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The Heart Wants What It Wants: Effects of Desirability and Body Part Salience on Distance Perceptions (Campbell)

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Previous research has shown that desirability influences perceived distance to an object, such that desirable objects are perceived as closer to the viewer than undesirable objects (Balcetis & Dunning, 2010). Research regarding conceptual metaphors has suggested that making the head or heart salient by placing the index finger there produces characteristics commonly associated with these body parts (i.e., emotionality for the heart and rationality for the head) (Fetterman & Robinson, 2013). The current studies examined the effects of desirability and head or heart salience on distance perception. Participants had their attention drawn to their head or their heart by touching it with their index finger while throwing a beanbag towards a desirable or a neutral object. In Experiment 2, a verbal estimate of distance was also measured. We predicted that, due to the popular association of the heart with desire, there would be a significant interaction between desirability of an object and hand placement. Specifically, there would be no effect of hand placement when the object was neutral, but heart-pointers would perceive the desirable object as closer than head-pointers. Results from both studies failed to support the predictions, as neither hand placement nor object desirability affected distance perceptions. Limitations and suggestions for further research are discussed.

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Embodied cognition, conceptual metaphor, desirability, body part salience

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Previous research has shown that desirability influences perceived distance to an object, such that desirable objects are perceived as closer to the viewer than undesirable objects (Balcetis & Dunning, 2010). Research regarding conceptual metaphors has suggested that making the head or heart salient by placing the index finger there produces characteristics commonly associated with these body parts (i.e., emotionality for the heart and rationality for the head) (Fetterman & Robinson, 2013). The current studies examined the effects of desirability and head or heart salience on distance perception. Participants had their attention drawn to their head or their heart by touching it with their index finger while throwing a beanbag towards a desirable or a neutral object. In Experiment 2, a verbal estimate of distance was also measured. We predicted that, due to the popular association of the heart with desire, there would be a significant interaction between desirability of an object and hand placement. Specifically, there would be no effect of hand placement when the object was neutral, but heart-pointers would perceive the desirable object as closer than head-pointers. Results from both studies failed to support the predictions, as neither hand placement nor object desirability affected distance perceptions. Limitations and suggestions for further research are discussed.

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While the phrase “seeing is believing,” is often heard and expressed within popular culture, perhaps a more accurate statement would be “seeing is deceiving.” Research within the field of cognitive psychology suggests that individuals’ perceptions of the environment are not as objective as many would believe. Perception is distorted by a number of biases intended to optimize the ability to interact with surroundings. This idea is consistent with the theory known as embodied cognition, which proposes that the physical and psychological state of the human body affects cognitive and perceptual processes.

One factor that influences the perception of an object is the extent to which is desired by the viewer (Balcetis & Dunning, 2010). Balcetis and Dunning (2010) found that participants perceived desirable objects as closer to them in space than undesirable objects. The effect was demonstrated across a variety of desirable objects, including those that fulfilled a physiological need (i.e., a bottle of water for thirsty participants), a social need (i.e., positive feedback), and a financial need (i.e., a $100 bill or a $25 gift card). Distance perceptions were measured using a haptic beanbag toss towards the object as well as a verbal estimate. In order to identify desirability as the variable that influenced distance perceptions, participants in one study estimated the distance to a $100 bill – those in one condition were told that they had an opportunity to win the money and those in the other condition believed it belonged to the researcher. Participants who were told they could win the $100 bill perceived it as closer than those who were not told of the opportunity to obtain it, suggesting that desirability itself, as opposed to potential confounds, affected distance perception.

Metaphors have also been shown to influence perception. Metaphors are tools that allow people to understand abstract concepts by relating them to simple, concrete experiences (Landau, Meier, & Keefer, 2010). For example, consider the idea of love. Individuals are better able to conceptualize love and relationships with a significant other using metaphors that refer to a physical journey, such as "where do you see us ten years down the road?," or "I think we need to slow down." Metaphors were traditionally thought of as purely linguistic elements, but recent research has shown that metaphors reflect the ways in which conceptual knowledge is represented. It has been suggested that metaphors operate in a different way than do schemas or simulation in influencing thoughts and attitudes. Thus, the influence of metaphors on perceptual tasks has been of increasing interest for psychologists in a variety of subdisciplines, including social and cognitive psychology.

