Loss aversion bias is affected by L2 proficiency, not by more rational behavior in the L2

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People are predictably irrational in their decision-making (Tsversky & Kahnemann, 1981): choices are affected by how information is framed.

Asian Disease Problem (ADP)
Recently, a dangerous new disease has been going around. Without medicine, 600 people will die from it. In order to save these people, two types of medicine are available. They would have the following consequences:

Gain frame:
If you choose Medicine A, 200 people will be saved. (safe option)
If you choose Medicine B, there is a 33.3% chance that 600 people will be saved and a 66.6% chance that no one will be saved. (risky option)

Loss frame:
If you choose Medicine A, 400 people will die. (safe option)
If you choose Medicine B, there is a 33.3% chance that no one will die and a 66.6% chance that 600 will die. (risky option)

Which medicine do you choose?

Loss aversion bias: L1 speakers choose the safe option more frequently in the gain frame than in the loss frame (framing effect)

“Foreign language effect”: L2 speakers might not show the same loss aversion (Costa et al., 2014; Keysar et al., 2012). But why?
• Are L2 speakers more rational in their L2 because of reduced emotionality?
• But: Does “200 people will be saved” mean exactly 200? At least 200? At most 200?
• Interpretation of number term changes which choice is rational (Mandel, 2013)

Is the difference between L1 and L2 framing effects due to subtle differences between native and non-native interpretations? If so, loss aversion bias should be affected by L2 proficiency.

Experiment

Participants
• L1 group: 48 native speakers of English
• L2 group: 47 native speakers of Spanish, varying levels of English proficiency (measured by self-assessment on language background questionnaire)

Materials
• 2 version of the ADP; participants saw one in gain frame and one in loss frame
• Forced choice between safe and risky option
• Question about interpretation of the number term (at least, at most, exactly) after second scenario

Results

Forced choice task
• L1: expected framing effect (p = .04)
• L2: same framing effect! (p = .003)
• No difference between language groups (interaction: p = .86)

L2 Proficiency
Higher L2 proficiency correlates with stronger framing effect (p < .05)

L2 Emotionality
• measured by rating emotional weight of swear/taboo words and terms of endearment
• no correlation between emotionality and framing effect (p = .49)

Number Interpretation
• Unequal distribution of safe and risky choices in the gain frame and loss frame across interpretations
• Numerical trend towards more ‘exactly’ interpretations for L2 than L1 group
• Framing effect for ‘exactly’ and ‘at least’ interpretations; reverse for ‘at most’
• Consistent with L1 and L2 speakers having different interpretations and choosing rationally based on those

Summary

• We did not replicate the absence of a framing effect for L2 speakers.
• Framing effect stronger for more proficient L2 speakers.
• No evidence that L2 emotionality affects loss aversion bias.

References