

# Expectations in the Ultimatum Game

**Peter Vavra (peter.vavra@donders.ru.nl)**

Behavioural Science Institute, Montessorilaan 3  
Donders Institute for Brain, Cognition and Behaviour, Kapittelweg 29  
Nijmegen, 6525 HR The Netherlands

**Luke J. Chang (luke.chang@colorado.edu)**

Institute of Cognitive Science, 344 UCB  
Boulder, CO 80309 USA

**Alan G. Sanfey (alan.sanfey@donders.ru.nl)**

Behavioural Science Institute, Montessorilaan 3  
Donders Institute for Brain, Cognition and Behaviour, Kapittelweg 29  
Nijmegen, 6525 HR The Netherlands

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## Introduction

Being treated fairly by others is an important social need. Experimentally, fairness can be studied using the Ultimatum Game in which the decision to reject a low, but non-zero, offer is seen as a way to punish the other player for an unacceptable division. The canonical explanation of such behavior is inequity aversion: people prefer equal outcomes over personal gains (Fehr, Schmidt, 1999). However, there is abundant evidence that the decision to reject a low offer can be changed by both contextual factors and emotional state, which cannot be satisfactorily explained by the inequity aversion model.

A recent alternative explanation proposes that the main driving force behind the decision to reject is that of deviation from expectations: the larger the difference between the actual offer and the expected offer, the more likely one is to reject the offer (Chang, Sanfey, 2013). We tested and extended this idea by providing participants with explicit information on what kind of offers to expect. Crucially, we independently manipulated both the mean and the variance of expected offers.

## Methods

Each participant played as the responder in the Ultimatum Game and made a series of decisions to either accept or reject monetary offers. Participants were provided with information as to what kind of offers to expect in form of histograms, indicating what the current group of partners supposedly offered in a previous experiment. The critical manipulation was of both the mean and the variance of the histograms. First, behavioral data were analyzed using a logistic mixed-model analysis. Second, we fitted and compared different, previously proposed utility models. A second group of participants also underwent scanning using fMRI.

## Results

As expected, we found that the decision to accept or reject a certain offer was dependent on the information provided. Importantly, we found that the mean and variance of expected offers differentially affected this decision. Specifically, changing the mean expected offer shifts the threshold for acceptance. In contrast, changing the variance alters how strictly this threshold is adhered to. A model comparison showed that the expectation model outperforms the inequity aversion model.

## Conclusions

These results demonstrate the complex nature of social expectations, which might be better conceptualized as distributions instead of simple mean expected values, and how they influence considerations of fairness. Follow-up work is examining the neural bases of these expectations.

## References

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