One category of metaphors that affects perception consists of those referring to the head and the heart. Metaphors about the heart suggest emotionality and, more specifically, a caring nature (i.e., saying that someone has a "big heart" suggests that he or she is extremely kind and loving). In contrast, metaphors about the head imply rationality and intelligence (i.e., telling people to "use their head" indicates that they need to think logically). Fetterman and Robinson (2013) examined the effects of head and heart metaphors using both correlational and experimental designs. In the correlational studies, participants were asked to self-locate in either their heart or their head. The question stated, "Irrespective of what you know about biology, which body part do you more closely associate with your self? (Choose one): heart or brain." Participants then completed personality tests, intelligence tests, and moral dilemmas. Those who self-located in the heart (heart-locators) were found to be more emotional, feminine, and interpersonally warm, and solved more moral dilemmas in emotional ways than those who self-

located in the head (head-locators). Head-locators, on the other hand, correctly answered a greater percentage of general knowledge questions, described themselves as more logical, and solved more moral dilemmas in rational ways than heart-locators. In Fetterman and Robinson's (2013) experimental work, they manipulated the salience of the head or the heart by asking participants to place their dominant index finger on either the corresponding side of their temple (head condition) or the left portion of their upper chest (heart condition). After doing this, participants in the heart condition performed worse on a test of general knowledge and solved more moral dilemmas in emotional ways than those in the head condition. These results show that traits associated with the head or the heart are more accessible when the respective body part is made salient through touch.

The current study combined the research of Balceitis and Dunning (2010) and Fetterman and Robinson (2013) to examine how the head or heart manipulation moderates the effect of object desirability on distance perception. Desirability is often associated with the heart, as exemplified in metaphors such as, "the heart wants what it wants." Hence, we hypothesized that increased heart salience decreases perceived distance from desirable objects more than increased head salience, but that this effect does not exist when objects are neutral. If our hypothesis is supported, this would demonstrate that the head or heart manipulation is not relevant in all contexts but that it is related to desirability.

Our research represented a novel combination of the methodologies employed by Balceitis and Dunning (2010) and Fetterman and Robinson (2013). In this study, we asked participants to touch either their head or their heart (as in Fetterman and Robinson (2013)) and measured their perceptions of distance from either a desirable or a neutral object using a beanbag toss towards the object (as in Balcetis and Dunning (2010)). We operationalized the variable of

distance perception as a haptic beanbag toss due to Balcetis and Dunning's (2010) success in finding an effect of desirability on distance perception when using this measurement. We predicted that there would be a significant interaction between desirability of object and hand placement. Specifically, we predicted that there would be no effect of hand placement when the object was neutral (i.e., throwing distances would be equal in the head and the heart conditions), but that when the object was desirable, heart-pointers would perceive the object as significantly closer than head-pointers (i.e., throwing distances would be shorter in the heart condition than in the head condition).

Experiment 1

Method

Participants

Sixty-one Gettysburg College students (M_{age} = 20.07, SD = 1.10) participated in the study. Of the participants, 45 were women and 16 were men. The participants were recruited via word of mouth and email communication. Individuals volunteered to participate in the study, and received no course credit or financial compensation. One participant was excluded from the analysis because of a failure to maintain the assigned hand placement, leaving a total of 60 participants.

Procedure

We employed a 2 (desirability: desirable object, neutral object) x 2 (hand-placement: head, heart) between-subjects design. Each researcher tested five participants in the four treatment conditions. Participants were randomly assigned to a condition. The dependent variable was participants' perceived distance away from the object, which was operationalized as the number of inches that participants threw the beanbag from the starting line. Ethical approval

for the experimental procedure was provided by the instructor of the Psychology 315 course at Gettysburg College.

