
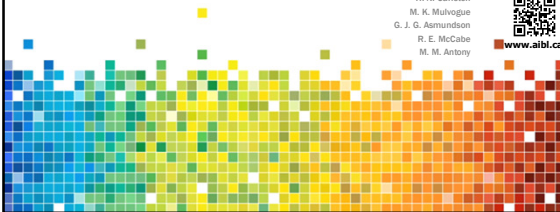


Intolerance of Uncertainty Across Anxiety and Depressive Disorders Relative to Undergraduate and Community Samples

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Background

- Anxiety is believed to require a “sense of uncontrollability focused on the possibility of future threat, danger, or other potentially negative events”
 - Suárez, Bennett, Goldstein, & Barlow, 2009, p. 153
- There appears to be implicit theoretical support that negative reactions to uncertainty may be intrinsic for all anxiety disorders




Background

- Intolerance of Uncertainty (IU)
 - A dispositional characteristic resulting from negative beliefs about uncertainty and its implications
- Clinical work has historically focused on generalized anxiety disorder (GAD) and obsessive compulsive disorder (OCD)
 - Dugas et al., 1995, 2005; Holaway et al., 2006; Ladouceur et al., 1999; Freeston et al., 1994; Sexton et al., 2003
- Higher rates in GAD relative to a mixed anxiety group
 - GAD, $n=24$; an additional diagnosis of GAD, $n=24$; other anxiety disorders, $n=38$; nonclinical, $n=20$
 - Ladouceur et al., 1999




Background

- A recent meta-analysis suggested previous evidence indicating IU differentiates GAD from other disorders may have been influenced by the specific content assessed by the original Intolerance of Uncertainty Scale
 - Gentes & Ruscio, 2011




Background

- Evidence from undergraduate, community, and clinical samples suggests IU is ubiquitous
 - Berenbaum et al., 2008; Dugas et al., 2007; Norton, 2005; Sexton & Dugas, 2009; McEvoy & Mahoney, 2011; Tolin et al., 2003
- Important relationships may exist between IU and other anxiety disorders
 - McEvoy & Mahoney, 2011; Norton & Mehta, 2007; Norton et al., 2005




Background

- **IU and social anxiety comparable to fear of negative evaluation**
 - Boelen & Reijntjes, 2009; Carleton et al., 2010; Norton et al., 2005; van der Heiden et al., 2010
- **IU and panic comparable to anxiety sensitivity**
 - Buhr & Dugas, 2009; Carleton et al., 2007
- **IU and depression**
 - Boelen et al., 2010; Butzer & Kuijper, 2006; Miranda et al., 2008; Norton & Mehta, 2007; Norton et al., 2005; van der Heiden et al., 2010; Yook et al., 2010




Purpose

- **To investigate endorsement rates and response patterns of IU – as measured by the IUS-12 – across various principal anxiety disorder diagnoses or depression relative to undergraduate and community samples**




Hypotheses

- **A 2-factor solution was expected for the IUS-12**
- **Clinical participants were expected to be higher than non-clinical**
- **Prospective IU was expected to be higher for GAD and OCD**
- **Inhibitory IU was expected to be higher for social anxiety, panic, agoraphobia, and depression**
 - McEvoy & Mahoney, 2011




Participants

- **Clinical Sample**
 - From the ATRC, an established outpatient anxiety treatment and research center
 - Postsecondary (69%), graduated high school (17%), some high school (12%)
 - Caucasian (94%), Asian (3%), Aboriginal (2%)
 - Single (45%), married/cohabit (46%), divorced (8%)
 - 146 men [$M_{age} = 36.55$; $SD = 13.58$]
 - 230 women [$M_{age} = 35.09$; $SD = 11.81$]




Participants

- **Undergraduate Sample**
 - From the University of Regina
 - Caucasian (87%), Asian (7%), Aboriginal (2%)
 - Single (82%), married/cohabit (12%), divorced (1%)
 - 103 men [$M_{age} = 20.58$; $SD = 3.04$]
 - 325 women [$M_{age} = 20.47$; $SD = 3.86$]




