Replication of Study 4b by Janiszewski & Uy (2008, *Psychological Science*)

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Introduction

People can be influenced by the prior consideration of a numerical anchor when forming numerical judgments. The anchor provides an initial starting point from which estimates are adjusted, and a large body of research demonstrates that adjustment is usually insufficient, leading estimates to be biased towards the initial anchor. Extending this work, Janiszewski and Uy (2008) conceptualized people’s attempt to adjust following presentation of an anchor as movement along a subjective representation scale by a certain number of units. Precise numbers (e.g. $9.99) imply a finer-resolution scale than round numbers (e.g. $10). Consequently, adjustment along a subjectively finer resolution scale will result in less objective adjustment than adjustment by the same number of units along a subjectively coarse resolution scale.

In three experimental studies the authors demonstrate this predicted basic effect and rule out various alternative explanations. Two additional studies (4a and b) found that this effect was especially strong when people were explicitly given more motivation to adjust their estimates (e.g., by implying that the initial anchor substantially overestimated the price). Finally a field study demonstrated a similar effect of real estate list-price precision on the sale price/list price ratio of houses that sold below the list price.

Replicating Study 5 (the quasi-experimental study) was not practical. Study 4a was selected for replication (rather than 4b) because it manipulated precision of the anchor directly (Study 4b manipulated the coarseness of the scale on which prices were estimated), and thus most directly captured the central contribution of the paper.

Method

**Power Analysis**

The original data was obtained from the first author to enable the accurate measurement of effect sizes with the “Hummer” scenario excluded (see Procedure for details; including the Hummer scenario resulted in a more conservative analysis of effect size). In Study 4a there are two effects of theoretical interest, a substantial main effect of anchor precision that replicates the first three studies and a small interaction (between precision and motivation within which people can adjust) that is not central to the paper. The main effect of anchor precision (effect size = .55) would require a sample size of 10 for 80% power, 12 for 90% power, and 14 for 95% power. The interaction (effect size = .11) would require a sample size of 65 for 80% power, 87 for 90% power, and 107 for 95% power. There was also a theoretically uninteresting main effect of motivation (people adjust more when told to adjust more).

**Planned Sample**

The sample will include 120 undergraduates (30 per condition) recruited from around campus.

**Materials**

Materials were obtained directly from the first author and consisted of ten hypothetical price estimates that are anchored on initial prices that vary in their level of precision (see Janiszewski & Uy, 2008). One of these estimates concerned a promotion of a now defunct Hummer brand SUV. It was dropped from the materials, leaving participants to make nine estimates.   
  
**Procedure**

Participants will be recruited from campus dining halls and asked to complete the survey on a voluntary basis. Basic demographic information will be collected. After completing the questionnaire, participants will be thanked for their time.

**Analysis Plan**

A 2 (precision) X 2 (motivation) ANOVA will be performed on price estimates. It is predicted that there will be a significant main effect of precision, a significant main effect of motivation, and a significant interaction between precision and motivation.

**Differences from Original Study**

This study differs from the original in the following known ways.

* While the authors’ sample consisted of undergraduates from a state university, this sample is recruited from an elite private university.
* While the authors asked participants to complete this questionnaire in the lab as a part of a larger experiment, we are asking people around campus to complete this questionnaire in campus dining halls.
* While the original authors asked participants to make ten price estimates, we are only asking participants to make nine price estimates.

The authors documented their findings in both the hypothetical choices of college students and in actual real estate purchase behavior, so these differences should not matter for detecting the main effect.

(Post Data Collection) Methods Addendum

**Actual Sample**  
    126 participants (43 men, *Mage* = 19.72, SD = 1.14) were approached alone or in groups and asked to complete the survey individually. Six participants discussed their answers with each other and were thus excluded from analysis, leaving a total sample of 120.   
  
**Differences from pre-data collection methods plan**  
    Any differences from what was described as the original plan, or “none”.

Results

**Data preparation**  
    Participant’s estimates were subtracted from the initial anchor to create difference scores. Difference scores were standardized and summed into a singled measure of difference from the anchor, with smaller numbers indicating less adjustment.   
  
**Confirmatory analysis**  
    A 2 X 2 ANOVA revealed a main effect of motivation, *F*(1,116) = 71.06, *p* < .001, = .38, indicating that people told to adjust by a large amount adjusted more (*M* = .27, SD = .39) than people told to adjust by a small amount (*M* = -.27, SD = .32). There was also a main effect of anchor precision, *F*(1,116) = 6.28, *p* = .014, = .05, indicating that people given the round anchor adjusted more (*M* = .08, SD = .48) than people given the precise anchor (*M* = -.08, SD = .40). There was no interaction between motivation and precision, *F* < 1.

Discussion

**Summary of Replication Attempt**

These findings represent a partial replication of Janiszewski and Uy (2008). The central claim of their paper – that anchor precision influences the degree of adjustment was supported. Additionally, these data replicated the main effect of motivation observed in their study. There was no evidence of the reported interaction.

**Commentary**

Overall, all observed findings were weaker than in the original study. The effect of motivation was about half the size reported in the original study, and the effect of anchor precision was about a third of the size reported in the original study. We did not observe any evidence of an interaction between motivation and anchor precision, despite having sufficient experimental power. One possible explanation for the generally lower effect sizes is that our sample was collected from a dining hall, and may have thus been more distracted than the sample used by Janiszewski & Uy (2008).

Reference

Janiszewski, C., D. Uy. 2008. Anchor precision influences the amount of adjustment. *Psychological Science, 19*,121–127.