Participants met the researcher in a designated hallway of the Gettysburg College Science Center. They read and signed the informed consent form provided by the researcher. Next, participants filled out a short questionnaire with demographic information, as well as questions about hand dominance and prior athletic experience. The researcher explained that the current study examined the effects of hand dominance on throwing accuracy. Participants were then informed that their goal was to throw a beanbag as close to an object as they could. The beanbag was approximately 6 inches x 6 inches, and weighed between 14 and 16 ounces. It was covered in plastic wrap to prevent it sliding from the original position in which it landed. Participants were randomly assigned to throw the beanbag at either a $25 Amazon gift card (desirable object) or a Gettysburg College student ID card belonging to one of the researchers (neutral object). These two objects were of the same size, approximately 3.38 inches x 2.13 inches, and were taped to the ground 156 inches from the marked starting line. The distance between the starting line and the objects was the same as that used by Balcetis and Dunning (2010). In the desirable object condition, participants were told that the participant who threw the beanbag the closest to the gift card would win the gift card at the end of the duration of the study.

All participants were told that they were in the dominant hand condition and would use their dominant hand to throw the beanbag. The researcher then explained that, in order to be sure that their non-dominant hand did not influence their throwing (due to aiming, balance, etc.), they would place the index finger of their non-dominant hand in a specific location. Participants assigned to the head condition were told to place their non-dominant index finger on the corresponding side of their temple. Those assigned to the heart condition were told to place their

non-dominant index finger on the left portion of their upper chest. These hand placements were identical to those used in Fetterman and Robinson (2013). Participants then threw the beanbag from the designated starting line towards the object. Each participant was given one throw.

After participants threw the beanbag, the researcher used a tape measure to measure the distance between the object and the beanbag, and informed them how far their throw was from the object. It is important to note, however, that the metric of interest to the study was the total distance of the throw from the starting line, rather than the distance of the throw from the object. The researcher then asked participants to fill out a short questionnaire, which included a manipulation check, a measure of suspicion, and the following question from Fetterman and Robinson (2013): "Irrespective of what you know about biology, which body part do you more closely associate with your self? (Choose one): heart or brain." Once participants finished the questionnaire, the researcher debriefed them.

Results and Discussion

We conducted a between-subjects analysis of variance (ANOVA) to examine the effects of hand placement (head, heart) and object desirability (desirable, neutral) on distance perception. The interaction between hand placement and object desirability, as well as the main effects of hand placement and object desirability, were non-significant, all F's < 1.0. Means and standard deviations are displayed in Table 1.

A manipulation check conducted with a between-subjects t-test showed that the gift card (M = 5.33, SD = 1.63) was significantly more desirable than the ID card (M = 3.40, SD = 1.92), $t(58) = 4.21$, $p < .001$. This suggests that the manipulation of object desirability was successful.

Results from Experiment 1 did not support our hypothesis. Neither hand placement nor object desirability affected distance perceptions.

Experiment 2

A second experiment was conducted with the hopes of improving upon the design of Experiment 1. In Experiment 1, several participants interpreted the ID card as representative of the researcher, which biased desirability ratings. Therefore, the neutral object was changed from one of the researcher's Gettysburg College student ID cards to a piece of black paper with the same dimensions. Second, participants in Experiment 1 may not have held the assigned hand position for a period of time long enough to affect salience of the corresponding body part. Carney, Cuddy and Yap (2010) found significant body posture effects after individuals held assigned positions for two minutes, so participants in Experiment 2 held their index finger to their head or their heart for at least two minutes before making distance judgments. This was accomplished by giving participants two minutes to complete items on a Remote Associates Test (RAT), developed by Mednick (1962) as a measure of creativity. A question was added to both the initial questionnaire and the final questionnaire to make the written RAT task appear connected to the purpose of the study. Proffit (2006) suggested that verbal perceptual estimates are less accurate and more susceptible to bodily effects than haptic perceptual estimates, so before throwing the bean bag towards the object, participants in Experiment 2 verbally estimated the distance between themselves and the object. Lastly, the distance between the starting line and the object was increased from 156 inches to 192 inches. This change was made in order to allow for more variation in distance estimates than in Experiment 1.

The predictions of Experiment 2 were the identical to those of Experiment 2. We predicted that participants in the heart condition would perceive the desirable object as closer than participants in the head condition, causing heart-pointers to provide shorter verbal estimates

and to throw the beanbag shorter distances than head-pointers. We predicted no effect of hand placement when the object was neutral.

