



Intolerance of Uncertainty and Attention: Evaluating Associations with Attentional Network Functioning and Attentional Bias for Uncertainty

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Introduction

- Intolerance of uncertainty (IU), the tendency to fear the unknown, is a transdiagnostic vulnerability and maintenance factor for anxiety and depressive disorders.
- IU may be associated with altered attentional network functioning and an attentional bias for uncertainty, thereby increasing anxiety. If such attentional alterations and biases exist and contribute to anxiety, IU-related attentional differences may be potential targets for interventions (e.g., attentional bias modification protocols).
- Studies examining attentional network functioning and attentional biases related to IU have produced conflicting results, possibly due to the tasks and analytic strategies used.
- The current investigation assessed associations between attentional network functioning, attentional bias for uncertainty, IU, and potential confounding variables.

Methods

Participants and Measures

Participants included 75 undergraduate students who completed the Attention Network Test–Revised (ANT-R), dot probe task (DPT), and self-report measures. Attentional tasks were counterbalanced and completed prior to self-report measures.

Hypotheses

1. Compared to low IU, elevated IU is associated with increased alerting, impaired orienting, and impaired executive control on the ANT-R.
2. Compared to individuals with low IU, individuals with elevated IU demonstrate an attentional bias towards stimuli denoting uncertainty using both traditional and variability-based measures of bias on the DPT. The bias is characterized by facilitated attention and difficulty disengaging.

Data Preparation and Statistical Analyses

- Index scores for each task were calculated using reaction times (RTs) from different attentional task conditions (e.g., varying cue and target congruency).
- Analyses included ANOVAs with IU group (elevated or low) and attentional task conditions as independent variables and RT as the dependent variable. MANOVAs with IU group or order of tasks as independent variables and index scores as dependent variables were also conducted. Bonferroni corrections were applied when evaluating results.

Results

Table 1. Descriptive statistics by IU condition.

	Low IU	Elevated IU
Sex		
Male	<i>n</i> = 11 (31.4%)	<i>n</i> = 8 (20.0%)
Female	<i>n</i> = 24 (68.6%)	<i>n</i> = 32 (80%)
Age	<i>M</i> = 23.54 (<i>SD</i> = 6.42)	<i>M</i> = 21.20 (<i>SD</i> = 3.56)
IUS-12 Score	<i>M</i> = 20.77 (<i>SD</i> = 3.83)	<i>M</i> = 45.88 (<i>SD</i> = 4.25)

Figure 1. Mean RTs on the ANT-R for each cue type as a function of flanker congruence and IU condition.

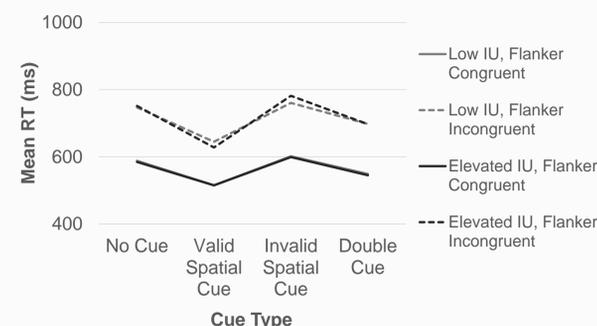
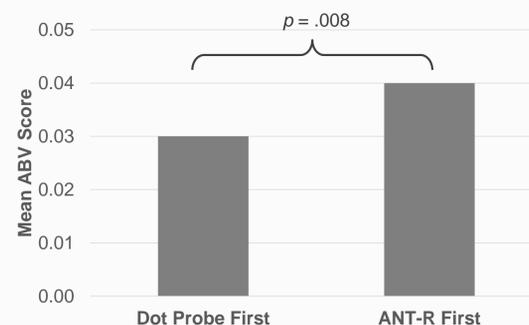


Figure 2. Mean ABV Scores on the DPT as a function of task order.



Note. ABV = attention bias variability.

Results

Hypothesis 1

- Hypothesis 1 was not supported. IU condition was not associated with differences in RTs or index scores on the ANT-R ($p_s \geq .037$)

Hypothesis 2

- Hypothesis 2 was not supported. IU condition was not associated with differences in RTs or index scores on the DPT ($p_s \geq .086$).

Ancillary analyses

- A main effect of order of tasks emerged on the DPT indices, $F(3, 71) = 4.46$, $p = .006$, $\eta_p^2 = .159$. Order of tasks was not associated with differences on the disengaging ($p = .047$), engaging ($p = .980$), or overall bias indices ($p = .062$). Completing the DPT first was associated with decreased attention bias variability, $F(1, 73) = 7.46$, $p = .008$, $\eta_p^2 = .093$.
- Order of tasks was not associated with significant differences across the ANT-R indices, $F(14, 57) = .851$, $p = .613$, $\eta_p^2 = .173$.

Discussion

- The current investigation was the first to assess both IU-related differences in attentional network functioning and attentional bias for uncertainty, as assessed by the ANT-R and DPT, respectively.
- Elevated IU was not associated with differences in attentional network functioning or attentional bias for uncertainty.
- Potential reasons for null findings include the specific attentional tasks used, examining intergroup as opposed to interindividual differences, and a sample characterized by high IU.
- The results did show that task order influenced attention task performance, suggesting that attentional network functioning and attentional biases are related and highlighting the potential confounding effects of task order. Specifically, completing the ANT-R led to decreased attention bias variability on the DPT.
- Further research examining IU-related attentional biases and alterations in attentional network functioning is needed to clarify discrepancies between the current results and past findings. Additionally, given that attentional task order influenced the attentional bias for uncertainty, future researchers should examine whether the ANT-R is a potential tool for ABM.

