



FlashReport

Exploring metaphor's epistemic function: Uncertainty moderates metaphor-consistent priming effects on social perceptions

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ABSTRACT

Consistent with conceptual metaphor theory's claim that metaphors operate at a conceptual, and not just linguistic, level, prior research shows that priming perceptions related to concrete concepts influences perceptions related to dissimilar, more abstract concepts in metaphor-consistent ways. However, the theory's claim that metaphors function to reduce uncertainty about abstract concepts has yet to be experimentally assessed. Two studies tested whether situational variation in uncertainty moderates metaphor-consistent priming effects. Study 1 focused on the metaphor *life is a path* and showed that priming path perceptions (vs. literal representations) increased perceived autobiographical continuity only if uncertainty about personal identity was salient. Study 2 focused on verticality metaphors and showed that vertical orientation primes influenced satisfaction with the decision to attend one's current university in both directions (*up is good, bad is down*) only if uncertainty about the value of the college experience was salient.

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People routinely employ metaphors to talk about abstract concepts in terms of semantically remote concepts (e.g., "We're *moving forward*" on this paper" compares goal pursuit to spatial movement). According to conceptual metaphor theory (CMT; Gibbs, 2006; Lakoff & Johnson, 1980), these linguistic metaphors are examples of conceptual metaphor, a cognitive tool that people use to comprehend an abstract or difficult concept (referred to as the *target*) in terms of a superficially dissimilar concept that is relatively more concrete and easier to understand (the *source*). Specifically, metaphor creates a conceptual mapping between corresponding characteristics (e.g., causal structure) of the target and the source, and this mapping provides an analogical framework for interpreting and making judgments about the target.

Accordingly, recent studies demonstrate that metaphors are involved in representations of socially relevant targets such as *morality, friendliness, and authenticity* (for a review, see Landau, Meier, & Keefer, 2010). These studies test whether priming perceptions of a source influences perceptions and judgments related to a target in metaphor-consistent ways, even when linguistic expressions of the relevant metaphors are not salient. For example, Williams and Bargh (2008) investigated whether people conceptualize *emotional attachment* (the target) in terms of *spatial distance/closeness* (the source; e.g., "We are *close* friends"). They found that participants primed with spatial closeness (by placing two dots close together vs.

far apart on a Cartesian plane) perceived a stronger emotional bond with their family members.

Although prior research demonstrates that social perceptions can be automatically affected by metaphoric associations, virtually no research has considered the situational factors that determine when people use metaphors to process target-relevant information (Landau et al., 2010). The current research addressed this issue by building on CMT's claim that metaphors serve an epistemic function by enabling people to use concrete sources to structure their comprehension of relatively more abstract or uncertain targets. Thus, people should be more likely to rely on metaphors to interpret target-relevant information when target uncertainty is high.

More specifically, we hypothesized that when uncertainty about a target is salient, source-relevant primes will be recruited to interpret target-relevant information, leading to metaphor-consistent changes in target perceptions. If target uncertainty is not salient, however, source-relevant primes will not influence target perceptions. Two studies assessed this hypothesis by testing whether manipulating the salience of uncertainty about target concepts (*personal identity; satisfaction with life decisions*) moderates the effects of priming source concepts (*path; up-down*) on perceptions of those targets.

Study 1

People commonly describe their life course in terms of a path (e.g., "I'm on the right *track*"; Moser, 2007). According to Lakoff and Johnson (1980), path metaphors help people maintain a coherent personal identity (an otherwise elusive concept) by representing past episodes along a forward-moving (i.e., progressing) trajectory with a

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clear direction (i.e., purpose) culminating in the current self-concept. Based on these insights and our guiding analysis, we hypothesized that people will be especially likely to use path metaphors to conceptualize their identity when uncertainties about their identity are salient. Specifically, we predicted that when identity uncertainties are salient, organizing past episodes along a path will increase the perception that one's past is continuous with the current self-concept. When participants are not given a path-metaphoric organization, however, the salience of identity uncertainty will have the expected effect of decreasing perceived autobiographical continuity.