Method

Participants

The study included 65 Gettysburg College students (M_{age} = 19.85, SD = 1.15) who had not taken part in Experiment 1. Of the participants, 47 were women and 18 were men. As in Experiment 1, individuals were recruited via word of mouth and email communication and volunteered to participate. Five participants were excluded from the analysis – the researchers failed to show three participants a ruler for reference, one participant had completed Experiment 1, and one participant threw the beanbag overhand. This resulted in 60 total participants.

At the conclusion of Experiment 2, all 126 participants were entered in a randomized drawing to win the $25 Amazon gift card.

Procedure

We employed the same 2x2 between-subjects design as in Experiment 1. The sole difference in research design was that the dependent variable of distance perception was operationalized as both a haptic beanbag throw and a verbal estimate.

The procedure of Experiment 2 was identical to that of Experiment 1, apart from the changes described below. Participants met the researcher in a lab room belonging to the Gettysburg College Psychology Department, and were told that the current study examined the effects of hand dominance on task performance. They completed the same questionnaire as in Experiment 1, with an additional item about the extent to which they enjoyed reading for pleasure. Next, all participants were told they were in the dominant hand condition, and would complete two tasks with their dominant hand – one written task and one throwing task.

Participants were instructed to place the index finger of their non-dominant hand on either their temple or their upper chest, and the researcher demonstrated the pose. While maintaining this position, participants were given two minutes to complete as many items as possible on the RAT. Participants and the researcher then moved into the hallway connecting adjacent lab rooms. While standing at the designated starting line, participants were shown a 1-foot ruler for reference, and were asked to verbally estimate the distance between themselves and the object. The object was either a $25 Amazon gift card participants believed they had the chance to win or a piece of black paper. After making a verbal estimate, participants were instructed to throw the beanbag towards the object using an underhand toss (this specification was added to control for differences between underhand and overhand tosses), and were given one throw. The assigned hand position was held during the entire duration of the throwing task. The final questionnaire, which contained an added question about confidence in handwriting abilities, was administered in the lab room.

Results and Discussion

We conducted a between-subjects analysis of variance (ANOVA) to examine the effects of hand placement (head, heart) and object desirability (desirable, neutral) on the haptic measure of distance perception. The interaction between hand placement and object desirability, as well as the main effects of hand placement and object desirability, were non-significant, all F's < 1.0. Means and standard deviations are displayed in Table 2.

We conducted a between-subjects ANOVA to examine the effects of hand placement and object desirability on the verbal measure of distance perception. The interaction between hand placement and object desirability and the main effects of hand placement and object desirability were non-significant, all F's < 1.0. Means and standard deviations are displayed in Table 3.

A manipulation check conducted using a between-subjects *t*-test showed that the gift card was not significantly more desirable than the piece of paper, $t(58) = 1.16$, $p = .13$, suggesting that desirability was not successfully manipulated in Experiment 2.

We conducted a within-subjects *t*-test to examine the effects of measure type (haptic, verbal) on distance perceptions. Prior to conducting this test, absolute value accuracy scores were calculated by subtracting the actual distance between the starting line and the object from the perception of this distance. Haptic estimates of distance ($M = 15.87$, $SD = 13.18$) were more accurate than verbal estimates of distance ($M = 53.20$, $SD = 39.05$), $t(59) = -6.83$, $p < .001$.

The results of Experiment 2 did not support our hypothesis, as distance perceptions measured using a haptic beanbag toss and a verbal estimate were not influenced by hand placement or by object desirability.

General Discussion

The data from both Experiment 1 and Experiment 2 failed to support our hypothesis. We hypothesized that hand placement would moderate the effect of object desirability on the perceptions of distance between the viewer and the object. A desirable object would be perceived as closer when the heart is salient than when the head is salient, but there would be no such effect of body part salience for a neutral object. In Experiment 1, there was no significant interaction or significant main effects when distance perception was operationalized as a haptic beanbag toss. Experiment 2 found the same non-significant results using a haptic measure of distance perception, as well as using a verbal measure of distance perception.

