



Looking behaviour and preference for artworks: The role of emotional valence and location



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ABSTRACT

The position of an item influences its evaluation, with research consistently finding that items occupying central locations are preferred and have a higher subjective value. The current study investigated whether this centre-stage effect (CSE) is a result of bottom-up gaze allocation to the central item, and whether it is affected by item valence. Participants ($n = 50$) were presented with three images of artistic paintings in a row and asked to choose the image they preferred. Eye movements were recorded for a subset of participants ($n = 22$). On each trial the three artworks were either similar but different, or were identical and with positive valence, or were identical and with negative valence. The results showed a centre-stage effect, with artworks in the centre of the row preferred, but only when they were identical and of positive valence. Significantly greater gaze allocation to the central and left artwork was not mirrored by equivalent increases in preference choices. Regression analyses showed that when the artworks were positive and identical the participants' last fixation predicted preference for the central art-work, whereas the fixation duration predicted preference if the images were different. Overall the result showed that item valence, rather than level of gaze allocation, influences the CSE, which is incompatible with the bottom-up gaze explanation. We propose that the centre stage heuristic, which specifies that the best items are in the middle, is able to explain these findings and the centre-stage effect.

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1. Introduction

In Western Society a robust social convention is that the person with the highest status will often be positioned in the centre of a group of people (McArthur, 1981). This relationship between the central position and status has surprisingly important implications such as influencing how much a person is preferred, their perceived status, and even whether they will be given a job. For instance people who hold the belief that "Important people sit in the middle" are more likely to give a job to the candidate in the centre of a photograph of five potential job candidates (Raghubir & Valenzuela, 2006). This 'centre-stage effect' (CSE) has also been found to apply to consumer choices so that when people are presented with a row of similar items they show a preference for items in the middle rather than at either end of the row (Atalay, Bodur, & Rasolofoarison, 2012; Christenfeld, 1995; Raghubir & Valenzuela, 2006; Rodway, Schepman, & Lambert, 2012; Shaw & Bergen, 2000; Valenzuela & Raghubir, 2009). Therefore it is apparent

that not all locations are treated equally, and the preference for centrally located people and objects influences decisions in a wide range of settings, including consumer choices and the evaluation of people.

Previous work demonstrating a middle preference has tended to use everyday consumer items (Christenfeld, 1995) such as pens and chairs (Shaw & Bergen, 2000), packets of chewing gum (Valenzuela & Raghubir, 2009), socks (Rodway et al., 2012), or vitamins and cereal bars (Atalay et al., 2012). In each of these studies the set of items were selected to be very similar, or identical, and have also possessed a neutral or mildly positive valence. As these items may not be intrinsically interesting it is possible that when people are forced to choose between them they select the middle item as their default option because of indifference toward the items, as can occur on some rating scales (see Kulas, Stachowski, & Haynes, 2008). Similarly, as proposed by Christenfeld (1995), limited interest in the items may also cause participants to expend minimal mental effort on the selection, with the middle item selected because it appears to be the easiest option and requires the least thought.

One of the aims of the current study was to test this possibility by investigating whether the middle preference generalises to stimuli that may require more cognitive and emotional appraisal during their evaluation and selection. Works of art were chosen as stimuli because

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it has been argued that visual art is appraised differently from everyday objects (Cupchik, Vartanian, Crawley, & Mikulis, 2009). The former involves complex cognitive and emotional responses that are believed to be key processes of the aesthetic evaluation of a work of art, but not the processing of everyday objects (Cupchik et al., 2009; Leder, 2013; Leder, Belke, Oeberst, & Augustin, 2004). In this study three works of art were presented on each trial and participants were asked to select the one that they most preferred. It was reasoned that if the middle preference is simply a product of minimal effort when choosing among items with little intrinsic value, then it may not be present for works of art which elicit greater in-depth cognitive and emotional appraisals. Conversely, if position continues to have an effect it will show that the centre-stage effect generalises to aesthetic preferences and that it might not be due to the use of everyday items that require minimal cognitive appraisal.

A further central aim of the study was to examine the two primary explanations of the centre stage effect. One explanation is that it is caused by a 'centre-stage' decision heuristic that specifies that central items are more important and valuable and are therefore to be preferred (Raghubir & Valenzuela, 2006; Valenzuela & Raghubir, 2009). Thus, the middle advantage arises because the middle location has a special status, carrying implicit assumptions about the importance of the object (or person) in the middle of a group (McArthur, 1981; Raghubir & Valenzuela, 2006; Valenzuela & Raghubir, 2009). A second explanation of the CSE is that it is due to attentional processes, with greater attention to the central item enhancing preference (Shaw & Bergen, 2000). Evidence exists for both accounts and previous research has not convincingly favoured one explanation.