Method

Participants were 65 (36 female) undergraduates at the University of Kansas (KU). In a study purported to be about personal experiences, participants were first asked to recall three episodes each from five periods in their past – family history, early childhood, grade school, middle school, high school – and generate a keyword representing each episode.

The identity uncertainty salience manipulation was next. Participants randomly assigned to the identity uncertainty condition responded to an open-ended prompt: "In the space below, describe some uncertainties you have about who you are as a person." To control for the possibility that the hypothesized effect is due to the salience of any aversive cognitions, we had participants in the comparison condition respond to the following prompt: "In the space below, describe what happens to you when you experience intense physical pain."

Participants then received materials and instructions for organizing their 15 recalled episodes either along a path or chronologically. Those in the path condition received a picture of a path divided into five sections (each containing three spaces) corresponding to the periods from which they recalled the episodes. They were instructed to write the keyword for each episode in the appropriate section of the path, starting with the section earliest or "nearest" to them on the path. Those in the chronological condition received a sheet with five columns (oriented horizontally), each labeled with a range of ages (e.g., 13–15). They were instructed to write the keywords for each episode in the appropriate column depending on how old they were when it occurred. Like the path organization, the chronological organization allows participants to locate episodes at a specific place in time, but does not involve metaphoric associations with forward progress and directional purpose.

Finally, participants indicated their agreement with 3 items assessing perceived autobiographical continuity: "My experiences in the past have significantly shaped who I am today; The person I am now is the product of past events; If my experiences in the past had been different, I would be someone other than who I am today." Responses were made on a 9-point scale (1 = *completely disagree*; 9 = *completely agree*) and were averaged to form composite scores ($\alpha = .93$).

Results

Autobiographical continuity scores were submitted to a 2 (identity uncertainty salience vs. pain salience) \times 2 (episode organization: path-metaphoric vs. chronological) ANOVA. A main effect for episode organization condition ($F(1, 61) = 5.18, p = .03, \eta_p^2 = .08$) was qualified by the predicted two-way interaction ($F(1, 61) = 9.75, p = .003, \eta_p^2 = .14$). Pair-wise comparisons (Fisher's LSD) and the pattern of means presented in Fig. 1 revealed that, when identity-relevant uncertainties were salient, participants who organized past episodes along a path showed an increase in perceived autobiographical continuity ($M = 8.60, SD = .83$) compared to those who organized episodes chronologically ($M = 7.19, SD = 1.20; F(1, 61) = 12.88, p = .001, \eta_p^2 = .17$). In contrast, when the experience of physical pain

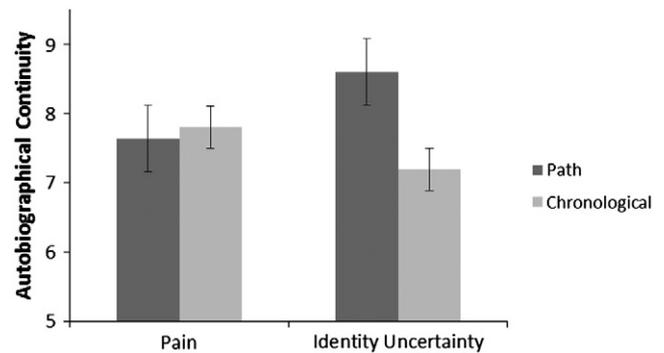


Fig. 1. Mean levels of perceived autobiographical continuity as a function of identity-relevant uncertainty salience and past episode organization condition.

was salient, autobiographical continuity scores did not significantly differ between the path-metaphoric ($M = 7.64, SD = .94$) and chronological organization conditions ($M = 7.80, SD = .99; F(1, 61) < 1.00, p = .52$).

Also supporting predictions, it was only when participants organized past episodes along a path that identity uncertainty salience increased perceived autobiographical continuity compared to pain salience ($F(1, 61) = 5.23, p = .03, \eta_p^2 = .08$); when episodes were organized chronologically, identity uncertainty salience (vs. pain salience) decreased perceived autobiographical continuity ($F(1, 61) = 4.69, p = .03, \eta_p^2 = .07$).

