



Relating action to abstract goals increases physical activity reported a week later



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ARTICLE INFO

Article history:

Received 15 October 2013

Received in revised form

27 March 2014

Accepted 27 March 2014

Available online 5 April 2014

Keywords:

Construal level

Physical activity

Self-regulation

Affect

ABSTRACT

Objective: The primary aim of the present study was to investigate whether construing action abstractly versus concretely increases physical activity over a one-week period.

Design and method: An experimental study was conducted in which participants were asked to commit to engaging in physical activity at least four times in the coming week. After making this commitment, participants were assigned randomly to think about the concrete procedures or the abstract purpose of their actions. Additionally, in an attempt to induce differences in level of goal conflict, participants were assigned randomly to receive a reminder of a different or consistent goal. The main outcome variable of interest was the number of minutes spent on physical activity over the following 7-day period.

Results: Consistent with the hypothesis, participants in the abstract condition reported engaging in significantly more minutes of physical activity than did those in the concrete condition. Level of goal conflict did not significantly impact physical activity. The effect of abstract versus concrete thinking on physical activity also was related to the processing of negative affect.

Conclusion: By providing evidence that construing action abstractly impacts physical activity, the present investigation makes an important addition to research aiming to identify effective means of increasing physical activity.

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People can think about their goals at varying levels of abstraction. For example, an individual desiring to get more physical activity may focus on the specific, concrete procedures of action (e.g., *How do I get more physical activity?*) or on the general, abstract aims of action (e.g., *Why do I want to get more physical activity?*). This difference, that is, focusing on the concrete versus the abstract features of an event, is referred to as a difference in construal level (Trope & Liberman, 2003, 2010). High-level construals facilitate an *abstract mindset*, a state characterized by increased attention to the global, superordinate and central features of an event, including the abstract purpose of a given behavior (Freitas, Gollwitzer, & Trope, 2004; Liberman, Sagristano, & Trope, 2002). Low-level construals facilitate a *concrete mindset*, a state characterized by increased attention for local, subordinate and peripheral features, such as the concrete procedures of carrying out a behavior. Changes in construal level can be elicited through manipulations of psychological distance (Fujita, Henderson, Eng, Trope, & Liberman, 2006; Trope &

Liberman, 2003, 2010) and through procedures that promote a focus on the low-level procedures versus the abstract aims of action (Freitas et al., 2004; Fujita, Trope, Liberman, Levin-Sagi, 2006).

What implications might thinking in an abstract or concrete manner have for goal-directed action? Previous research indicates that relative to a concrete mindset, an abstract mindset increases self-control (Fujita, 2009; Mischel, Shoda, & Rodriguez, 1989). For example, children who are promised two marshmallows if they can resist eating one marshmallow are more successful at delaying their gratification if they think about the marshmallow in abstract terms (e.g., imagining the marshmallows as clouds) than if they focus on the consummatory aspects of the reward (e.g., thinking about how good marshmallows taste; Mischel, Shoda, & Rodriguez, 1989). More direct support for the prediction that an abstract mindset increases self-control comes from research indicating that relative to a concrete mindset, an abstract mindset increases the amount of time spent holding a hand grip (Fujita et al., 2006), behavioral intentions to exert self-control (Fujita et al., 2006), preference for an apple over a candy bar (Fujita & Han, 2009), and influences prospective decisions about future temptations (Fujita & Roberts, 2010).

In regulating one's self-control, there is an inherent trade-off between abstract, long-term desires and immediate, concrete

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experiences (Mischel et al., 1989; Trope & Fishbach, 2000). To attain the long-term benefits of engaging in physical activity, such as an increase in physical fitness, one must undergo immediate and potentially aversive experiences, such as sore muscles. Relatedly, individuals in an abstract mindset, relative to those in a concrete mindset, show increased sensitivity to long-term aims rather than immediate discomforts (Freitas et al., 2004). For example, in one study, participants in an abstract (relative to a concrete) mindset indicated that it would be more worthwhile to receive accurate negative feedback, which is potentially aversive but facilitates greater long-term benefits, than positive feedback (Freitas et al., 2004).

Adopting an abstract mindset appears to change how people think about their present actions. Can such a strategy be used to affect behaviors that extend outside of the lab (e.g., physical activity)? Despite theoretical support for such a prediction, no research has addressed whether changes in construal level can be used as a strategy to promote health behavior change (for review, see Mann, de Ridder, & Fujita, 2013). More broadly, little research has addressed the longevity of changes in mental construal, given that past research has focused primarily on lab-based effects. To address this gap in the literature, the present study tests whether construal level impacts time spent on physical activity over one week. We hypothesize that an abstract mindset should increase physical activity more so than a concrete mindset. As explained, below, we also investigated two potential moderators of the relation between construal level and physical activity: (1) perceived conflict between an exercise goal and other life goals and (2) affect.

