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The Self's Symbolic Role in Implicit Approach/Avoidance: Movement Time Evidence

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Abstract

Theories of self-regulation emphasize the special role that the symbolic self may play in approach and avoidance movements, but experimental evidence is lacking. In two experiments (total $N = 157$), participants moved either a self-relevant (e.g., “me”) or non-self (e.g., “not me”) agent to one of two locations, one occupied by a positive word and the other occupied by a negative word. In both experiments, movement agent interacted with destination valence such that it was only the symbolic self that moved more quickly to positive than negative locations. These results establish a role for the symbolic self in approach/avoidance that had been questioned, thereby supporting both classic and contemporary self-related theories of approach and avoidance.

Keywords

motivation; affect; self; approach; avoidance; movement

Versions of the hedonic principle proliferate throughout psychology: People approach what is positive and avoid what is negative (Elliot, 2006). In human beings, the vast majority of these strivings are likely to work through, and in relation to, the symbolic self (Sedikides & Skowronski, 1997). It is the self that seeks to approach success and avoid failure (Elliot, 2006) and it is the self that is evaluated with respect to progress in meeting these objectives (Carver & Scheier, 1998). There is definitive evidence, for example, that the hedonic principle is applied to the self in a manner that it is not applied to others (Alicke & Sedikides, 2009). These ideas suggest that the symbolic self should be special from an approach/avoidance perspective. In the introduction, we locate this suggestion in Lewin's (1936) seminal theory of the spatial self, examine relevant experimental evidence, and finally propose two studies aimed at establishing an important role for the symbolic self in approach/avoidance movement dynamics.

Lewin's Theory and Relevant Experimental Evidence

Lewin (1936) conceptualized the self in quasi-spatial terms. The self was seen to exist in a distinct location within a larger psychological field composed of barriers, neutral regions, and those of hedonic significance. Appetitive stimuli in the environment were thought to attract the self in spatial terms (approach) and aversive stimuli were thought to repulse the self in spatial terms (avoidance). He referred to the latter forces as vectors within the psychological field. Moreover, he suggested that these forces should be evident in the direction and intensity of a person's movements: Moving toward positive and away from negative object locations should be faster than moving toward negative and away from positive object locations.

Lewin's (1936) spatial-dynamic view of the self is intuitive and contributed greatly to modern theories of approach and avoidance motivation (Elliot, 2006). Approach motivation is viewed in terms of reducing the space between the self and a desired outcome or entity, whereas avoidance motivation is viewed in terms of increasing the space between the self and an undesired outcome or entity (Carver, Sutton, & Scheier, 2000). As with Lewin's (1936) original theory, though, such spatial-dynamic considerations have been largely of a metaphoric nature. For example, it is not clear how approaching an ideal self, a very abstract entity (Higgins, 1987), would map onto spatial movement processes (Carver et al., 2000).

Experimental paradigms are important in this context in that they can directly model the movement-related tendencies proposed by Lewin (1936). Chen and Bargh (1999) conducted some of the early important work in this area by asking people to move a lever forward or backward in relation to positive and negative words. It was found that participants were faster to initiate movements in a forward direction when the stimulus was a negative one (as if pushing the stimulus away from the self), whereas they were faster to initiate movements in a backward direction when the stimulus was a positive one (as if pulling the stimulus toward the self). Although self-representations and processes concerning the self could have been involved, Chen and Bargh (1999) instead interpreted their findings in terms of fixed action patterns of a relatively reflex-like nature (following Zajonc & Markus, 1985).

Markman and Brendl (2005) sought to challenge the idea that performance in approach/avoidance movement paradigms merely reflects fixed action patterns or reflexes (also see Bamford & Ward, 2008). In their task, a participant's name (e.g., Scott) was presented at center screen and participants were instructed to use a lever to move positive (negative) words toward (away from) center screen or were given the opposite set of instructions. Movements were faster under the positive/toward and negative/away mappings than vice versa, regardless of whether motions required forward or backward lever displacements. The authors rightly concluded that their results cannot be interpreted in terms of fixed action patterns (e.g., inevitable pushing movements with negative stimuli: Chen & Bargh, 1999).

On the other hand, the self-relevance of the Markman and Brendl (2005) findings has been disputed in subsequent investigations (Proctor & Zhang, 2010; van Dantzig, Zeelenberg, & Pecher, 2009). In Experiment 3 of van Dantzig et al. (2009), for example, a rectangle was presented at center screen. Otherwise, the spatial layout, procedures, and movements made

were similar to those of Markman and Brendl (2005). Despite the fact that a rectangle is a neutral stimulus, positive/toward and negative/away movements were faster than positive/away and negative/toward movements. van Dantzig et al. (2009) concluded that the results of Markman and Brendl (2005) do not seem to be self-relevant in nature.

