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Labovitz School of Business & Economics, University of Minnesota Duluth, 11 E. Superior Street, Suite 210, Duluth, MN 55802

The Embodied Simulation of Verticality

Massimiliano Ostinelli, University of Wisconsin - Milwaukee, USA

David Luna, Baruch College, USA

Torsten Ringberg, Copenhagen School of Business

The existing literature suggests that metaphorical effects are mediated by semantic priming and embodied simulation is not necessary for these effects to occur. We qualify this prediction by showing that embodied simulation is necessary for dynamic metaphorical effects (i.e., moving down) and activates regulatory goals that increase preferences for status consumption.

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Massimiliano Ostinelli, University of Wisconsin-Milwaukee, USA

David Luna, Baruch College, CUNY, USA

Torsten Ringberg, Copenhagen Business School, Denmark

EXTENDED ABSTRACT

The existing literature proposes that metaphorical effects are mediated by semantic priming (Zhang and Li 2012): Sensory-motor experiences prime metaphorically associated knowledge that, in turn, affects judgments and behaviors (e.g., weight primes importance). Accordingly, embodied simulation—which entails the re-enactment of sensory-motor experiences—serves only as a means to prime metaphorical concepts and it is thus not necessary for metaphorical effects to occur. We qualify this metaphor-as-priming explanation by showing that semantic priming and embodied simulation are separate and independent underlying processes of the metaphorical transfer effects of verticality, each leading to opposite effects on preference for status products.

We distinguish between metaphors based on dynamic (i.e., moving down) and static (i.e., being down) sensory experiences of verticality. In line with the metaphor-as-priming explanation (Meier and Robinson 2004), we suggest that metaphors based on static experiences of verticality (e.g., imagining being in a lower vertical position) are mediated by the priming of associated concepts (e.g., “low” primes “bad”). Since these associations generally result in assimilative responses (Sela and Shiv 2009), static downward verticality reduces preferences for status products.

By contrast, because dynamic sensory experiences are processed through the re-enactment of the sensory-motor system (Glenberg and Kaschak 2002; Tettamanti et al. 2005), we suggest that metaphors based on dynamic verticality are mediated by embodied simulation. That is, without embodied simulation there will not be dynamic metaphorical transfer effects on consumer behavior. Furthermore, because the re-enactment of motor experiences (i.e., embodied simulation), has been shown to activate regulatory goals (for a review see Pezzulo et al. 2013), we predict that metaphors based on downward movement activate a compensatory goal that increases preferences for high-status products (Sivanathan and Pettit 2010). Moving up, on the other hand, is unlikely to have any effect on consumption preference because self-worth boosts might have limited effects on preferences for high-status products (Sivanathan and Pettit 2010). Therefore, moving down, not up, is the central focus of our investigation. Study 1 tested our prediction. Participants imagined one scenario of a 2 (direction: up vs. down) x 2 (movement: dynamic vs. static) design, before reporting the percentage price premium for a high-status product over a low-status product. Participants were informed of the retail price of each product and asked to report the highest percentage of the retail price they would be willing to pay for the two products. In line with the definition of price premium (Kusum, Lehmann, and Neslin 2003), an index was created by subtracting the percentage of the full price participants were willing to pay for the low-status product from the percentage they were willing to pay for the high-status product. Higher scores indicate a higher price premium for the high-versus low-status product. Measures of embodied simulation derived from past research (Labroo and Nielsen 2010) and theoretical considerations (Barsalou 2005) were collected both for static (e.g. *it felt as if I was at the bottom*) and dynamic (e.g., *it felt as if I was moving downward*) verticality. An ANOVA with price premium as dependent variable revealed a significant interaction effect. Participants in the “being down condition” reported a lower price premium for the high relative to the low-status product. Consistent with the meta-

phor-as-priming explanation (Zhang and Li 2012), imagining being down should prime lower value hence decreasing preferences for status products (Mandel, Petrova, and Cialdini 2006; Sela and Shiv 2009). By contrast, imagining moving downward increased price premium for the high-status product, suggesting that moving downward activates regulatory goals that increase preferences for status products. Furthermore, embodied simulation of dynamic verticality mediated the effect of vertical movements on price premium, as suggested by a bias-corrected 95% confidence interval of the indirect effect did not include zero. By contrast, static embodied simulation did not mediate the effect in the static scenarios.

Studies 2 and 3 provide further evidence, through a moderation-of-process approach (Spencer, Zanna, & Fong, 2005), that dynamic metaphorical transfer effects are mediated by embodied simulation. Because the re-enactment of sensory-motor experiences is modulated by vividness of the imagination (Lorey et al. 2011) and vividness of the imagination intensifies the activation of the brain areas originally developed to process that particular sensory-motor experience (Amedi, Malach, and Pascual-Leone 2005; Cui et al. 2007; Lorey et al. 2011), we predict that metaphorical effects of dynamic verticality are moderated by the vividness with which movements are imagined. This prediction cannot be accounted for by the metaphor-as-priming explanation (Lee and Schwarz 2012).

Study 2 tested whether the vividness of imagination moderates the effect of imagined vertical movement on preference for high-status products. Participants read a text describing a virtual tour of a luxury building that started from the gym and ended at the apartment unit. Movement was manipulated by changing the location of the gym (on the 10th floor in the upward condition and on the 50th floor in the downward condition) while keeping constant the location of the apartment on the on the 30th floor, so that participants imagined moving either 20 floors upward or downward. Vividness was manipulated by changing the concreteness with which vertical movement was described. Intention to rent the apartment was then measured. The results show a significant interaction effect: In the downward condition, vividness increased intentions to rent the luxury apartment, whereas vividness had no effect in the upward condition.

Study 3 tested whether the effect of imagined vertical movement on preference toward status products is moderated by imagery dispositional ability. Participants reported their willingness to pay to rent the apartment after listening to an audio describing the vivid scenarios used in Study 2 along with measures of imagery ability (Marks 1973). A regression analysis revealed a significant interaction effect: In the moving down condition, imagery ability increased willingness to pay for the luxury apartment, whereas, in the moving up condition, imagery ability had no significant effect on willingness to pay.

Altogether, our research advocates for a theoretical framework of metaphorical transfer effects on consumer behavior that incorporates both semantic priming and embodied simulation as independent underlying processes.

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