**Theoretical Background**

Models of GAD suggest that worry is an attempt to control or avoid negative emotions (see Behar, DiMarco, Hekler, Mohlman, & Staples, 2009 for review).

A variety of vulnerabilities may reinforce and maintain worry, including intolerance of uncertainty, negative problem orientation, metacognitions, and cognitive avoidance.

Distress intolerance (DI) has been defined as the perceived inability to withstand distressing states and is hypothesized to be a central element of many psychological disorders (McHugh et al., 2010).

DI motivates individuals to engage in avoidance behaviors in order to escape distress.

DI has been identified as a risk factor for a variety of avoidance behaviors; however, the mechanisms that link DI to specific disorders or behaviors remain poorly understood. The aim of the current study was to examine a mediation model to explain the relationship between DI and specific vulnerabilities for worry.

**Hypotheses**

This study hypothesized that worry-specific vulnerabilities (intolerance of uncertainty, negative problem orientation, metacognitions, and cognitive avoidance) would partially mediate the association between DI and worry.

**Participants and Procedure**

Participants:
One hundred and twenty three patients receiving treatment at a partial hospital program in New England from February through July 2012

Demographically the average age is 35 years, and most patients were women (63%). The majority of patients were Caucasian (88%) and never married (53%).

Comorbidity was common in the sample. The most common diagnosis was major depressive disorder (69%), followed by GAD (44%), social anxiety disorder (44%), post-traumatic stress disorder (15%), obsessive-compulsive disorder (11%), panic disorder (9%), psychotic disorder (3%), and bipolar disorder (1%).

Procedure:
- Approval for the study was granted by the hospital’s Institutional Review Board
- Data were collected on site at the hospital.
- At admission, patients completed a structured diagnostic interview, the Mini International Neuropsychiatric Interview (MINI, Sheehan et al., 1998), a demographics survey, and a battery of self-report measures
- Measures:
  - Distress Intolerance Index: assesses the inability to tolerate negative states
  - Penn State Worry Questionnaire: assesses trait worry
  - Cognitive Avoidance Questionnaire: assesses the use of five cognitive avoidance strategies
  - Intolerance of Uncertainty Scale-12: assesses individual’s tendency to find uncertainty upsetting and distressing
  - Metacognition Questionnaire-30: (positive and negative beliefs subscales) assess metacognitive beliefs, judgments, and monitoring tendencies

**Methods**

- A multiple mediator model was used to investigate whether worry-specific vulnerabilities (cognitive avoidance, intolerance of uncertainty, positive and negative beliefs about worry, and negative problem orientation) mediated the association between DI and worry in a clinical sample.
- The INDIRECT macro for SPSS was used to test the hypothesized multiple mediation model (Preacher & Hayes, 2008). INDIRECT allows for the simultaneous testing of multiple mediators. In addition to testing traditional \( a, b, c, \) and \( c' \) path coefficients, the macro estimates direct and indirect effects using normal theory significance tests and percentile-based bootstrap confidence intervals. We used 1,000 bootstrapped samples with bias corrected and accelerated estimates and a 95% CI.

**Results**

- The overall model was significant, \( F(6, 113) = 27.52, p < .001 \), and explained 57% of the variance in worry.
- Of the indirect effects, negative problem orientation and negative beliefs about worry were significant. Refer to Table 1 for a summary of the direct and indirect effects.
- Of the \( a \) paths, DI significantly predicted cognitive avoidance, negative beliefs about worry, intolerance of uncertainty, and negative problem orientation.
- Of the \( b \) paths, only negative beliefs about worry and negative problem orientation significantly predicted worry.

**Discussion**

- We examined a multiple mediator model in an attempt to understand whether DI may link to worry via more specific vulnerabilities.
- Components of the models of worry fully mediated the association between DI and worry. Particularly the indirect effects of negative beliefs about worry and negative problem orientation were significant.
- These findings partially support the metacognitive model of GAD (Wells, 2005), suggesting that negative beliefs about worry are associated with worry at the clinical level.
- Additionally, the finding that the indirect effect of negative problem orientation was significant may be a consequence of a greater number of problems present at the clinical level, as well as an increased difficulty engaging in problem solving.
- These results provide initial evidence that DI may be associated with avoidance types via more specific risk factors.

**Limitations and Future Directions:**

- This study was cross sectional in nature and unable to establish temporal precedence of the mediators. Future research should utilize a longitudinal and/or experimental design.
- Interventions targeting distress intolerance may effectively reduce worry.
- Because DI functions transdiagnostically, interventions designed to increase withstanding distress may be beneficial for those with comorbid psychopathology.

**Table 1:** Estimates for individual paths and of the multiple mediator model predicting PSWQ scores and bootstrapped confidence intervals for the indirect effects.

<table>
<thead>
<tr>
<th>Mediators</th>
<th>a paths (SE)</th>
<th>b paths (SE)</th>
<th>Effect (SE)</th>
<th>95% CI</th>
</tr>
</thead>
<tbody>
<tr>
<td>CAQ</td>
<td>.52 (.14)</td>
<td>.375***</td>
<td>.02 (.06)</td>
<td>0.36</td>
</tr>
<tr>
<td>IUS-12</td>
<td>.45 (.08)</td>
<td>5.53***</td>
<td>.17 (.12)</td>
<td>1.46</td>
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<tr>
<td>NPOQ</td>
<td>.61 (.10)</td>
<td>6.07***</td>
<td>.23 (.10)</td>
<td>2.52</td>
</tr>
<tr>
<td>MCQ-P</td>
<td>.03 (.04)</td>
<td>0.62</td>
<td>.18 (.18)</td>
<td>1.005</td>
</tr>
<tr>
<td>MCQ-N</td>
<td>.26 (.04)</td>
<td>6.98***</td>
<td>1.24 (.23)</td>
<td>5.62</td>
</tr>
</tbody>
</table>

**Note:**
- \( * p < .05, ** p < .01, *** p < .001 \)
- CAQ = Cognitive Avoidance Questionnaire; IUS-12 = Intolerance of Uncertainty Scale-12; NPOQ = Negative Problem Orientation Questionnaire; MCQ-P = Metacognitions Questionnaire; MCQ-N = Metacognitions Questionnaire: positive beliefs about worry subscale; PSWQ = Penn State Worry Questionnaire.

**References**


