Head and Heart Metaphors for Moral Decision Making: Conceptual or Communicative?

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Abstract

When faced with a moral dilemma, following your head versus your heart can result in very different decisions. Earlier work has argued that people who "self-locate" in the head tend to make more rational and less emotional decisions to moral dilemmas than those who "self-locate" in the heart. We replicate this finding, suggest an alternative interpretation of the result, and then extend it with a novel experiment. In a metaphor framing task, we manipulated the salience of the head/heart metaphors—by using them (a) in a single sentence, (b) a more elaborate paragraph, or (c) by emphasizing one in contrast to the other. We found that people who received the head metaphor made more rational decisions than those who received the heart metaphor, but only in the high salience condition that contrasted the two metaphors. This finding illustrates the communicative value of metaphor, which can be enhanced through comparison.

Keywords: metaphor; decision making; rationality; emotion

Introduction

In the novel and movie Sophie's Choice*, a Polish woman, Sophie Zawistowska, is arrested by the Nazis and sent to the Auschwitz death camp. On arrival, she is "honored" for not being a Jew by being allowed a choice: One of her children will be spared the gas chamber if she chooses which one should be killed. If she does not choose, both of them will be killed.*

Many moral dilemmas, like Sophie's, can be construed as a contrast between two extremes, involving a rational, utilitarian option (choose one child to die so that only one life is lost) and an emotional option (forgo choosing; both children die, but you did not play a direct role in either death). Why do some people decide to use their head to make the rational choice, while others follow their heart in choosing the emotional option?

One possibility for why some people make more rational decisions than others appeals to a role for conceptual metaphor (Fetterman & Robinson, 2013; Lakoff & Johnson, 1980). In English, the "head" is associated with cold, rational decision making. We use instructions like "use your head" to encourage emotional detachment in favor of carefully deliberated judgment. The "heart," on the other hand, is associated with hotter, more emotional thinking. Telling someone to "follow their heart" often implies that they should ignore a cost-benefit calculus in favor of a more impulsive decision.

Recent work has argued that these "head" and "heart" metaphors (or metonymies) do more than describe different modes of thinking. They may also represent different ways of thinking about the self: some people "self-locate" in their head; others "self-locate" in their heart (Fetterman & Robinson, 2013). On this view, people who conceptualize thinking as a process that happens in their head will tend to make more rational decisions, while people who conceptualize thinking as something that happens in their heart will tend to make more emotional decisions.

Evidence for this theory comes from a series of studies in which people were asked: "Irrespective of what you know about biology, which body part [the head or heart] do you more closely associate with your self?" Then participants completed personality measures, general knowledge questions, or they answered a series of moral dilemmas. Fetterman and Robinson (2013) found roughly a 50-50 split in how people identified with the head versus the heart, which, in turn predicted responses to the other measures: head-locators characterized themselves as more rational and interpersonally cold on the personality measures, answered more of the general knowledge questions correctly, and suggested more utilitarian responses to the moral dilemmas, compared to the heart-locators.

Given the study design, however, it is difficult to know whether people really self-locate in the head or heart, and whether individual differences in self-location tendencies predict behavior. That is, an alternative interpretation of the finding is that people have some sense of their typical cognitive style—whether they tend to base their decisions on more rational or emotional motivations—which is what people report for the self-location question. On this view, one might expect the same results if participants had been asked if they consider themselves to be more rational or emotional decision makers (as opposed to a question about self-location). In addition, how people respond to the self-location question may influence their performance on subsequent measures. People who say that they self-locate in their "head" may be inclined to demonstrate their headiness by adopting a more rational strategy to the moral dilemmas, for example.

These concerns relate to long-standing questions about what can be inferred about mental representation from patterns of language use (Keysar & Bly, 1995; McGlone, 2011; Murphy, 1996). For example, when someone says, "I followed my heart" are they really imagining that their decision was made in their heart? Or is this phrase merely a conventional expression that has come to mean something like "I made the emotional choice"?

In the current paper, we explore these concerns, and address novel theoretical questions about metaphor framing, by manipulating the salience of instructions to "use one's head" or "follow one's heart" in moral decision making. There were three conditions in the experiment. In the low-salience condition, the phrase "use your head" or "follow your heart" was embedded in the instructions of the task—which involved responding to the five moral dilemmas that were used by Fetterman and Robinson (2013). In the medium salience condition, participants were presented with a discussion about Plato's theory of the self, which was said to emphasize the head or the heart; the given metaphor was repeated in different ways throughout a paragraph that preceded the moral dilemmas. In the high salience condition, participants received the same information as those in the medium salience condition, with an additional explicit contrast: they were told either that the "head and not the heart" or the "heart and not the head" is where the self is located.