Participants

- **Community Sample**
 - From across Canada
 - Postsecondary (67%), graduated high school (21%)
 - Caucasian (84%), Asian (5%), Aboriginal (3%)
 - Single (55%), married/cohabit (34%), divorced (9%)
 - 187 men [$M_{age} = 27.86$; $SD = 10.37$]
 - 384 women [$M_{age} = 28.72$; $SD = 10.81$]




Participants

- Axis I diagnosis in the clinical sample were based upon the disorder that was found to be most disabling at the time of the assessment
 - SAD ($n = 120$; 32%)
 - Panic disorder w/wo ag. (PDA; $n = 89$; 24%)
 - GAD ($n = 63$; 17%)
 - OCD ($n = 60$; 16%)
 - Major Depressive Disorder (MDD; $n = 26$; 7%)
- Insufficient numbers
 - Specific phobia ($n = 11$), ADNOS ($n = 7$)
 - PTSD was not treated at the ATRC




Measures

- Intolerance of uncertainty scale, short form (IUS-12)
 - Carleton, Norton, et al., 2007; Carleton, Sharpe, et al., 2007
 - Psychometrically sound as well as comparable to, but briefer than, the original IUS
 - Khawaja & Yu, 2010
- Structured Clinical Interview, DSM-IV (SCID-I)
 - First et al., 1996



Analyses


- Descriptive Statistics
- Univariate Kernel density estimation curves
- ANOVAs
 - Replicating Ladouceur et al., 1999
 - Comparing total and subscale scores
- Confirmatory Factor Analyses
- Multi-group Invariance Analyses



Results

- Rates of Comorbid Diagnoses


Principal Diagnosis	Additional Diagnosis						
	None	MDD	PDA	GAD	SAD	OCD	Other Axis I
MDD	8%	-	23%	19%	38%	4%	8%
PDA	22%	29%	-	12%	15%	4%	8%
GAD	13%	24%	14%	-	27%	10%	13%
SAD	17%	32%	13%	21%	-	6%	13%
OCD	18%	32%	12%	12%	13%	-	13%



Results


- Descriptive Statistics

	UG ($n=428$)	Comm. ($n=571$)	SAD ($n=120$)	PDA ($n=89$)	GAD ($n=63$)	OCD ($n=60$)	MDD ($n=26$)
	$M(SD)$	$M(SD)$	$M(SD)$	$M(SD)$	$M(SD)$	$M(SD)$	$M(SD)$
IUS-12 Pro	17.51 (5.68)	18.54 (6.50)	23.97 (6.48)	21.83 (7.49)	24.60 (6.84)	23.62 (6.45)	25.23 (5.32)
IUS-12 Inh	10.00 (4.30)	10.99 (5.23)	17.69 (4.75)	15.18 (5.55)	15.79 (5.19)	17.17 (5.28)	17.81 (4.51)
IUS-12 Total	27.52 (9.28)	29.53 (10.96)	41.65 (10.23)	37.01 (12.45)	40.38 (11.26)	40.78 (10.71)	43.04 (9.20)
GAF	-	-	59.52 (7.45)	60.08 (8.77)	63.06 (7.28)	63.17 (7.95)	59.52 (8.12)




Results

- Age and UG; Age and Community
 - $p_s > .05$, $r_s < .04$
- Age and Clinical
 - $r(355) = -.11$, $p = .03$
- SAD group GAF scores slightly lower than GAD and OCD
 - mean differences ~ 3.5 ; $p < .05$
- GAF scores across men and women
 - $t(367) = 1.43$, $p > .05$, $r^2 < .01$



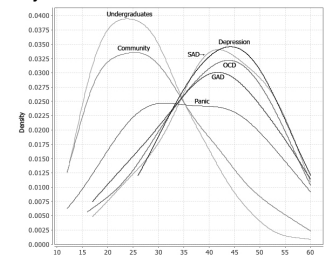
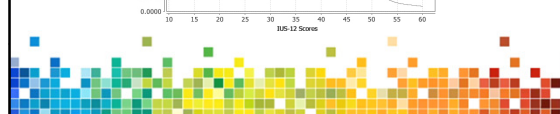
Results

- No items or summed scales with unacceptable skew or kurtosis; bootstrapping was still used
- Almost no statistically significant differences between men and women (i.e., all p s > .10; r^2 s < .01) on the total or subscale scores
 - In the community sample men scored slightly higher than women on the inhibitory IU subscale
 - $t(569) = 2.25, p < .05, r^2 < .01$




