

Ambiguity Aversion and Ambiguity Seeking Are Not Opposite Ends of the Same Continuum:

A Psychometric Examination of Ellsberg-Type Tasks

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Background

An Ellsberg-Type Urn task, which requires participants to choose between known and unknown outcome probabilities (See fig. 1) has been proposed as a measure of Ambiguity Tolerance (Lauriola et al., 2007). Although this measure avoids many of the issues associated with measures of Ambiguity Tolerance (Furnham & Marks, 2013), there has not yet been a robust psychometric investigation of this task.

You win \$10 if you draw a **gray** marble. Which box do you draw from?

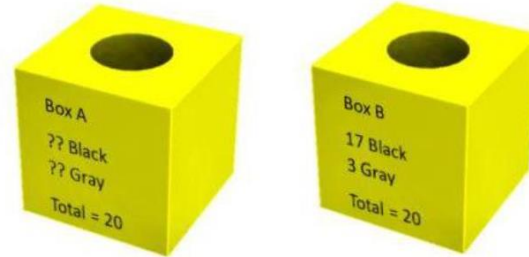


Figure 1. Sample urn task item

Research Questions

- What is the nomological network of Ambiguity Tolerance?
- How does the Ellsberg Urn Task function psychometrically?

Method

- Sample: N = 506 MTurk workers
- Analyses
 - Correlational Analysis
 - Exploratory Factor Analysis
 - IRT

Table 1. Factor Loadings from Principal Axis Factoring with Promax Rotation

# of Winning Marbles	Ambiguity Aversion	Ambiguity Seeking
1	.522	-.032
3	.574	-.200
5	.752	-.008
7	.622	.122
13	.081	.654
15	-.021	.678
17	-.045	.693
19	.000	.737
% Variance	6.86	38.18

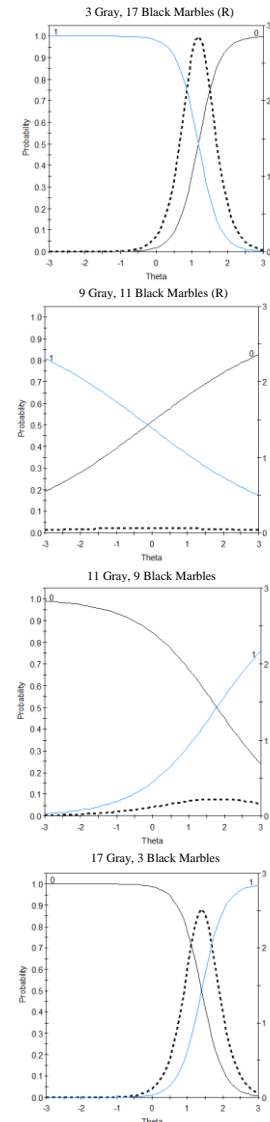


Figure 2. Item response and information functions

Table 2. Correlations between ambiguity tolerance factors and study variables

	Ambiguity Aversion	Ambiguity Seeking
AmbiguityTol	-.02	-.01
<i>Diverse</i>	-.03	.06
<i>Challenge</i>	.06	-.01
<i>UnfamTol</i>	.05	-.17**
<i>ChangeTol</i>	-.09*	.02
POAppr	-.17**	.16**
POAvoi	.24**	-.12**
CogRef	-.01	.12**
Will to Pay	-.05	-.02
Extraversion	.03	-.04
Agreeableness	.14**	-.13**
Conscientiousness	-.13**	.09*
Neuroticism	.11*	-.04
Openness	-.13**	.09
Rational	-.09*	.12**
Intuitive	.08	-.04
Dependent	.07	-.08
Avoidant	.23**	-.19**
Spontaneous	.23**	-.16**
Ambiguity Seeking	-.52**	-

Note: Italics indicate dimensions of Herman et al. (2010) scale. Boldface indicates subscales of Scott & Bruce (1995) decision-making style. AmbiguityTol=Herman et al (2010) ambiguity tolerance. Diverse=Valuing diverse others. Challenge=Challenging perspectives. UnfamTol = Unfamiliarity tolerance. ChangeTol= Change tolerance. POAppr=Performance orientation approach. POAvoi=Performance orientation avoidance. CogRef=Cognitive reflection. *p < .05; **p < .01

Results

- Factor and item analyses supported a two-factor structure of ambiguity seeking and ambiguity aversion.
- IRT analysis fitting two single-factor 2PL models also supported this conclusion.
- Ambiguity Seeking: Respondents will choose ambiguous option even when known option offers favorable odds.
- Ambiguity Aversion: Respondents will choose known option even when it offers unfavorable odds.
- Correlational data revealed expected relations with performance approach and avoidance orientations, the Big Five, and decision-making styles.
- Ambiguity aversion and ambiguity seeking show differential correlation patterns with several outcomes of interest (e.g., Agreeableness, rational, etc.).

Conclusion

The Ambiguity-Probability Tradeoff Urn tasks assesses 2 conceptually related yet distinct constructs: **ambiguity seeking** and **ambiguity aversion**.

For questions/comments, please contact: Andrew Samo (asamo@bgsu.edu)

Select References

- Furnham, A., and Marks, J. (2013). Tolerance of ambiguity: A review of the recent literature. *Psychology*, 4(9), 717-728.
- Lauriola, M., Levin, I. P., & Hart, S. S. (2007). Common and distinct factors in decision making under ambiguity and risk: A psychometric study of individual differences. *Organizational Behavior and Human Decision Processes*, 104(2), 130-149.