We expected that the high-salience condition would elicit the strongest effect: with the emphasis on head-location, in explicit contrast to heart-location, leading to more rational responding (and vice versa). An explicit comparison between the two metaphors should highlight the underlying difference between a rational and emotional approach to the moral dilemmas (Edwards, Williams, Gentner, & Lombrozo, 2014; Markman & Gentner, 1996).

This result would support an alternative interpretation of Fetterman and Robinson (2013)'s work. First, it would illustrate that, at least in some circumstances, more salient metaphors are more influential. In the original study, the metaphors were highly salient, since they were explicitly contrasted with one another in a forced choice task. Second, it would suggest that these particular metaphors are informative because of their conventional, idiomatic meaning, rather than their role in the mental representation of self-location (Keysar, Shen, Glucksberg, & Horton, 2000; Thibodeau & Durgin, 2008).

This result would also represent a novel contribution to the metaphor framing literature, which has found that linguistic metaphorical frames can shape how people think about issues like immigration (Landau, Sullivan, & Greenberg, 2009; Jia & Smith, 2013), cancer (Hauser & Schwarz, 2013; Hendricks & Boroditsky, 2015), and crime (Thibodeau & Boroditsky, 2011, 2013). For instance, metaphorically framing crime as a "virus" has been found to increase support for societal reform as a means of crime-reduction, whereas a "beast" frame leads people to support more enforcement-oriented approaches to crime-reduction

(Thibodeau & Boroditsky, 2011, 2013). The current work extends these findings by investigating whether an explicit contrast, designed to make the underlying entailments of the metaphor more salient, leads to stronger metaphor framing effects.

Before conducting the experiment, we first replicated the original study (Fetterman & Robinson, 2013). We present the results of the replication, which confirm the original findings, and then discuss the results of our follow-up experiment.

Methods

Participants

500 and 1,000 people were recruited from Amazon's Mechanical Turk to participate in Studies 1 and 2, respectively. Data was excluded from participants who did not submit a correct completion code and from participants who answered more than 3 (of 5) attention check questions incorrectly, leaving data from 484 and 945 participants for analysis in Study 1 and Study 2, respectively. Participants who completed Study 1 were not eligible to participate in Study 2.

Procedure

Study 1 Study 1 was a replication of Fetterman & Robinson (2013, Study 5). At the beginning of the study, participants were asked: "Irrespective of what you know about biology, which body part do you more closely associate with your self?" They were required to choose either the head or the heart. Next participants considered five moral dilemmas, similar to and including the Sophie's Choice example from the introduction. Each dilemma had one rational response and one emotional response (see Appendix). After the five dilemmas they answered an attention check question about each dilemma, and finally completed the Big Five Inventory (BFI; John & Srivastava, 1999). The BFI measures individuals' extraversion, agreeableness, conscientiousness, neuroticism, and openness to experience. In the original studies, Fetterman and Robinson (2013) included the measure of conscientiousness as a predictor of how people responded to the moral dilemmas. For consistency, we also include conscientiousness in the analyses below, although the results do not differ if this measure is excluded.

Study 2 The procedure for Study 2 was identical to Study 1, except that instead of choosing the body part that they most associate with the self, participants randomly received one of the two metaphorical frames at one of three salience levels.

In the low salience condition, the metaphor was instantiated only in the instructions for responding to the moral dilemmas:

> Next you will read short scenarios and should report what you would do if you were in them. There are no right or wrong answers to the

questions. Just [follow your heart/use your head] to make the judgment that you think is right. Please read each carefully because you will be asked to answer other questions about them later.

The medium and high salience conditions included passages that instantiated the metaphors more explicitly than the low salience condition. The beginning of the medium and high salience passages were identical:

Plato said that there are three parts of the soul. The first is our appetites or desires; the second is hot-blooded emotion; and the final is rational, conscious awareness. But these three parts of ourselves do not play equal roles in making us who we are. The [head/heart] is the most crucial for defining who we are. The [head/heart] is where we find our true self.

The medium salience passage continued:

If we are to live a long and prosperous life, we must always listen to our [head/heart]. George Washington, Abe Lincoln, and Michelle Obama are just a few of the incredibly successful people who have followed Plato's advice in never losing sight of the fact that their [head/heart] holds the key to who they truly are.

In the high salience condition, the emphasized metaphor was explicitly contrasted with the alternative. Thus, the high salience passage instead said:

If we are to live a long and prosperous life, we must always listen to our [head/heart, even if it conflicts with our heart/head]. George Washington, Abe Lincoln, and Michelle Obama are just a few of the incredibly successful people who have followed Plato's advice in never losing sight of the fact that their [head/heart] holds the key to who they truly are, even if it means disregarding what their [heart/head] tells them.

