

An Embodied Cognition Approach to Litter Reduction: The Grounding of Clean in Shininess

Ron Broeders, Daniël Lakens, Cees Midden, & Jaap Ham

Eindhoven University of Technology, Eindhoven, the Netherlands

Introduction

Litter poses a number of costly environmental, social, and aesthetic problems. Given the seriousness of these problems it is not surprising that research has focused on understanding and preventing this behavior. For instance, research by Cialdini and colleagues (1990) demonstrated that litter attracts litter and environments that are clean stay clean. Furthermore, recent reports postulated the idea that littering could be a behavior people often are not aware of. In other words, littering behavior is less intentional and deliberate than once thought. Combining these findings with the notion that information distributed by media-campaigns is not enough to warrant a permanent behavioral change, the current research proposes a somewhat different approach to the problem of littering: embodied cognition.

Embodied cognition

According to embodied cognition the meaning of abstract concepts, such as power, morality, but also cleanliness, is grounded in concrete experiences (Barsalou, 2008; Lakoff & Johnson, 1999). In other words, human thinking about abstract concepts consists of representations built on concrete sensorimotor information. This concrete information is used to structure abstract concepts through metaphorical representations. Take for example the abstract concept of clean. Expressions like “*Cleaning* the silver really makes it *shine*”, and “*Shining* your shoes” are examples in which a reference is made to the way clean objects show an almost mirror-like quality of reflection after they have been cleaned. Apparently, the shiny surface of an object is a metaphor for its cleanliness and reflects the way people think about the abstract concept of clean. According to embodied cognition theory, if metaphor is an important basis for conceptual thought, exposure to the physical cues of the

metaphorical stimulus will activate the grounded concept.

The current research

Three studies are presented suggesting that the abstract concept of clean is grounded in shiny. In Study 1, after being exposed to a Stroop-like task in which synonyms for *clean* and *unclean* were presented with a glossy or dull font style, participants categorized synonyms for clean having a glossy font style faster than synonyms for clean with a dull or unclean synonyms having a glossy font style. Bypassing the concerns of response inference paradigms Study 2 replicated Study 1. Differences in font style (glossy vs. dull) of Chinese characters influenced the likelihood with which they were judged as correct translations of clean and unclean synonyms. In Study 3 we measured the effect of glossy vs. dull tabletops on cleaning behavior demonstrating that participants cleaned more (showed more cleaning behavior, ate longer, and started cleaning earlier) when they were exposed to a shiny environment rather than a dull environment, confirming the expectations that a shiny environment activates cleaning behavior. Taken together, the data seem to suggest that the abstract concept of clean is indeed grounded in perceptual shininess. Regarding the problem of littering this could lead to interesting interventions, for example exposing people to a shiny environment leads to less littering and more binning behavior.

References

- Barsalou, L. W. (2008). Grounded cognition. *Annual Review of Psychology*, 59, 617-645.
- Cialdini, R. B., & Reno, R. R. (1990). A focus theory of normative conduct: Recycling the concept of norms to reduce littering in public places. *Journal of Personality and Social Psychology*, 58, 1015-1026.
- Lakoff, G., & Johnson, M. (1999). *Philosophy in the flesh: The embodied mind and its challenge to western thought*. Chicago: University of Chicago Press.