Whether the symbolic self plays a role in approach and avoidance movements seems an important question. Somewhat surprisingly, though, none of the relevant studies (Markman & Brendl, 2005; Proctor & Zhang, 2010; van Dantzig et al., 2009) have actually compared movement times for a self-relevant object versus a control object. Furthermore, the studies have asked people to move positive and negative words rather than a self-relevant object despite the fact that it is typically the self that moves through its hedonic environment rather than vice versa (Bandura, 2001; Carver et al., 2000). Theoretical considerations and ambiguities in the literature led us to develop a novel experimental paradigm, one expected to provide positive evidence for a role for the symbolic self in implicit approach versus avoidance.

Overview of Experiments

We sought to model the symbolic (i.e., representational) self's movement through hedonic space. In doing so, we created a simulated environment involving two variables: the self-relevance of the movement stimulus (e.g., "me" versus "not me") and the prototypical valence ("good" versus "bad") of the location moved toward. The analyses focus on movement times, which are thought to be particularly reflective of motivational processes (Boyd, Robinson, & Fetterman, 2011). In both experiments, we hypothesized an interaction between movement agent (e.g., "me" versus "not me") and destination valence. On trials involving the symbolic self, faster movements toward the positive than negative location were expected. On trials not involving the symbolic self, however, no such differential approach/avoidance movement dynamics were expected. Results of this interactive type would support a role for the symbolic self in approach/avoidance movements, one hypothesized by Markman and Brendl (2005), but later questioned (e.g., van Dantzig et al., 2009).

Experiment 1

Method

Participants—Eighty-two (45 female) North Dakota State University undergraduates seeking credit for their psychology classes participated. The majority of the participants were Caucasian in race (95%) and their mean age was 19.19 ($SD = 1.62$). The protocol involved participant groups of 6 or less and the experiment was completed on personal computers in private cubicles.

Implicit Approach/Avoidance Tendencies—Detailed instructions for the implicit approach/avoidance task were presented before the trials began. Briefly, participants were told that the task required them to move a mouse cursor to the box that an arrow pointed to as quickly and accurately as possible. Following instructions, a practice block of 60 trials was administered in which participants moved a + sign, which was also the mouse cursor, to

a left box in the case of a left-pointing arrow or a right box in the case of a right-pointing arrow. This short practice block was done to provide some initial familiarity with the task environment.

Subsequently, the assessment block occurred. A trial started with the presentation of two white-outlined boxes, each of which was approximately 1.3 centimeters tall and 5 centimeters wide. The boxes were centered vertically, but offset horizontally, such that there was a 13 centimeter gap between them. In one box, the word “GOOD” was present; in the other, the word “BAD” was present. These words were presented in a green font for the sake of color contrast. Participants were not instructed to categorize location valence words, but we nevertheless expected them to be encoded to some extent (De Houwer, Teige-Mocigemba, Spruyt, & Moors, 2009). Valences were assigned to locations at random.

After a 1000 ms delay, the self-relevance manipulation occurred. At center screen, “me” or “not me” text was presented. To reinforce this manipulation of self-relevance, participants spoke “me” or “not me” into a voicekey, after which the relevant center-screen agent became the mouse cursor. Following voicekey registration, a white arrow was presented below the agent to be moved, either pointing to the left or right box destination, direction randomly determined.

At this point, participants were to move the trial-specific agent to the arrow-directed box and make a left mouse click as quickly as possible within it. If participants moved the cursor in the wrong direction, they received a one second error message telling them that they chose the “Wrong Box” (with the error rate reported below). Following the registration of a response, the next trial began after a 400 ms blank delay. There were 100 trials in which the agent (me versus not me) and destination valence (good versus bad) factors were fully crossed. Figure 1 provides a brief schematic of the sequence of events defining each trial.

To isolate movement times – the dependent measure of interest – the following procedures were used. Movement onset was defined as the time that elapsed from the presentation of the directional arrow to the point in time that the mouse cursor had moved 10 pixels from the center of the screen. Movement time was defined in terms of the time from movement onset to the left mouse-click in the relevant box. Pilot testing confirmed the sensitivity of such measures as well as their robustness to potential noise artifacts (e.g., slight hand tremor, which was strikingly absent from visual records of mouse movements).

Results

Data Cleaning and Preparation—As might be expected, participants moved the mouse in the arrow-indicated direction at a high level of accuracy ($M = 99.78\%$; $SD = 0.96$). We dropped the relatively few trials in which this was not the case. Movement times were positively skewed and we therefore performed several routine procedures to normalize this distribution. Raw movement times were first log-transformed to reduce positive skew (Ratcliff, 1993). Subsequently, times more than 2.5 SD s from the mean were replaced with 2.5 SD upper and lower scores, thus lessening outlier impact while still including all accurate trials (Robinson, 2007). Analyses involve this transformed metric, but means are reported in terms of millisecond values for ease of interpretation.