After the passages, all participants responded to the same five dilemmas used in Study 1 and answered the same attention check questions. They were then asked whether they remembered encountering the phrase "follow your heart" or "use your head" earlier in the experiment. This recognition memory question was included as a test of the salience manipulation. As expected, participants were more likely to remember the metaphor in the more salient conditions, $B = .75$, $SE = .10$, $p < .001$.

Analysis Mixed effect logistic regression models were used to analyze the data from both studies (Jaeger, 2008). Metaphor (head versus heart) was treated as a between-subjects fixed effect in both studies; salience (low, medium, high) was treated as a between-subjects fixed effect for the analysis of Study 2; participants and moral dilemmas were treated as random effects in both studies. We compare nested models and present standardized regression coefficients to conduct hypothesis tests (Menard, 2002).

Results

Study 1: Replication

In Study 1, more people identified with the head metaphor (63%) than the heart metaphor (37%), $\chi^2(1) = 32.80$, $p < .001$. We tested whether participants' choice of metaphor predicted how they solved the moral dilemmas by comparing two nested models. In the first, conscientiousness was included as a predictor of participants' judgments; in the second model, participants' chosen metaphor was added, which significantly improved fit, $\chi^2(1) = 19.84$, $p < .001$. People who identified with the heart metaphor solved the moral dilemmas more emotionally ($M = .52$, $SD = .25$) than people who identified with the head metaphor ($M = .41$, $SD = .29$), $B = .68$, $SE = .15$, $p < .001$, as did more conscientious participants, $B = .28$, $SE = .11$, $p = .012$. These findings replicate the basic patterns reported by Fetterman & Robinson (2013).

We also conducted analyses by item to test whether particular dilemmas were driving the effect. We found an effect of metaphor for dilemmas that elicited more ambivalent responses overall. That is, there was a stronger consensus among participants on how to respond to dilemmas 1 (rationally) and 3 (emotionally); there was no effect of participants' choice of metaphor on these dilemmas, ps > .3. There was less consensus among participants on how to respond to dilemmas 2, 4, and 5; these dilemmas showed differences as a function of which metaphor people chose, ps < .001 (see Table 1).

Table 1. Proportion of emotional responses overall, for head-locators, and for heart-locators by dilemma.

Dilemma	Overall	Heart	Head
1	.70	.73	.69
2	.36	.49	.29
3	.14	.13	.14
4	.50	.61	.44
5	.57	.66	.51

In other words, head-locators did not simply choose the rational response to each dilemma (and vice versa for heart-locators). They were also sensitive to the content of the dilemmas. For this reason, we focus on responses to dilemmas 2, 4, and 5 in the experiment.

Study 2: Metaphor Framing

We tested whether the metaphor used to describe the task and the salience of the metaphor affected participants' moral judgments. We focus on data from dilemmas 2, 4, and 5, since these dilemmas elicited more ambivalent responses overall, and were influenced by participants' choice of metaphor in Study 1.

The analysis revealed no main effect of metaphor, $\chi^2(1) = 1.73$, $p = .189$, or salience condition, $\chi^2(1) = 0.53$, $p = .467$. But it did reveal an interaction between metaphor and salience condition, $\chi^2(1) = 4.34$, $p = .037$, as well as an effect of conscientiousness, $\chi^2(1) = 9.52$, $p = .002$.

As shown in Figure 1, there was no effect of the metaphor frame in low, $B = .01$, $SE = .19$, $p = .964$, or medium, $B = .08$, $SE = .21$, $p = .681$, salience conditions. There was an effect of the metaphor in the high-salience condition, $B = .70$, $SE = .27$, $p = .011$. When the instructions emphasized the "heart" in explicit contrast to the "head," people responded to the dilemmas more emotionally (and vice versa).