Experiment 1 used the same desirable object (a $25 gift card the participants believed they had the chance to win), distance perception measurement (haptic beanbag toss), and distance between the starting line and the object (156 inches) as did Balcetis and Dunning

(2010). Therefore, our failure to replicate the finding that desirable objects are perceived as closer than neutral objects calls its validity into question. It may be that desirability does not influence distance perceptions, as our results would suggest. Future research should continue to examine these two variables to determine whether the relationship suggested by Balcetis and Dunning (2010) exists.

Interestingly, Experiment 2 showed that participants were more accurate in estimating the distance between themselves and the object when throwing a beanbag towards it than when making a verbal estimate. This caused beanbag tosses to be significantly more on target than verbal estimates. Proffitt (2006) found that individuals' haptic estimates of environmental features were more accurate and less influenced by bodily states than their verbal estimates. Our results suggest the same pattern, providing further support for Proffitt's (2006) theory that non-conscious (haptic) and conscious (verbal) perceptual processes may be controlled by different mechanisms.

One possible explanation for the discrepancy between our results and Fetterman and Robinson's (2013) is that they had participants touch their head or heart with their dominant hand, whereas we had participants touch their head or heart with their non-dominant hand. This switch was necessary due to our desire to have participants throw the beanbag with their dominant hand. However, it may be that the traits associated with a certain body part do not become as accessible when that body part is touched with the non-dominant hand than when it is touched with the dominant hand.

There are several limitations to the current research. Proffitt, Stefanucci, Banton, and Epstein's (2003) studies regarding embodiment and distance perception placed participants approximately 158 to 551 inches away from the target object. In Experiment 1, the distance was

shorter than any of those used by Proffitt et al. (2003). Although the distance was extended in Experiment 2, it was nevertheless shorter than many of those used by Proffitt et al. (2003). It is possible that a longer length between our participants and the object may have been necessary to find a moderating effect of hand placement on distance perceptions to a desirable or neutral object. A second limitation is that in Experiment 1, when one of the researcher's ID cards was used as the neutral object, the desirability manipulation was successful. In Experiment 2, however, the $25 Amazon gift card was not rated as significantly more desirable than the neutral piece of black paper. It is unclear why this occurred, but is a limitation of Experiment 2. Finally, there was a small sample size in the current studies, with 15 participants in each of the four conditions. This resulted in low power.

Future studies should continue to examine the variables included in the present research. As mentioned above, it is important that further attempts are made to replicate the relationship between object desirability and distance perception suggested by Balcetis and Dunning (2010). Research should also investigate the effect of using one's dominant or non-dominant hand to draw attention to the head or heart on the salience of corresponding traits. It may be that the effects produced by touching the head or the heart with the dominant hand are different than when the non-dominant hand is used to touch these body parts. Lastly, researchers should investigate the potential relationship between heart salience and feelings of desirability. Whether touching the heart makes objects more desirable is a worthwhile research question that could lend support to theories regarding the role of metaphors in cognitive processing.

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Table 1

Mean Distance Perception (and Standard Deviations) as a Function of Object Desirability and Hand Placement

	Object Desirability	
Hand Placement	Desirable	Neutral
Head	143.08 (21.10)	146.47 (22.58)
Heart	151.86 (17.53)	145.79 (22.84)

Note. Distance perception was measured as inches between the starting line and the landed beanbag. The actual distance between the starting line and the object was 156 inches.

Table 2

Mean Distance Perception (and Standard Deviations) Measured Haptically as a Function of Object Desirability and Hand Placement

	Object Desirability	
Hand Placement	Desirable	Neutral
Head	204.14 (25.21)	196.13 (14.25)
Heart	195.03 (21.71)	195.98 (17.27)

Note. Distance perception was measured as inches between the starting line and the landed beanbag. The actual distance between the starting line and the object was 192 inches.

Table 3

Mean Distance Perception (and Standard Deviations) Measured Verbally as a Function of Object Desirability and Hand Placement

	Object Desirability	
Hand Placement	Desirable	Neutral
Head	166.40 (54.59)	168.00 (64.14)
Heart	178.40 (72.12)	180.00 (67.73)

Note. Distance perception was measured as a verbal estimate in inches. The actual distance between the starting line and the object was 192 inches.