Pre-Choice Ratings Predict Post-Choice Memory Errors

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ABSTRACT

People often misremember chosen options as more attractive (and unchosen options as less attractive) than is warranted. This is evidenced by four different memory errors: fast distortion, misattribution, selective forgetting, and false memories. These errors are typically thought to reflect post-choice processes.[2,3] However, pre-choice ratings of options' attributes predict fact distortion separately from choice.[1] In this study (N = 472), we ask whether the same is true for misattribution, selective forgetting, and false memories. Results indicate that the answer is, 'Yes,' for all three.

INTRODUCTION

Three memory errors with post-choice accounts were studied for the pre-choice effect of rating: misattribution, selective forgetting, and false memory. These errors are detailed in their respective sections.

METHODOLOGY

376 subjects considered two apartments by rating 18 attributes of each. The number or positive and negative attributes were evenly divided between them, so one option did not dominate the other. 16 attributes of each option also belonged to one of four categorical bundles (e.g., location, kitchen, amenities, and overall interior). After every attribute was rated and a choice was made, the process was repeated for a choice between two roommates. Subjects then took a memory test of previously seen and unseen attributes.

96 subjects rated attributes in a no-choice control condition in order to test whether attributes were positive and negative, as designed.
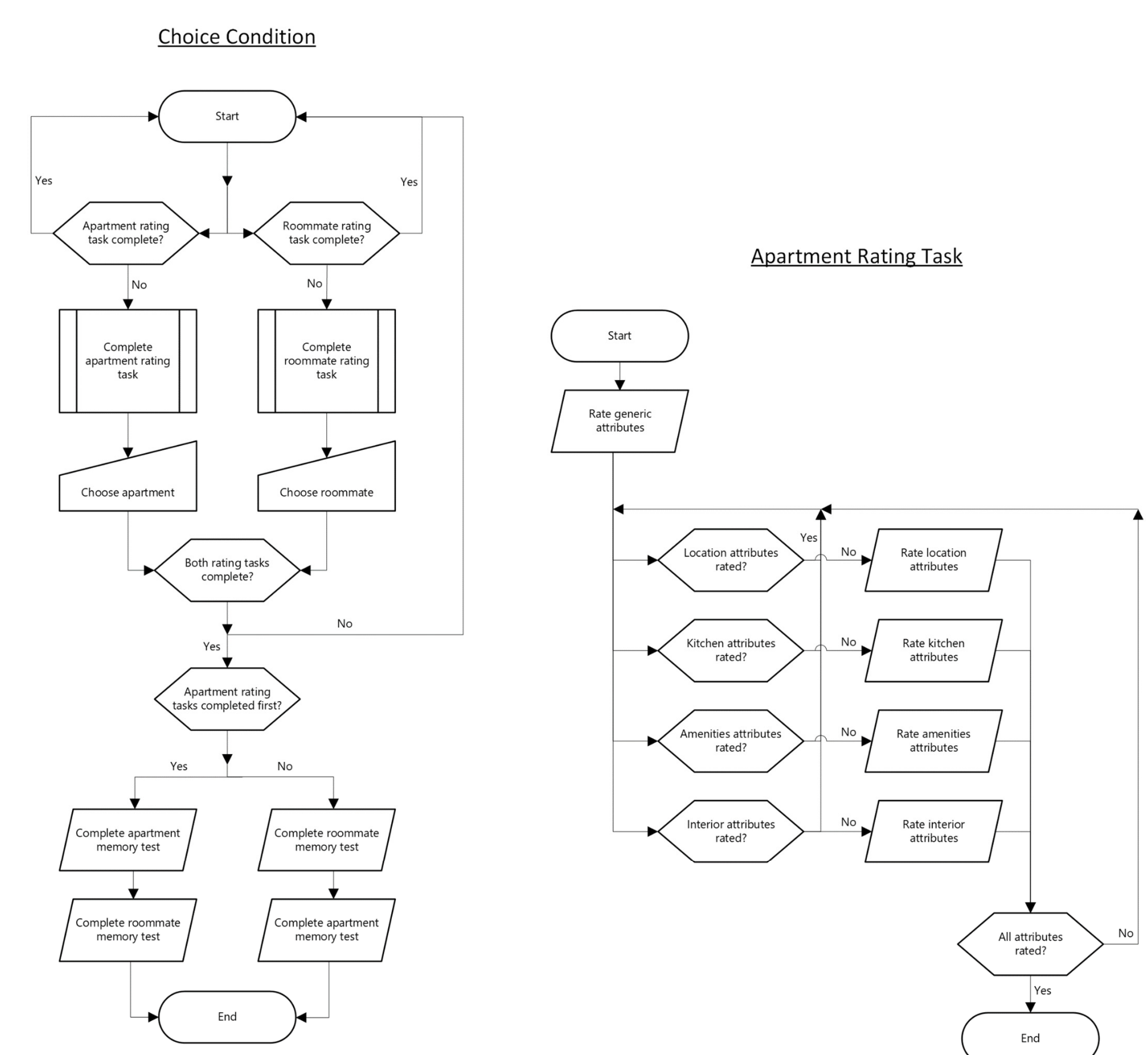
MISATTRIBUTION

