Decreases loom larger than increases:
Asymmetry in perceiving decreasing and increasing patterns underlies loss aversion

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ZOOM https://ubc.zoom.us/j/7060015860

Introduction

Background

Loss aversion: Pain of losing $100 (a change from the status quo to -$100) > pleasure of gaining $100 (a change from the status quo to +$100)

Typically involved changes in monetary value and the underlying mechanism remains unknown

Research question

Is there a basic perceptual asymmetry in experiencing decreases versus increases?

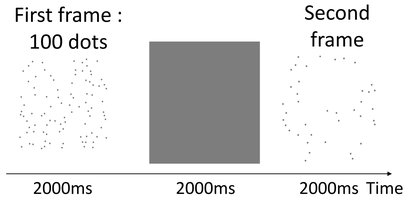
Hypothesis

Perceptually more sensitive to a decrease from the status quo to -100 than to an increase from the status quo to +100

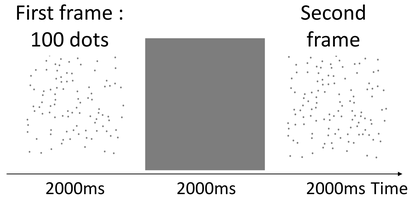
Exp1 – Temporal paradigm

Paradigm

Decreasing trials



Increasing trials



Number of dots in the 1st frame was always 100 dots.

Number of dots in the 2nd frame varied from 20 to 90 in decreasing trials and from 110 to 180 in increasing trials with an increment of 10 dots.

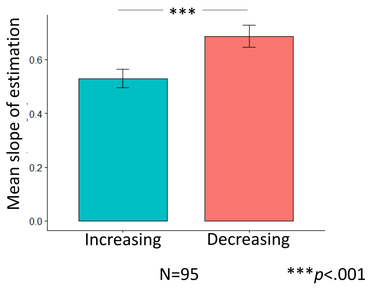
Tasks

Judgment: Did the number of dots increase or decrease in the tank in the 2nd frame?

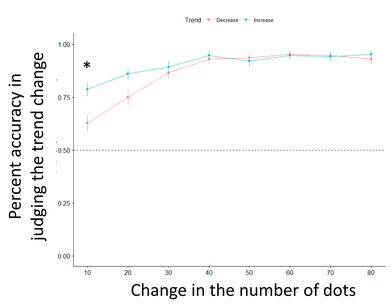
Estimation: The 2nd frame decreased (increased) by ____ dots?

Results

Estimation task



Judgment task

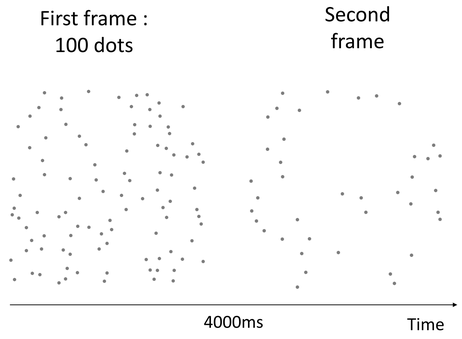


Decreasing trials had a steeper slope than increasing trials
Overestimation of decreases than increases

Decreasing trials had a lower accuracy than increasing trials

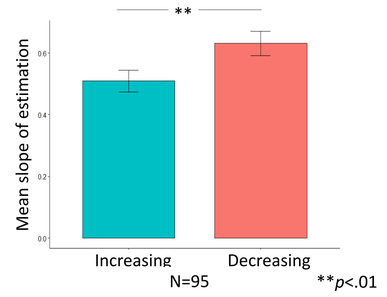
Exp2 – Spatial paradigm

Paradigm

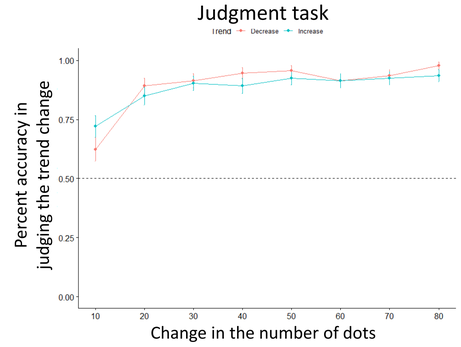


Results

Estimation task



Judgment task

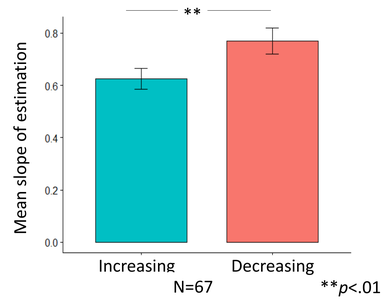


Decreasing trials had a steeper slope than increasing
Replicated with a spatial paradigm

