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Choice Blindness in the Attractiveness of Paintings

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I. Introduction

Sometimes we are unaware of the stimuli that are influencing our choice behaviors in daily simple decision tasks. How do we choose among different stimuli that one is better than another in everyday settings? Do we know what we want when we make such choices?

1. Choice Blindness

“*Choice blindness*” refers to a person’s failure to detect a mismatch between one’s intentions and the outcome of one’s choices in a decision task, without their notice. In previous studies, Johanson and his colleagues showed participants pictures of various pairs of stimuli including pairs of patterns, female faces, jams, and teas (Johansson, Hall, Sikström, & Olsson, 2005; Hall, Johansson, Tärning, Sikström, & Deutgen, 2010). Participants were asked to judge which member of a given pair was more attractive. On some trials, the experimenter switched the outcome of the participant’s choices such that the outcome was the opposite the participant’s intended choice. It turns out that participants failed notice the mismatches between their intended choices and presented outcomes. Moreover, they reported introspective reasons for the choices they had made for the manipulated pictures that they did not choose. This seemingly mysterious phenomenon, called “*Choice blindness*”, is a

failure on the participant's part to detect a mismatch between his or her intentions and the outcome of actions in a decision task.

What might explain the fact that we can choose x , and then not notice when given y instead? Do we not actually know what we want at the moment we make a choice?

2. Verbal Report in the Choice Blindness

Not only were the participants in previous choice-blindness experiments blind to the manipulation of their choices, they also offered introspective reasons for preferring the false alternative they were given.

Johansson and his colleagues analyzed the collection of introspective verbal reports (Johansson, Hall, Sikström, Tärning, Lind, 2006). Two major methods have been used in the comparative analyses of the verbal reports. Based on relevant research, such as automatic lie-detection and language development, a large number of variables were compared for reports what derived from manipulated condition with what from non-manipulated condition. Of the total 30 variables measured for these reports, only two variables statistically differentiated manipulated from non-manipulated reports. First, in latent semantic analyses, the contextual usage of words in a large corpus, a "semantic space" is constructed representing the relative distance between words in the corpus. Although Johansson et al's semantic analyses, found no difference between manipulated and non-manipulated reports, they did reveal large discrepancies between male and female participants. Both latent semantic analyses and several linguistic frequency variables distinguished male from female reports.

If there are no or few differences between manipulated and non-manipulated reports, and we know that the manipulated reports, at least to some extent, are confabulatory, then this might indicate that the same mechanism is responsible for both types of reports. In this roundabout way, it can be argued that the problem in finding differences between manipulated and non-manipulated reports is due to the fact that they are *both* confabulatory.

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One goal of the present research involves an analysis of what the participants actually say. The aim is to discover the extent to which they provide reasons for preferring their original choice or to the manipulated outcome. Due to the nature of stimuli used in previous studies (faces, tastes, geometric patterns, etc.), it was difficult to determine what participants might claim had influenced in their decision. For example, if a verbal report cites the basis of for selecting one face over another is “pretty eyes”, this is difficult to confirm given two faces.

To clarify the issue of verbal reports and confabulation, we used paintings in this study. These stimuli are useful in that they can be examined to ascertain if a specific feature within a given painting was mentioned in participants’ explanations of their choice. In this experiment, the features of a given painting are unique to the picture, such as the season, the color red, or the presence of a curtain. This makes it possible to clearly identify a feature change. In those cases when one or more of these features is referred to by a participant who did not choose that picture, identification errors can be clearly detected by the experimenter. In short, if a painting, or more specifically a painting’s characteristics, are referred to by participants who did not choose this painting when presented with a pair of paintings, then we can be certain that the reports are constructed after the fact. Moreover, this means that in some respects the verbal report is a confabulation. By comparing the content of verbal reports with the properties of the chosen items it is possible to establish which reports are “*confabulatory*.”

II. Methods

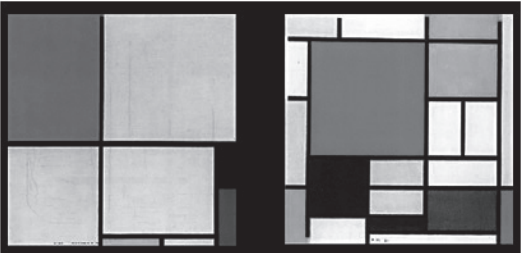
1. Participants

Thirty Japanese participated in this study. All participants were naïve to the actual purpose of the study. The data of one participant, who had detailed knowledge of all target paintings, were removed from the analysis. .


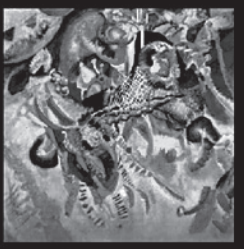




2. Materials









As stimulus material, we used 40 pairs of Western paintings (Table 1). There were four categories; *Abstract*, *Portrait*, *Landscape*, and *Still Life*. The pictures were organized in pairs, roughly matched for similarity and themes by a specialist in art. The presentation size on the screen was about 5x5 cm.