Discussion

Participants who organized autobiographical episodes along a path were more likely to perceive their personal past as continuous with their current self-concept, but only if they had earlier focused on uncertainties about their personal identity. These findings accord with CMT's claim that metaphors serve an epistemic function, because it was specifically when uncertainties about the target were salient that people recruited the metaphoric framing to interpret the target. When a source prime was available (path organization condition), heightened target uncertainty had the counterintuitive but metaphor-consistent effect of producing more confident target perceptions, whereas when a source prime was not available (chronological condition), uncertainty salience had the more intuitive effect of producing less confident target perceptions. Study 2 was designed to conceptually replicate this effect while testing whether source primes can have divergent effects on target perceptions.

Study 2

Linguistic analyses (Lakoff & Johnson, 1980) show that people talk about concepts implying positive valence metaphorically in terms of high vertical position and concepts implying negative valence in terms of low vertical position. Meier and Robinson (2004) have shown that metaphoric associations between affect and verticality have an automatic influence on perception. Participants in their studies were faster to categorize words as positive or negative if the words' valence and vertical presentation position matched prevalent metaphors (*up = good; down = bad*). Common expressions suggest that such verticality metaphors are used to assess satisfaction with major life decisions ("a big step up"; "going downhill"), but we know of no experimental evidence supporting this possibility. Thus, in Study 2, we had university freshmen organize the factors leading up to their decision to attend their current university in either an upward or a downward orientation and then report how satisfied they were with their decision.

Our analysis suggests that it is only when people focus on uncertainties about the value of their college experience that they

will recruit vertical orientation perceptions to evaluate their decision to attend their current university. Specifically, we predicted that participants led to focus on college-relevant uncertainties will report being *more* satisfied with their decision in the upward orientation condition, and *less* satisfied in the downward orientation condition. In this way Study 2 extends Study 1, which compared metaphor-relevant and literal priming conditions, by testing whether contrasting source primes (in this case, *up* and *down*) produce divergent, metaphor-consistent effects on target perceptions.

Method

Participants were 183 freshmen (98 female) at KU. Participants received a packet of questionnaires containing the materials for the study. The first questionnaire was the college uncertainty salience manipulation. Participants randomly assigned to the college uncertainty salience condition responded to an open-ended prompt: "In the space below, describe some uncertainties you have about your life after graduating from college (for example, whether you will be able to find a good job)." The pain salience induction was the same as the one used in Study 1. We included a third, neutral comparison condition to ensure that the predicted results are not driven by a shift towards concrete thinking in the pain salience condition: "In the space below, describe what happens to you when you place books on shelves."

Participants then received a sheet with six vertically positioned lines and instructions for organizing the factors leading up to their decision to attend KU rather than another college or university. Participants in the upward orientation condition were asked to think of the earliest factor that influenced their decision and summarize it in a few words on the bottom-most line. They were then instructed to describe the next factor in their decision on the second line from the bottom, and to continue in this way, writing the most recent decision factor on the top line. Participants in the downward orientation condition received parallel instructions asking them to list their decision factors downward from the earliest (top line) to the most recent (bottom line).

Finally, participants were asked to indicate their agreement with three items assessing college decision satisfaction: "I have no doubt that KU was the ideal school for me; I belong at KU; KU was the right choice for college" Responses were made on a 7-point scale (1 = *completely disagree*; 7 = *completely agree*) and were averaged to form composite scores ($\alpha = .93$).

Results

Decision satisfaction scores were submitted to a 3 (college uncertainty salience vs. pain salience vs. neutral) \times 2 (upward vs. downward orientation) ANOVA. We observed only the predicted two-way interaction ($F(2, 177) = 5.73, p = .004, \eta_p^2 = .07$). Pair-wise comparisons (LSD) and the pattern of means presented in Fig. 2 revealed that, when college-relevant uncertainties were salient, participants reported more satisfaction with their decision if they had organized decision factors in an upward orientation ($M = 5.36, SD = 1.21$) compared to a downward orientation ($M = 3.21, SD = 1.14; F(1, 177) = 10.98, p = .001, \eta_p^2 = .06$). In contrast, orientation condition did not influence decision satisfaction in the pain salience ($F(1, 177) < 1.00, p = .48$) and neutral conditions ($F(1, 177) < 1.00, p = .67$).