Figure 2. Effect size by item (moral dilemmas 1-5) for the metaphor preference task in Study 1 and bin the high-salience condition of Study 2. The further the bar extends to the right (from 0), the more congruent the responses (i.e. heart and emotional responding; head and rational responding). Bars extending to the left (of 0) indicate a pattern of incongruent responding (i.e. heart and rational; head and emotional).
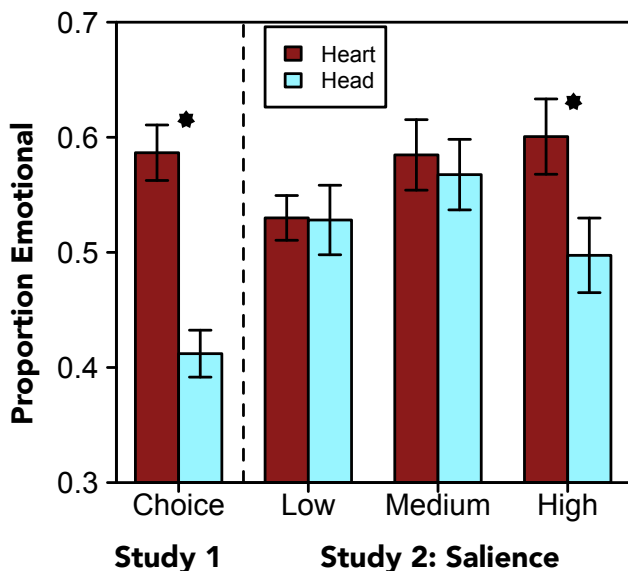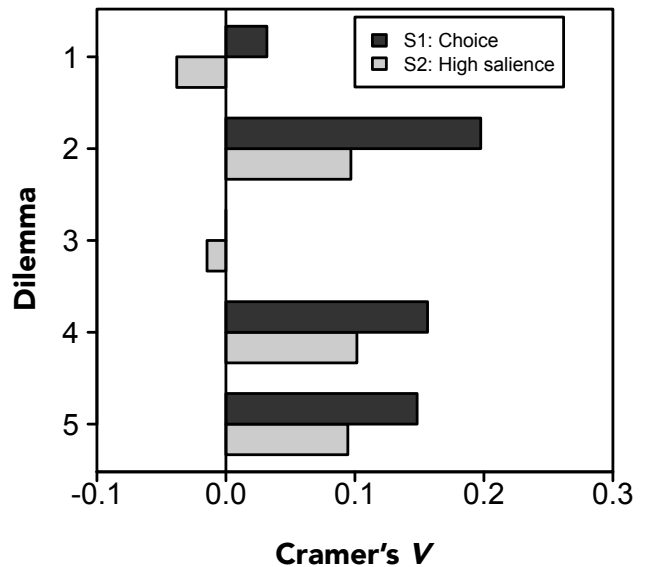

Figure 1. Proportion of dilemmas solved emotionally in Study 1 (choice) and in Study 2 by metaphor and salience conditions. Error bars denote standard errors of the means.

The effect of the salience manipulation appeared to be fairly linear for the "heart" condition—with people responding more emotionally as the salience of the "heart" metaphor increased, $B = .21$, $SE = .10$, $p = .030$. The effect of the salience manipulation seems to have been more abrupt in the "head" condition. There was no difference in how participants responded to the low- and medium-salient versions of the instructions that emphasized the "head" metaphor, $p = .311$; participants responded marginally more rationally to the high-salient version, compared to medium-salient version, of the instructions that emphasized the "head" metaphor, $p = .057$.

Figure 2 illustrates the effect of metaphor preference (Study 1) or metaphor frame (from the high-salience condition of Study 2) on each of the moral dilemmas. It shows that the metaphor people identified with in Study 1 had the biggest effect on judgments of the 2nd, 4th, and 5th moral dilemmas. These were the same dilemmas that were most influenced by the salient metaphor frames in Study 2.

Discussion

In this work, we first replicated prior work by Fetterman & Robinson (2013) showing that people who identified with a heart metaphor for the self responded more emotionally to moral dilemmas, while people who identified with a head metaphor for the self responded more rationally to moral dilemmas. The original finding was interpreted as evidence for an individual difference in self-location grounded in conceptual metaphor. However, we have argued that there are alternative interpretations of the finding. Most notably, the heart and head metaphors are conventional expressions that correspond to emotional and rational modes of thinking, respectively. People have some self-awareness about how they make decisions—more rationally or more emotionally. When asked to choose between identifying with the heart or head, emotional decision makers choose the heart, while rational decision makers choose the head.

In a follow-up experiment, we examined whether metaphorically framing the locus of a person's decisions as either in the head or in the heart would lead them to make more rational decisions (in the case of the head) or emotional decisions (in the case of the heart). We also explored the role of salience in this process: using the metaphors in a single phrase (low salience), a more elaborate paragraph (medium salience), or by emphasizing one in direct contrast with the other (high salience).