Table 1. The 8 Western painting pairs that participants were asked to verbally describe and then give reasons for their choices. Half of these were switched.

Pairs of Paintings	
Abstract	 <p>Mondrian, Composition with Red Yellow and Blue, 1928, Wilhelm-Hack-Museum, Ludwigshafen am Rhein, Germany.</p> <p>Mondrian, Composition with Red Yellow Blue and Black, 1921, Gemeentemuseum, the Hague, Netherlands.</p>

9. CHOICE BLINDNESS IN THE ATTRACTIVENESS OF PAINTINGS

<p>Abstract</p>	<div style="display: flex; justify-content: space-around; align-items: center;">   </div> <p>Kandinsky, Gorge Improvisation, 1914, Städtische Galerie in Lenbach, München, Germany.</p> <p>Kandinsky, Fugue, 1914, Collection Ernst Beyeler, Basle, Switzerland.</p>
<p>Portrait</p>	<div style="display: flex; justify-content: space-around; align-items: center;">   </div> <p>VELÁZQUEZ, Queen Isabel of Bourbon Equestrian, 1634-35, Prado, Madrid</p> <p>VELÁZQUEZ, Queen Margarita on Horseback, 1634-35, Prado, Madrid</p> <div style="display: flex; justify-content: space-around; align-items: center; margin-top: 20px;">   </div> <p>Lippi, Filippo, Madonna with the Child and two Angels, 1465, Uffizi, Florence</p> <p>BOTTICELLI, Sandro Virgin and Child with Young St John the Baptist, 1470-75, Musée du Louvre, Paris</p>

Landscape	 <p>Monet, Bridge at Argenteuil, 1874, Louvre, Paris</p>	 <p>Monet, The Bridge at Argenteuil, 1874, National Gallery of Art, Washington D.C.</p>
	 <p>BRUEGHEL, Pieter the Younger, Winter Landscape with a Bird-trap, -, Museo del Prado, Madrid</p>	 <p>CLAUDE LORRAIN, Landscape with Dancing Figures, 1648, National Gallery, London</p>
Still Life	 <p>BEYEREN, Banquet Still-Life with a Mouse, 1667, Los Angeles County Museum of Art</p>	 <p>BEYEREN, Large Still-life with Lobster, 1653, Alte Pinakothek, Munich</p>
	 <p>BOSSCHAERT, Abraham, Flowers in a Glass Vase-, Private collection</p>	 <p>PONCE, Antonio, Vase of Flowers, c. 1650, Private collection</p>

3. Procedure

The participants were shown two pictures simultaneously of Western paintings for two seconds on a computer using E prime software. After presentation, the screen went black and the participants were asked to select which picture they preferred. After their evaluation, the chosen picture was shown to the participants again. On some trials, immediately after choice, they were asked to verbally describe the reasons for their choice, while looking at the outcome of the chosen painting.

Each participant completed a sequence of 40 pairs of paintings in random order, in eight of these trials they were asked to state the reason behind their choice. Unknown to the participants, in four of the eight verbal report trials in which they asked to state the reasons for their preferences, the pictures were covertly exchanged. On these trials, the presented outcome of a participant's previous choice was the opposite of what they had reported as their preference (Manipulated condition). In the other half of the trials, the pictures were not switched (Non-Manipulated condition). All reports were recorded and later transcribed. The non-manipulated and manipulated pairs were counterbalanced during the experiment (Figure 1).

III. Results and Discussion

1. Detection

Detection rates for the manipulated pictures were measured both concurrently and retrospectively (see Johansson et al., 2007). A concurrent detection was determined when a participant showed signs of detection at the time of a switch (Concurrent). A retrospective (Retrospective) detection occurred during a post-experiment series of interview questions designed to determine if a participant detected a picture switch. Participants who revealed no signs of detection of either type were then presented with a hypothetical scenario describing an experiment in which the two paintings they chose between have been switched; these participants were then asked if they thought they would have noticed such a change (Possible). Finally, all participants were debriefed about the true nature of the design, and asked if they had noticed anything in the experiment resembling the switches that we had just described. If they answered “no” to this question, we concluded that they did

