < .001$ ) and middle tertile ( $M = 20.77, p = .002$ ).

## RESULTS: Perfectionism as a Vulnerability (continued)

- On the LES, there were significant mean differences between the participants scoring in the upper tertile compared to participants scoring in the low tertile ( $M = 11.30, p = .007$ ) and middle tertile ( $M = 10.19, p = .028$ ).

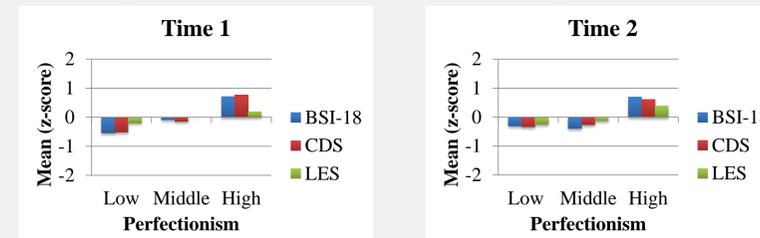


Figure 1. Between-groups comparison of scores on dependent measures

## RESULTS: Cognitive Distortions as a Mediator

- In step one of the mediation model, perfectionism significantly predicted psychological distress when cognitive distortions were not included in the model (path *c*).
- In step two of the mediation model, results showed that perfectionism significantly predicted the mediator, cognitive distortions (path *a*).
- Step three of the mediation process showed that the mediator, cognitive distortions, significantly predicted psychological distress after controlling for perfectionism (path *b*). When including cognitive distortions in the model, perfectionism no longer significantly predicted psychological distress ( $p = .07$ ).
- There was an indirect effect of perfectionism on psychological distress via cognitive distortions that was significantly greater than zero at  $\alpha = .05$ .
- Results from the Sobel test indicated that cognitive distortions mediated the relationship between perfectionism and psychological distress ( $z = 3.4, p = .0007$ ). This represented a moderate effect,  $\kappa^2 = .15, 95\% \text{ BCa CI } [.07, 24]$ .

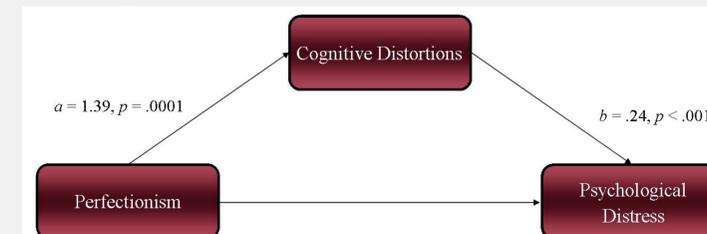


Figure 2. The mediating role of cognitive distortions in the relationship between perfectionism and psychological distress

## DISCUSSION

- Results from this study provided partial support for perfectionism as a vulnerability to psychological distress and strong support for the mediating role of cognitive distortions.
- Perfectionism demonstrated predictive validity and moderate temporal stability, with an increase in scores at Time 2. As noted by Ingram and Price (2010), vulnerability levels can change under the right circumstances. Thus, it is plausible that the observed increase in scores represented further activation of the perfectionistic schema elicited by internal stress (i.e., pressure to meet standards).
- In light of evidence that scores on the BSI-18 did not significantly increase from Time 1 to Time 2, it was not possible to conclude that perfectionism temporally preceded symptoms of distress (Riskind & Alloy, 2006).
- A post-hoc analysis revealed that participants reporting high levels of perfectionism experienced greater distortions in their thinking and symptoms of psychological distress compared to participants reporting low and average levels of perfectionism.
- Results also indicated that cognitive distortions mediated the relationship between perfectionism and psychological distress. Establishing cognitive mediation in this study lends additional empirical support to the theoretical assumptions of the cognitive model.
- These findings can facilitate predictions about behavior, particularly who has the highest propensity to develop psychological distress (i.e., students with high levels of perfectionism), which can be used to inform treatment; however, it remains to be seen when distress is most likely to emerge. Findings also provided evidence that targeting cognitive distortions is an appropriate focus in treatment.
- Limitations in this study include the timing of the assessments, use of self-report measures, and a homogenous sample.
- Future research should consider using an experimental manipulation as this may help demonstrate the predictive validity and temporal stability of perfectionism.

## REFERENCES

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