Misattribution occurs when an attribute is correctly recalled, but its source is not.[2] This makes the chosen option more attractive when a positive attribute of the unchosen option is said to describe the chosen option. Conversely, it makes the unchosen option less attractive when a negative attribute of the chosen option is said to describe the unchosen one.
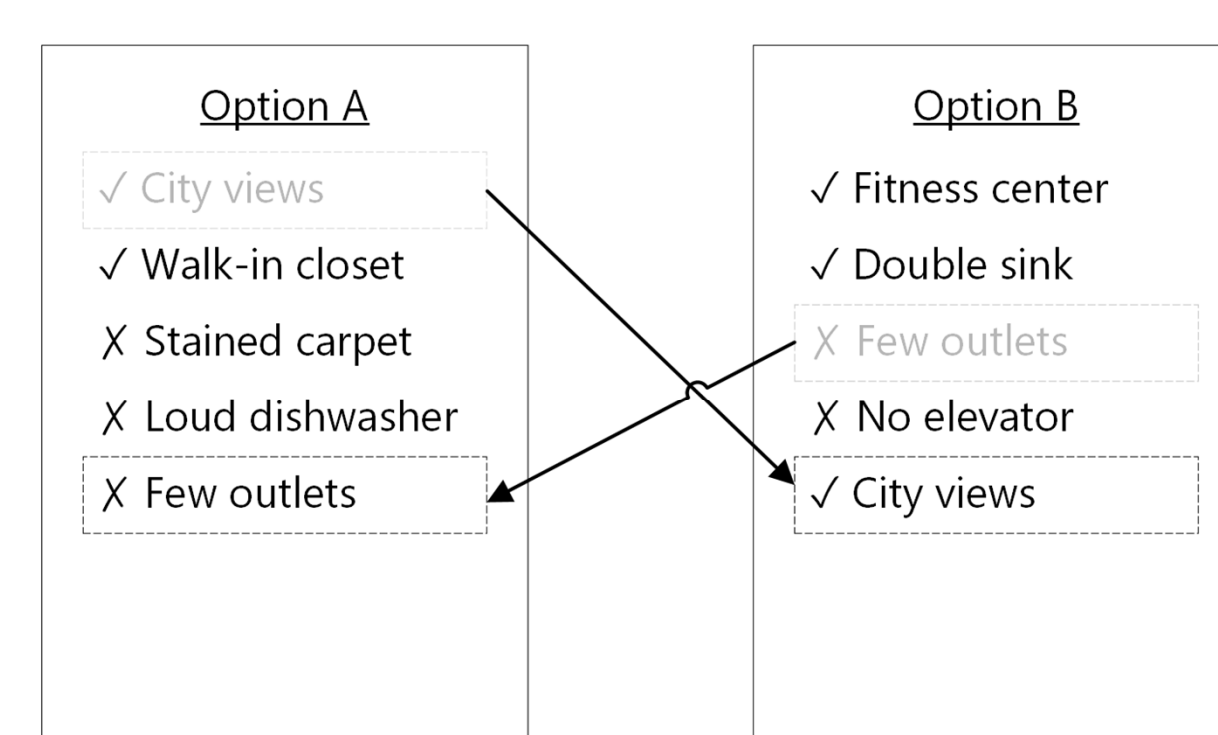
Ratings

The mean rating of an attribute was subtracted from every rating of that attribute. Ratings were then recoded to advantage one option over the other (i.e., Option B over Option A) by reversing the signs of Option A ratings.