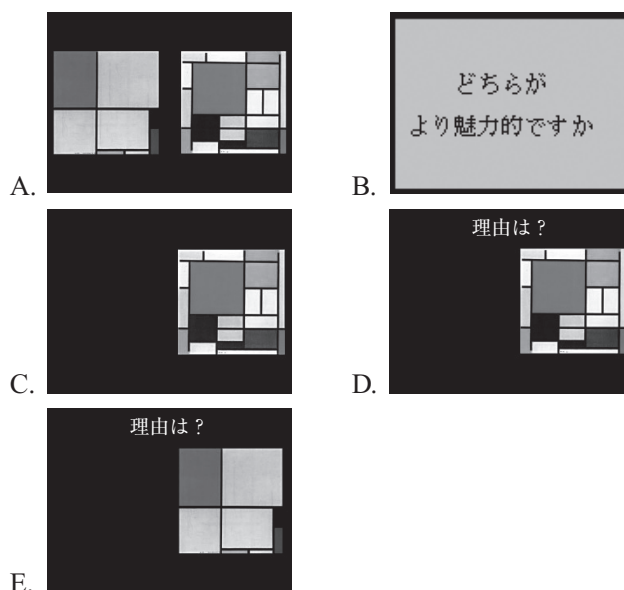


Figure 1. Step-by-step progression of a manipulated trial. A. Participants are shown two pictures simultaneously for two seconds. B. Participants are asked to choose which of the two they find most attractive. Participants indicate their choice by pressing a key on the side of the picture they prefer. C, D, E. Then the pictures chosen by the participant are presented again. In some trials (D, E), participants are immediately asked to explain why they chose the way they did. In half of the explanation trials, the figure that participants had chosen is presented (D), but in the other half, the chosen figure is switched (E).

not consciously notice any of the manipulations made during the experiment (Misdetection).

Results indicated a very low level of concurrent detection. Only 11% of the pairs that were switched were detected concurrently. During the experiments, 89% of participants failed to notice any of the manipulated switches; and 77% of participants failed to notice manipulation after debriefing. The overall detection rate (Concurrent-plus-Retrospective-plus-Possible) was lower than 30%. Most of the participants failed to notice any mismatch between their intentions and the outcome of their actions. (Figure 2)

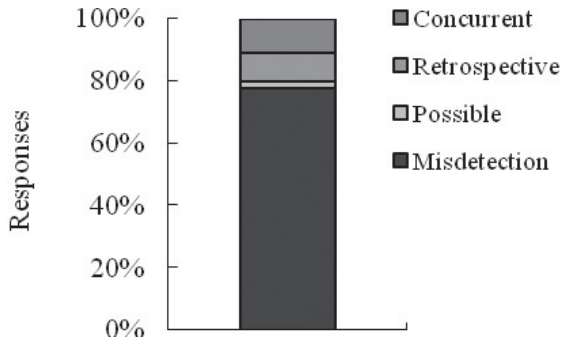


Figure 2. Percentage of detection for the Manipulated condition

2. Verbal Reports

In this study, our primary interest is to examine postdictive explanations. All of the subjects who were asked to give reasons for their reported choices even if these involved the switched paintings. The verbal reports were also recorded and analyzed.

The content of the verbal report for the manipulated condition was classified 3 types. In the manipulated condition, a verbal report was classified as transfer when stimulus described in verbal report was congruent with what was presented while first judgment (Transfer). In this case, participants mentioned features what based on their original preference. If the stimulus described in verbal report was incongruent what was presented while judgment, then the verbal description were classified as Retrospective. In this case, explanation is *postdictive*, which means that it does not represent original reasons for the choice that occurred when participants had judged the picture during the trial. The other description, in which the object was not clear in explanation, was classified as “Unclear.”

(Table 2, Figure 3)

These results allowed inferences about reasons for choice blindness. The reasons become clear with an examination of those features mentioned by participants when asked to explain their choices. For example, a participant who originally chose a landscape figure that depicted a lake in the summer or spring, nonetheless agreed that chosen a switched painting containing a lake in the snow. That is, he failed to detect the change. However, when asked

Table 2. The contents of the verbal report

Stimulus presented during verbal report (Condition)	Stimulus described in verbal report	
Not chosen one (Manipulated)	Chosen one	Transfer
	Not chosen one	Retrospective
	Unclear	The subject is not clear
Chosen one (Non-Manipulated)	Chosen one	Congruent
	Not chosen one	-
	Unclear	The subject is not clear

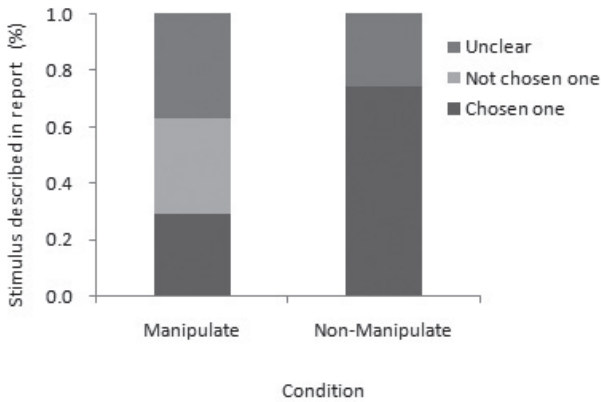


Figure 3. Rates of content of verbal report

why he chose the latter painting, this participant responded “...because I like winter, ...because I like snow,...so I chose this one”.

The conclusion is that the relationship between intention and outcome may sometimes be far more malleable than we have assumed. As such, choice blindness illustrates the dangers of aligning the technical concept of intention too closely with commonsense. Analyses of verbal reports shows that in some trials we can be certain that the participants confabulate or construct their answers in line with the manipulations that have been made, as they refer to unique properties of the initially non-preferred paintings.

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