Results

- Kernel density estimation of IUS-12 scores


Results

- Ladouceur et al., 1999 Replication
- Principle GAD vs. Additional GAD vs. Principle other anxiety disorder vs. undergraduates vs. community
 - Total IU, $F(5,134.32)=70.14, p<.001, \eta^2=.20$
 - Prospective IU, $F(5,134.61)=46.05, p<.001, \eta^2=.14$
 - Inhibitory IU, $F(5,134.32)=83.02, p<.001, \eta^2=.23$
- No differences within clinical
- Clinical scores larger than undergraduate and community samples



Results

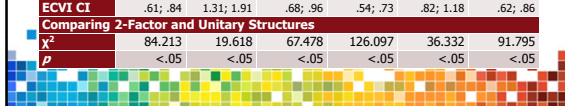
- Principle diagnoses vs. undergraduate sample vs. community sample
 - Sufficient sample to detect medium effect size differences
 - $n > 200$; moderate effect size of $F^2 = .25, \alpha = .05, 1$ -tailed, power = .85
 - Total IU, $F(6,182.90)=58.59, p<.001, \eta^2 = .20$
 - Prospective IU, $F(6,183.03)=35.87, p<.001, \eta^2 = .14$
 - Inhibitory IU, $F(6,182.69)=73.45, p<.001, \eta^2 = .24$
- Almost no differences within clinical
 - SAD slightly larger than PDA on Inhibitory IU
 - Mean difference = 2.51; $p < .01$
- Clinical scores larger than undergraduate and community samples



Results

- Confirmatory Factor Analyses Fit Indices

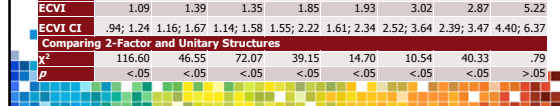
2-Factor	Undergraduate Sample				Community Sample			
	Total	Men	Women		Total	Men	Women	
CFI	.948	.925	.949	.963	.953	.966		
RMSEA	.073	.085	.073	.065	.067	.066		
RMSEA CI	.06; .09	.06; .11	.06; .09	.06; .08	.05; .09	.05; .08		
SRMR	.046	.065	.046	.040	.057	.037		
ECVI	.524	1.397	.603	.408	.793	.497		
ECVI CI	.44; .63	1.17; 1.70	.50; .73	.34; .49	.67; .96	.42; .60		
1-Factor								
CFI	.912	.890	.913	.927	.916	.930		
RMSEA	.094	.103	.095	.091	.089	.093		
RMSEA CI	.08; .11	.08; .13	.08; .11	.08; .10	.07; .11	.08; .11		
SRMR	.055	.071	.055	.052	.066	.050		
ECVI	.717	1.570	.805	.626	.978	.731		
ECVI CI	.61; .84	1.31; 1.91	.68; .96	.54; .73	.82; 1.18	.62; .86		
Comparing 2-Factor and Unitary Structures								
χ^2	84.213	19.618	67.478	126.097	36.332	91.795		
p	<.05	<.05	<.05	<.05	<.05	<.05		



Results

- Confirmatory Factor Analyses Fit Indices

2-Factor	Clinical Sample			Clinical Diagnostic Groups					
	Total	Men	Women	SAD	PDA	GAD	OCD	MDD	
CFI	.919	.930	.917	.875	.925	.805	.916	.813	
RMSEA	.098	.083	.106	.113	.107	.152	.094	.147	
RMSEA CI	.09; .11	.06; .11	.09; .12	.09; .14	.08; .14	.12; .19	.05; .13	.08; .21	
SRMR	.058	.064	.061	.072	.052	.106	.095	.119	
ECVI	.786	1.079	1.040	1.539	1.782	2.880	2.217	5.270	
ECVI CI	.67; .93	.90; 1.31	.87; 1.24	1.29; 1.86	1.49; 2.16	2.41; 3.48	1.87; 2.70	4.45; 6.41	
1-Factor									
CFI	.870	.870	.873	.815	.906	.780	.797	.814	
RMSEA	.123	.112	.129	.136	.119	.159	.145	.145	
RMSEA CI	.11; .14	.09; .13	.11; .15	.11; .16	.09; .15	.13; .19	.11; .18	.07; .21	
SRMR	.063	.072	.064	.082	.056	.104	.093	.124	
ECVI	1.09	1.39	1.35	1.85	1.93	3.02	2.87	5.22	
ECVI CI	.94; 1.24	1.16; 1.67	1.14; 1.58	1.55; 2.22	1.61; 2.34	2.52; 3.64	2.39; 3.47	4.40; 6.37	
Comparing 2-Factor and Unitary Structures									
χ^2	116.60	46.55	72.07	39.15	14.70	10.54	40.33	.79	
p	<.05	<.05	<.05	<.05	<.05	<.05	<.05	>.05	