Memory Test

For misattribution errors:

- Positive attributes of Option A assigned to B scored 1s.
- Negative attributes of Option A assigned to B scored 0s.
- Positive attributes of Option B assigned to A scored 0s.
- Negative attributes of Option B assigned to A scored 1s.

Only previously seen attributes were used. Items were not scored if a subject correctly assigned an attribute to A or B.

Results

Mixed-effects logistic regression was used to measure the relationship between rating, choice, or rating and choice and misattribution. Holding choice constant, the odds for misattribution of an attribute in the direction of Option B increased by 3.7% (95% CI [.025, .048]) for each unit increase in rating (also in the direction of Option B).

	Model A	Model B	Model C
(Intercept)	0.111, p < .001	-0.008, p = .85	0.005, p = .9
Rating	**0.005**, p < .001	—	**0.036**, p < .001
Choice	—	**0.229**, p < .001	**0.192**, p = .002

SELECTIVE FORGETTING

Selective forgetting occurs when some attributes are recalled, while others are not. This makes the chosen option more attractive when positive attributes of the chosen option are better recalled than positive attributes of the unchosen option. Conversely, it makes the unchosen option less attractive when negative attributes of the unchosen option are better recalled than negative attributes of the chosen one.[2]
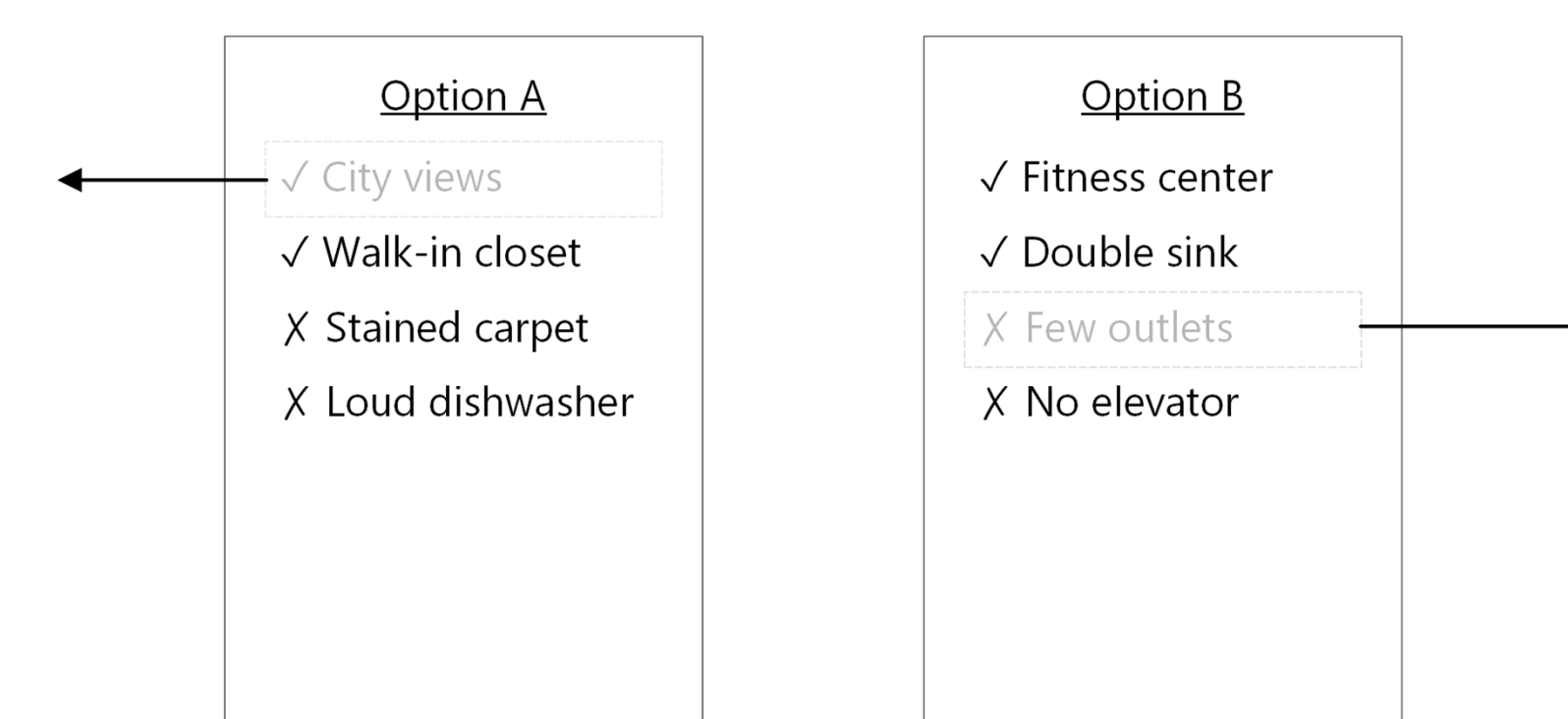
Ratings