Also supporting predictions, within the upward orientation condition, decision satisfaction in the college uncertainty salience condition was higher than in the pain salience condition ($M = 4.27, SD = 1.72; F(1, 177) = 4.61, p = .04, \eta_p^2 = .10$) and in the neutral condition ($M = 4.29, SD = 1.49; F(1, 177) = 6.55, p = .01, \eta_p^2 = .04$), whereas the latter two conditions did not differ ($F(1, 177) < 1.00, p = .96$). Similarly, within the downward orientation condition,

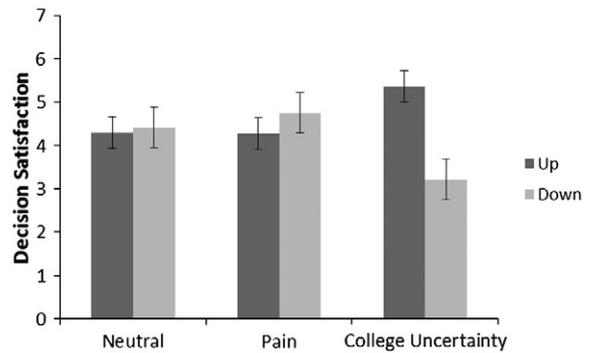


Fig. 2. Mean levels of college decision satisfaction as a function of college-relevant uncertainty salience and decision factor organization condition.

decision satisfaction in the college uncertainty salience condition was lower than in the pain salience condition ($M = 4.75, SD = 1.14; F(1, 177) = 4.77, p = .03, \eta_p^2 = .10$) and in the neutral condition ($M = 4.41, SD = 1.47; F(1, 177) = 4.67, p = .03, \eta_p^2 = .03$), whereas the pain and neutral conditions did not differ ($F(1, 177) < 1.00, p = .55$).

Discussion

Organizing factors in the decision to attend one's current university on a vertical axis influenced satisfaction with that decision in metaphor consistent ways (*up* = *good*; *down* = *bad*), but only when uncertainty about the value of one's college experience was salient. These results extend prior research on verticality and affect (Meier & Robinson, 2004) by demonstrating that verticality primes produce metaphor-consistent effects on perceptions of personally significant decisions.

General discussion

Based on conceptual metaphor theory, we proposed that metaphors are involved in representations of abstract social concepts because they help reduce uncertainty about those concepts. Accordingly, in two studies, priming perceptions of source concepts produced metaphor-consistent effects on perceptions of target concepts, but only when uncertainty about the targets was salient.

One potential limitation of these studies is the lack of target-specific controls. Specifically, because our target uncertainty inductions increased the salience of both uncertainty and the targets themselves (relative to the comparison conditions), we cannot rule out the possibility that target salience on its own was sufficient to increase metaphor use. Although we are unaware of a theoretical rationale for this possibility, future research should nevertheless test it using appropriate controls. Research should also test whether metaphor-consistent effects are produced by increasing uncertainty about a domain other than the target, or by increasing general motivation for certain knowledge (i.e., need for nonspecific closure; Kruglanski & Webster, 1996). Such evidence would suggest that metaphors serve an epistemic function in ways that are more fluid than investigated here.

Research should also examine ways people access metaphors. Whereas participants in our studies were provided with a metaphoric framing which allowed them to reduce uncertainty, studies could determine whether induced uncertainty prompts people to actively seek out metaphoric (over literal) interpretations of social information, such as by embracing political or consumer messages offering concrete metaphors for otherwise abstract concepts. Increased uncertainty may also motivate people to generate metaphors to make sense of otherwise inexplicable events and nebulous emotions, a tendency with consequences for emotional coping and mental

health (e.g., McMullen, 2006). Studies should also include measures of subjective certainty to test whether metaphor use is effective at reducing uncertainty. Such research can elucidate how conceptual metaphors shape thoughts and attitudes about abstract concepts of everyday significance.

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