

Title: A Pilot Study on Decision Making with Anxiety and Depression: Risk Aversion, Loss Aversion, and Ambiguity of Outcome Magnitude

Authors: Tomislav D. Zbozinek, PhD;¹ Song Qi, MA;¹ Caroline J. Charpentier, PhD;¹ Dean Mobbs, PhD¹

1. California Institute of Technology, Division of Humanities and Social Sciences

Abstract: Background: Anxiety and depression have been clinically associated with overestimating the likelihood and severity of undesired life events.^{1,2} However, many of these studies lack experimental control of these factors. Economic behavioral studies have found mixed results regarding the association of loss aversion with anxiety and depression.³⁻⁵ Additionally, risk aversion is associated with anxiety but has mixed results with depression.^{4,6} Furthermore, one unexplored area is decision making with (un)ambiguous outcome magnitude, which is a main focus of the present study. The goals of the present study are: 1) to assess the effects of ambiguous vs unambiguous outcome magnitude on decision making, and 2) assess the effects of anxiety and depression on risk aversion, loss aversion, and aversion to ambiguity of outcome magnitude. **Methods:** Participants (N = 54) completed a gambling experiment with eight conditions that assessed risk aversion, loss aversion, and aversion to ambiguity of outcome magnitude (see Figure 1). To our awareness, this is the first study to manipulate ambiguity of outcome magnitude with decision making and to assess the effects of emotionality (e.g., anxiety, depression). **Results:** Participants generally showed loss aversion, risk preference, and aversion to ambiguous sure gains. Null effects for remaining ambiguous outcomes. Gambling percentage generally followed expected trends: as expected value of gambling increased, gambling increased (see Figure 2). Results regarding the effects of emotionality on risk, loss, and outcome ambiguity aversion await analyses. **Discussion:** The novel results of this study suggest that individuals generally avoid ambiguous sure gains but have no preference for ambiguous losses or ambiguous risky gains. Analysis of the effects of anxiety and depression will evaluate whether anxious and depressed individuals overestimate both the likelihood and severity of undesired outcomes like the clinical literature suggests. This has implications for both sub-clinical levels of these emotions, as well as the prevention and treatment of anxiety and depressive disorders.