Goal conflict

Perceiving conflict between an exercise goal and other life goals is associated with various negative outcomes, including a decrease in physical activity (Bailis, Thacher, Aird, & Lipschitz, 2011; Li & Chan, 2008) and in trait and state well-being (Riediger & Freund, 2004). We propose that an abstract (relative to a concrete) mindset may reduce perceptions of conflict between one's goals. Support for this prediction comes from studies indicating that an abstract (relative to concrete) mindset leads individuals to see separate goals as more closely related to one another (Clark & Freitas, 2013; Freitas, Clark, Kim, & Levy, 2009). However, it remains unclear whether the effect of construal level on perceived goal correspondence impacts behavior outside of the laboratory. That is, will the increase in perceived goal correspondence afforded by an abstract mindset lead an individual to engage in more physical activity?

To address this possibility, we attempted to manipulate goal conflict, such that participants were reminded of a conflicting academic goal or of a consistent physical activity goal. Following research indicating that goal conflict undermines goal progress (Bailis et al., 2011), we expected that participants reminded of a conflicting goal would perceive greater conflict between their goals and would engage in less physical activity than would those reminded of a consistent goal. We further predicted that the effect of conflict would be moderated by construal level, with participants in the abstract and goal conflict condition perceiving less goal conflict and engaging in more physical activity than those in the concrete and goal conflict condition.

Affect

Affect impacts people's decision to exercise (Ajzen & Driver, 1992; Kwan & Bryan, 2010a). Several studies suggest that positive affective responses to exercise are associated with higher levels of exercise behavior and more stable exercise intentions (Kiviniemi, Voss-Humke, & Seifert, 2007; Kwan & Bryan, 2010a, 2010b).

Positive affective responses to exercise significantly moderate the relation between exercise intentions and behavior, with positive affective responses increasing the likelihood that intentions lead to behavior; conversely, negative affect may negatively influence exercise behavior by eliciting less favorable attitudes towards exercise relative to positive or neutral affect (Allen Catellier & Yang, 2013). Together, such findings suggest that negative affect hinders physical activity more so than positive affect.

Accordingly, the present study also explored whether differences in affect would help to clarify any effect of construal level on physical activity. There is some evidence that an abstract (relative to a concrete) mindset increases attention to affective information (Critcher & Ferguson, 2011); however, it remains unclear whether an abstract mindset differentially influences attention to positive versus negative affect. Such a distinction could be significant, as increased attention to positive affect may increase physical activity, whereas increased attention to negative affect may decrease physical activity. With past research supporting multiple possible predictions, we did not generate an *a priori* hypothesis about how affect combines with construal level to impact physical activity. Instead, measures of affect were included to explore and clarify the nature of the relation between construal, positive versus negative affect and physical activity.

The present study

In the present study, participants committed to the goal of engaging in 30 minutes of physical activity on each of four separate days over a 7-day period. After making this commitment, participants construed action in either concrete or abstract terms through a two-part construal-level manipulation task. Drawing from the approach used by Bailis et al. (2011), we then manipulated goal conflict by reminding participants of a different or consistent goal. A 7-day follow-up period was selected in order to be consistent with the methods used by Bailis et al. (2011). Furthermore, given that little research has tested the effect of construal level on behaviors outside of the lab, we reasoned that testing for effects of construal level over one week would be an appropriately conservative approach. Our primary hypothesis was that participants assigned to the abstract condition would report engaging in more physical activity than would participants assigned to the concrete condition.

Method

Design

Participants were assigned randomly to one of four conditions in a 2(Construal Level: Abstract or Concrete) \times 2(Goal Conflict: Conflict or No Conflict) between-participants design.

The main outcome variable was physical activity measured over 7 days. Secondary outcomes included perceived level of goal conflict, goal commitment, and goal challenge.

Participants

Seventy-six undergraduate students (30 male), aged 18–35 ($M = 19.35$),² participated in exchange for course credit or \$15. Of these 76, 46 completed all of the follow-up measures (response rate = 60.52%). Follow up data were not collected from 9 participants due to complications arising as a result of Hurricane Sandy in November 2012. Two individuals completed the follow-up

² Twelve participants did not report their age.

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