We found an effect of the metaphor framing manipulation in the high-salience condition but not the low or medium salience conditions, suggesting that an explicit contrast between the metaphors was important for influencing behavior on the decision making task. In the high salience condition, since people were exposed to both metaphors, they had the opportunity to compare the two metaphors. In fact, in order to truly comprehend the passage, they needed to compare their passage's dominant metaphor to the alternative. In Fetterman & Robinson's (2013) work and in our Study 1, choosing the locus of the self also encourages, and perhaps even requires, participants to explicitly compare the two metaphors' entailments in order to choose the one they believe describes them most accurately. Comparison has been found to be particularly effective in communicating the intended meaning of analogies (Edwards, Williams, Gentner, & Lombrozo, 2014; Markman & Gentner, 1996). This work suggests that explicitly comparing metaphor frames to each other may similarly highlight their differences and amplify their effects on cognition. In other words, we found that the head and heart metaphors used in this work were both conceptual *and* communicative.

All participants in these experiments were in the United States, so the implications about heart and head metaphors for decision making may not generalize to members of other cultures. It may be productive for future research to investigate interactions between cultural background and metaphor frames for decisions.

In addition, this work may have implications for the development of Deliberate Metaphor Theory (DMT; Steen, 2008), which argues that metaphors are most influential when they are used deliberately. That is, DMT emphasizes the social and pragmatic context in which figurative language is used, although the details of the theory (e.g., what constitutes a deliberate metaphor?) have yet to be ironed out, and empirical tests of the predictions made by the theory have received limited support (see, e.g., Gibbs, 2015a, 2015b; Thibodeau, In press). Thus, the current work may give researchers a novel case for thinking about one pragmatic signal—explicitly negating one metaphor in favor of another—that a metaphor has been used deliberately. Explicitly contrasting metaphors clearly signals deliberate use.

To advance Deliberate Metaphor Theory, it would be worthwhile to try and provide a more mechanistic account of the effect we have demonstrated. For instance, one might argue that the metaphors were used "deliberately" in all three salience conditions of the experiment. But we only found an effect when the two metaphors were contrasted with one another. An open question, therefore, is whether the contrast served as more of a pragmatic cue for participants to use the emphasized metaphor, or whether the contrast served to bring out the meaning of the head and heart metaphors more clearly—by highlighting an alignable difference between and the underlying meaning of the phrases (Gentner & Markman, 1994).

Future work should also explore the role of comparison in metaphor processing more generally. Experiments that examine metaphor framing—for persuasion, instruction, and explanation—typically present participants with only one frame (e.g., Jia & Smith, 2013; Landau, Sullivan & Greenberg, 2009; Thibodeau & Boroditsky, 2011, 2013). The current work suggests that explicitly contrasting metaphors may facilitate metaphorical reasoning.

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Appendix: Moral Dilemmas

1.You are an inmate in a concentration camp. A sadistic guard is about to hang your son who tried to escape and wants you to pull the chair from underneath him.

He says that if you don't he will not only kill your son but some other innocent inmate as well. You don't have any doubt that he means what he says. What would you do?

Rational = I would pull the chair
Emotional = I would NOT pull the chair

2.A pregnant woman leading a group of people out of a cave on a coast is stuck in the mouth of that cave. In a short time high tide will be upon them, and unless she is unstuck, they will all be drowned except the woman, whose head is out of the cave. Fortunately, (or unfortunately,) someone has with him a stick of dynamite.

There seems no way to get the pregnant woman loose without using the dynamite which will inevitably kill her; but if they do not use it everyone will drown. What would you do if you were in this situation?

Rational = I would let them light the stick of dynamite
Emotional = I would NOT let them light the stick of dynamite

3.A trolley is running out of control down a track. In its path are five people who have been tied to the track by a mad philosopher. Fortunately, you could flip a switch, which will lead the trolley down a different track to safety. Unfortunately, there is a single person tied to that track. Would you flip the switch or do nothing?

Rational = I would flip the switch
Emotional = I would do nothing

4. In the novel and movie Sophie's Choice, a Polish woman, Sophie Zawistowska, is arrested by the Nazis and sent to the Auschwitz death camp. On arrival, she is "honored" for not being a Jew by being allowed a choice: One of her children will be spared the gas chamber if she chooses which one should be killed. If she does not choose, both of them will be killed. Would you choose one of your children to be killed in the same situation?

Rational = I would choose a child to be killed
Emotional = I would NOT choose a child to be killed

5. In 1842, a 23ship struck an iceberg and more than 30 survivors were crowded into a lifeboat intended to hold 7. As a storm threatened, it became obvious that the lifeboat would have to be lightened if anyone were to survive. The captain reasoned that the right thing to do in this situation was to force some individuals to go over the side and drown or everyone would drown. Would you support pushing some people off the boat so at least some people could survive?

Rational = I would support pushing people off the boat
Emotional = I would NOT support pushing people of the boat