Results

- Multi-group Invariance Analyses

Sample(s)	Comparison Groups	Measurement Weights	Structural Covariances	
Clinical (n=358)	Men-Women	$\chi^2(10)=10.05, p=.43$	$\chi^2(3)=.85, p=.84$	Invariant
Undergraduate (n=428)	Men-Women	$\chi^2(10)=17.70, p=.06$	$\chi^2(3)=.87, p=.83$	Invariant
Community (n=571)	Men-Women	$\chi^2(10)=13.43, p=.20$	$\chi^2(3)=3.85, p=.28$	Invariant
Undergraduate and Community	Undergraduate-Community	$\chi^2(10)=11.83, p=.30$	$\chi^2(3)=16.99, p<.01$	Partially Invariant
Clinical and Community	Undergraduate-Clinical	$\chi^2(10)=33.92, p<.01$	n/a	Variant
Clinical and Community	Community-MDD+PDA-GAD-SAD-OCD	$\chi^2(10)=35.44, p<.01$	n/a	Variant
Clinical	SAD-OCD	$\chi^2(40)=34.14, p=.73$	$\chi^2(12)=17.66, p=.13$	Invariant

Discussion

- The first direct multi-approach comparative analyses of IU response patterns and empirical distributions across clinical samples of people endorsing criteria for a principal diagnosis of GAD, OCD, SAD, PDA, or MDD relative to undergraduate and community samples
- Provides normative data

Discussion

- Endorsement patterns for men and women appear comparable irrespective of whether the sample is broad or narrow
- Factor structure is well-supported; however, less so in smaller samples (as expected)

Discussion

- People with a principal diagnosis of SAD, PDA, GAD, OCD, or MDD endorsed significantly higher levels of prospective and inhibitory IU than did people in the undergraduate and community samples
- No differences between the undergraduate and community samples
- Few endorsement rate differences within the clinical sample; however, we know there are symptom-pattern differences
 - Boelen & Reijntjes, 2009; Carleton et al., 2010; Norton et al., 2005; van der Heiden et al., 2010

Discussion


- Endorsement rates and patterns across undergraduate and community samples were comparable
- Endorsement rates and patterns within the clinical sample were comparable
- Endorsement rates and patterns between the clinical, undergraduate and community samples were very different

Implications

- IU appears ubiquitous, with clear differences for persons experiencing clinically-significant distress relative to non-clinical samples
- IU may fit well within current transdiagnostic perspectives
 - Brown & Barlow, 2009; Norton & Philipp, 2008
- Empirically-supported treatments that focus on IU may be broadly beneficial
 - Koerner & Dugas, 2006; Robichaud & Dugas, 2006


Limitations

- Some diagnostic groups were relatively less represented or excluded
- No interrater reliability
- Neither the undergraduate sample nor the community sample was diagnostically assessed
- Primarily Caucasian
- Cross-sectional data
- Symptom pattern differences were not assessed




Future Directions

- IU appears to represent a transdiagnostic construct across anxiety disorders and depression
- Trait verses state IU
- Initial indications that reducing IU corresponds with symptoms improvement
 - Dugas et al., 2000; Ladouceur et al., 2000; Mahoney & McEvoy, 2012





Reference

Carleton, R. N., Mulvogue, M. K., Thibodeau, M. A., McCabe, R. E., Antony, M. M., & Asmundson, G. J. G. (2012). Increasingly certain about uncertainty: Intolerance of uncertainty across anxiety and depression. *Journal of Anxiety Disorders*, 26, 468-479.



Questions



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