Raghubir and Valenzuela (2006) examined these two explanations of the CSE by examining how people's beliefs about items located in the centre influenced their choices, in addition to using indirect measures of attention. They provided a range of evidence in favour of the heuristic explanation, with people's belief that central items are more valuable causing a middle preference in a wide range of circumstances. In addition they found that when participants chose an item for another person, rather than themselves, it increased the strength of the middle preference, which they suggest reflects the meta-cognitive knowledge people have about the factors that govern choices in other people. Valenzuela and Raghubir (2009) also predicted that if belief-based mechanisms underlie the middle preference, rather than attentional processes, then those beliefs will be affected by additional sources of information that strengthen or weaken the middle preference. Their findings were in line with their prediction but they obtained no evidence to suggest that greater attention to the middle item caused the middle preference. Consequently Raghubir and Valenzuela (2006) concluded that metacognitive beliefs about position were necessary and sufficient for the middle preference to emerge.

Despite persuasive evidence from Valenzuela and Raghubir's studies, without directly examining gaze behaviour it is difficult to discount the possibility that gaze influences location based preferences, independent of the centre stage heuristic. A robust finding in the vision literature is that people look first and for longer at the centre of a computer screen, or visual scene, than at peripheral items (Bindemann, 2010; Tatler, 2007). As increased exposure has been found to increase liking (Zajonc, 1968) the central looking bias could underlie the CSE.

Other research has demonstrated that directing gaze to an item, rather than mere exposure to an item, is important in enhancing preference (Shimojo, Simion, Shimojo, & Scheier, 2003). The influence of gaze on choice has been explained in terms of a gaze cascade theory (Shimojo et al., 2003), which proposes that gaze at preferred items combines with increased exposure to create a positive feedback loop (a gaze cascade) as people view items, so that preference for a particular item becomes stronger and a choice emerges (Shimojo et al., 2003; see also Glaholt & Reingold, 2009; Nittono & Wada, 2009).

One study to directly examine the role of attention and the CSE was conducted by Atalay et al. (2012) who measured participant's eye movements while choosing a consumer item from a row of similar

products. They replicated the CSE with participants showing a preference for the middle item. Participants also showed a central looking bias, with more first looks at the central item in the first 500 ms, and also more fixations on a chosen item in the last 500 ms before the choice was made. The increase in fixations on the central item at the start of the task did not predict choice of the middle item, whereas gaze allocation to the centre in the last 500 ms before the choice did predict the central preference. Atalay et al. (2012) explain the middle preference in terms of a *central gaze cascade effect*, with gaze allocated at the central item increasing the preference for that item. However, this is only apparent in the 500 ms before a choice and is not predicted by the central viewing bias at the start of a trial. Atalay et al. (2012) suggest that indirect measures of attention, such as recollection scores or visualisability are not sensitive at detecting actual behaviour, which is why Raghubir and Valenzuela (2006) may not have found a relationship between attention and the CSE.

A difficulty with concluding that the CSE is due to a gaze cascade effect is that other research has questioned the validity of gaze cascade theory (Glaholt & Reingold, 2009; Nittono & Wada, 2009; see also Orquin & Loose, 2013), as it has been found that exposure duration determines preferences rather than eye movements (Bird, Lauwereyns, & Crawford, 2012). Moreover, Bird et al. (2012) suggest that eye movements may have no causal role in a preference decision and that the relationship between eye movements and choice can be explained by greater exposure enhancing preference rather than by the allocation of gaze.

A further difficulty in concluding that the CSE is due to attentional factors is that considerable evidence suggests that top-down influences, such as instructions and search strategies, can govern the allocation of gaze to relevant stimuli (Orquin & Loose, 2013). Therefore, although Atalay et al.'s (2012) results show a link between gaze allocation and preference for the central item, it is not possible to conclude that gaze caused the preference, as gaze allocation could have been the product of a top-down 'centre-stage' strategy. It is possible that both mechanisms operate and they need not be mutually exclusive. For example, a centre-stage heuristic could increase the allocation of gaze to the middle, and the tendency to gaze at the middle item could be the mechanism by which preference for that item is increased. Furthermore, evidence suggests that the valence of items interact with the effect of exposure on preference. For example, Armel, Beaumel, and Rangel (2008) found that greater attention to appetitive items enhanced preference whereas greater attention to unappetitive items reduced preference. Therefore, increased exposure on its own does not increase choice (see also Chandon, Hutchinson, Bradlow, & Young, 2009), as it is dependent on the valence of an item, showing that gaze duration and choice preference can dissociate.

In the current study eye movements were measured and two manipulations were introduced to further examine the relationship between gaze and preference for the middle item. First, the valence of the artworks was manipulated with one category of artworks possessing a negative valence and a second category a positive valence. Armel et al.'s (2008) results suggest that increased gaze only enhanced preference for positive items and therefore gaze to negative artworks may not result in increased preference. Moreover, no other study has examined how the valence of an item influences the CSE but it is possible that the middle preference only applies to positive items and not negative items. This is suggested by the findings of Rodway et al. (2012) who manipulated the valence of the preference decision, but not the valence of the items, by asking participants to select from a row of five similar images the image they 'least prefer' or the one they 'most prefer'. They found that the middle item was only selected more frequently when it was a positive preference selection and not when it was a negative preference selection. This indicates that the CSE may only occur for items that are desirable or positive rather than items that are undesirable. Importantly, if valence influenced the CSE but not gaze behaviour then dissociation between gaze and choice of item might emerge. This would enable a clearer understanding of the cause of the centre stage effect, pointing to a heuristic explanation rather than an attentional account.

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