The same ratings used to predict misattribution were used to predict selective forgetting.

Memory Test

For selective forgetting errors:

- Positive attributes of Option A assigned to neither A nor B scored 1s.
- Negative attributes of Option A assigned to neither A nor B scored 0s.
- Positive attributes of Option B assigned to neither A nor B scored 0s.
- Negative attributes of Option B assigned to neither A nor B scored 1s.

Only previously seen attributes were used. Items were not scored if a subject assigned an attribute to A or B.

Results

Holding choice constant, the odds for selective forgetting of an attribute in the direction of Option B increased by 10.4% (95% CI [.073, .136]) for each additional rating unit.

	Model A	Model B	Model C
(Intercept)	-0.196, p = .013	0.043, p = .699	0.11, p = .338
Rating	**0.093**, p < .001	—	**0.099**, p < .001
Choice	—	**-0.392**, p = .009	**-0.551**, p < .001

The negative coefficient for choice was retested with items omitted from the previous test (i.e., items scored if a subject recognized an attribute). This "selective retention" measure was scored oppositely of selective forgetting. The sign for choice did not change for these new models.

	Model A	Model B	Model C
(Intercept)	1.395, p < .001	0.656, p < .001	1.487, p < .001
Rating	**0.27**, p < .001	—	**0.271**, p < .001
Choice	—	**-0.013**, p = .675	**-0.154**, p < .001