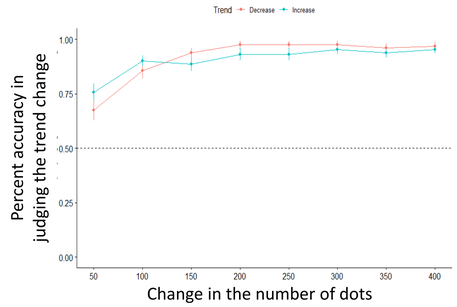
Decreasing trials had a lower accuracy than increasing trials

Exp3 – Spatial 500 dots

Estimation task



Judgment task

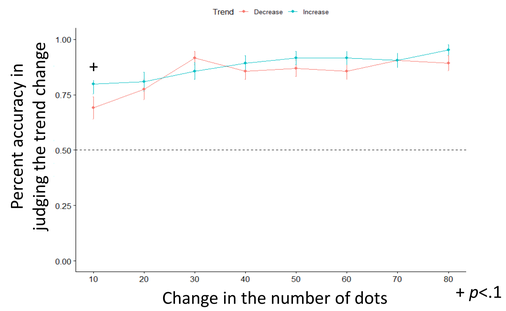


Decreasing trials had a steeper slope than increasing
Replicated with larger numerosities

Decreasing trials had a lower accuracy than increasing trials

Exp4 – Spatial without estimation task

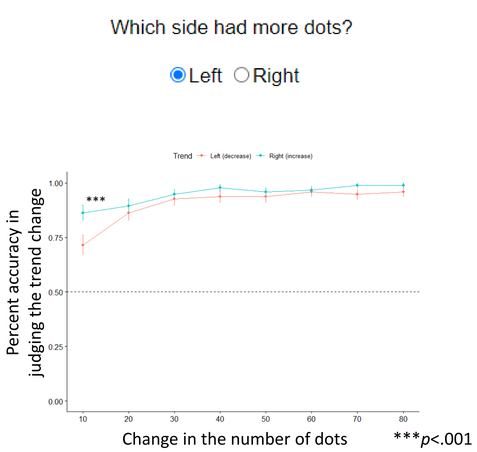
Removed the estimation task



Decreasing trials were marginally less accurate than increasing trials

Exp5 – Spatial implicit anchor

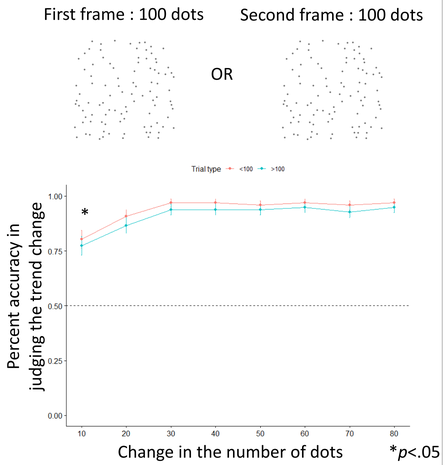
Changed the language in the judgment task



Decreasing trials were less accurate than increasing trials

Exp6 – Verifying Weber's law

Randomized the position of 100 dots



Smaller magnitudes comparisons were more accurate than larger magnitudes

Discussion

Our perceptual explanation of loss aversion is supported by the estimation data, but not with the accuracy data

Why are people more sensitive to increasing sequences than decreasing sequences?

Faster and more accurate responses for increasing number sequences (Kaan 2005; Paulsen & Neville 2008)

Ascending order advantage (Ben-Meir et al., 2013; Ganor-Stern, 2015)

Mental Number Line (de Hevia & Spelke, 2010)