FALSE MEMORY

False memory occurs when attributes are recalled that were never presented. This makes the chosen option more attractive when positive attributes of neither option are said to describe the chosen option. Conversely, it makes the unchosen option less attractive when negative attributes of neither option are said to describe the unchosen one.
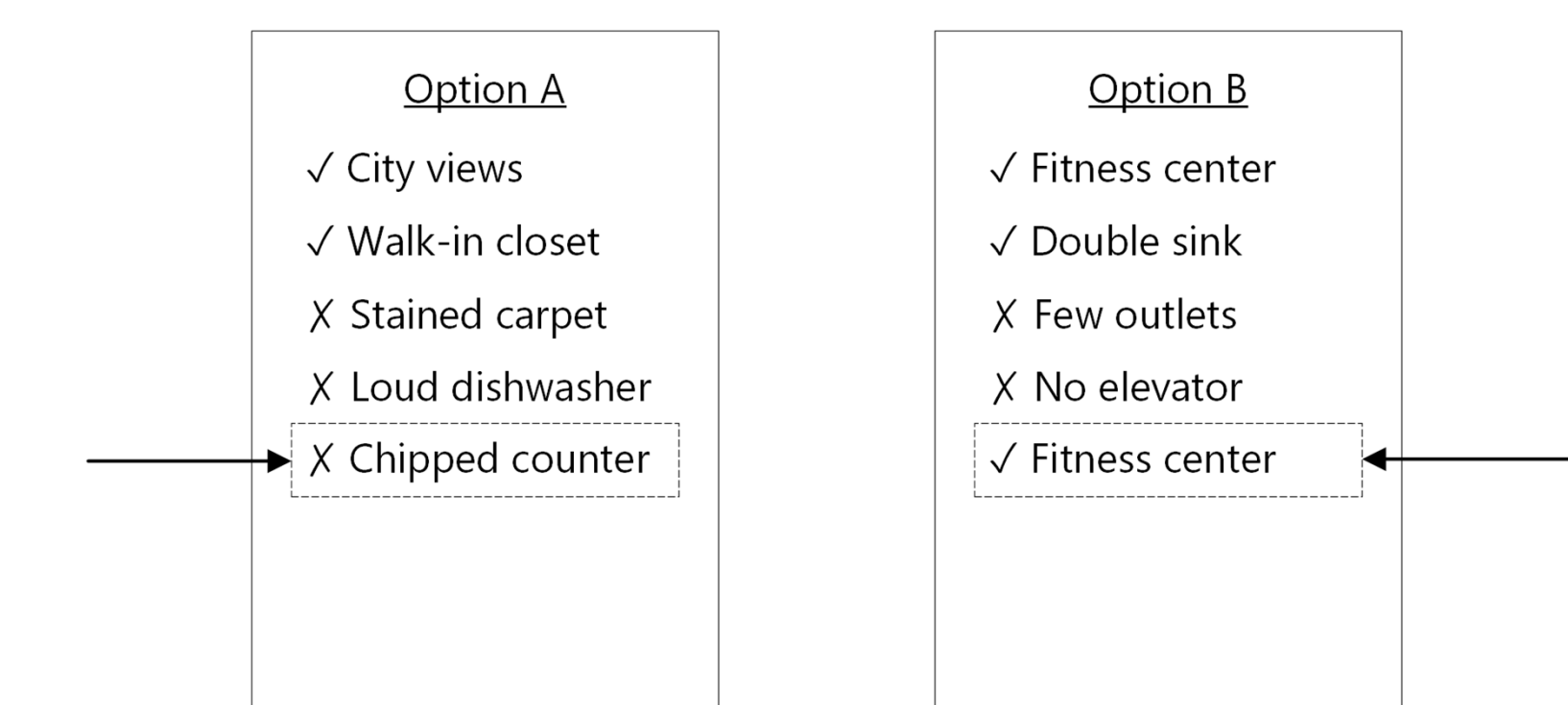
Ratings

Since previously unseen attributes cannot be previously rated, ratings used to predict misattribution were averaged according to their categorical bundle (e.g., location, kitchen, amenities, and overall interior). Previously unseen attributes, or lures, were then predicted by these bundle means.

Memory Test

For false memory errors:

- Positive lures assigned to Option A scored 0s.
- Negative lures assigned to Option A scored 1s.
- Positive lures assigned to Option B scored 1s.
- Negative lures assigned to Option B scored 0s.

Only previously unseen attributes were used. Items were not scored if a subject correctly assigned an attribute to neither A nor B.

Results

Holding choice constant, the odds for false memory of an attribute in the direction of Option B increased by 31.1% (95% CI [.297, .325]) for each additional rating unit.

	Model A	Model B	Model C
(Intercept)	0.094, p = .097	-0.183, p = .03	-0.101, p = .245
Bundle Rating	**0.449**, p < .001	—	**0.352**, p < .001
Choice	—	**0.484**, p < .001	**0.337**, p = .003

DISCUSSION

These results suggest that post-choice memory errors are not entirely due to post-choice processes. Pre-choice mechanisms also contribute to memory errors of past choices.

1. DeKay, M. L., Miller, S. A., Schley, D. R., & Erford, B. M. (2014). Proleader and antitrailer information distortion and their effects on choice and postchoice memory. *Organizational Behavior and Human Decision Processes*, 125, 134–150.

2. Lind, M., Visentini, M., Mäntylä, T., & Del Missier, F. (2017). Choice-supportive misremembering: A new taxonomy and review. *Frontiers in Psychology*, 8, 2062, 1–16.

3. Mather, M., Shafir, E., & Johnson, M. K. (2000). Misremembrance of options past: Source monitoring and choice. *Psychological Science*, 11, 132–138.