Movement Times—Following Lewin's (1936) topographic analysis, we predicted that movement times would be faster when the symbolic self was moved to a positive than negative location. This valence effect was not posited for the non-self agent. Accordingly, we predicted an Agent by Destination Valence interaction. Such predictions were examined in a 2×2 repeated-measures ANOVA with agent (me versus not me) crossed with destination valence (good versus bad).

The main effect for Agent was significant, $F(1, 81) = 5.69, p = .019$, partial eta square (PES) = .07. Movement times were faster when the "me" ($M = 447$ ms; $SD = 72$) rather than "not me" ($M = 457$ ms; $SD = 81$) agent was moved. This somewhat interesting main effect may reflect the fact that it is the self that is typically the agent of motion (Bandura, 2001). There was also a marginal main effect for Destination Valence, $F(1, 81) = 3.55, p = .063$, $PES = .04$. Movement times were slightly faster toward the positive ($M = 448$ ms; $SD = 72$) than the negative ($M = 456$ ms; $SD = 80$) location. This might represent a general sort of fixed action pattern (Chen & Bargh, 1999), but it did not, as there was also an Agent by Destination Valence interaction, $F(1, 81) = 6.21, p = .015$, $PES = .07$. As shown in Figure 2, movement times exhibited very different patterns when they involved the self-agent ("me") versus not.¹

Follow-up analyses were conducted with respect to each agent separately. When the agent was self-relevant in nature, movement times were faster when directed toward positive ($M = 438$ ms; $SD = 69$) than negative ($M = 455$ ms; $SD = 80$) locations, $F(1, 81) = 9.28, p = .003$, $PES = .10$. On the other hand, when the movement agent was not self-relevant in nature, movements toward negative ($M = 457$ ms; $SD = 86$) locations were equally as fast as movements toward positive ($M = 457$ ms; $SD = 82$) locations, $F(1, 81) = 0.04, p = .834$, $PES = .00$.

Our theoretical framework emphasizes the effects of valence for a given agent rather than the effects of agent for a given (destination) valence. In addition, there was a main effect for agent that would work against a slower movement time for the "me"/negative condition than the "not me"/negative condition. Nonetheless, it may be of interest to examine the effects of agent for each destination valence separately. The "me" object was moved faster toward positive locations than the "not me" object, $F(1, 81) = 11.24, p = .001$, $PES = .12$. On the other hand, there was no difference in movement times when a negative location was involved, $F(1, 81) = 0.01, p = .911$, $PES = .00$. Overall, then, one could emphasize the particularly fast movement speed for the one condition involving the self moving to a positive location.²

¹For theoretical reasons and because movement onset times could reflect numerous factors such as momentary alertness or preparedness, the hypotheses pertained to movement times rather than onset times. Indeed, when examining movement onset times, potential interactions between agent and destination valence were not significant in either Experiment 1, $p = .119$, or Experiment 2, $p = .818$. The results are therefore consistent with our emphasis on movement times as reflective of motivational processes in the task.

²For parsimony's sake, we omit a more or less direct replication of the interactive findings of Experiment 1 in a different sample of 83 participants. In that sample, too, a significant agent by destination valence interaction was observed for movement times, $p = .001$, and only the self-agent ("me") was moved faster to positive ($M = 553$ ms; $SD = 52$) than negative ($M = 589$ ms; $SD = 50$) locations, $p = .000$.

Discussion

The results supported two premises of Lewin's (1936) topographical model of motivation. Lewin (1936) had emphasized movements in his theory and, in fact, movements were particularly sensitive to approach/avoidance processes in our paradigm (see footnote 1). Of more importance, Lewin (1936) suggested that it is the *self* that is motivated to approach positive stimuli and avoid negative stimuli. In support of this point, we found that only the self-agent ("me") exhibited favoritism for positive relative to negative locations.

Experiment 2

The self/not self distinction is fundamental to theories of motivation (e.g., Panksepp, 1998) and Experiment 1 operationalized this distinction straightforwardly. Still, the not-self entity was a bit abstract and it was also defined by a negation – specifically, the word "not". According to some models, negated phrases are more cognitively demanding than non-negated ones (e.g., Mayo, Schul, & Burnstein, 2004). Although factors of this type are incapable of explaining the interaction that occurred, it would still be useful to conduct a second experiment in which the control agent is easier to conceptualize. We did not want the control agent to be a social one such as the word "you", though, in that an object of this type would introduce its own set of social representations and implicit motivational processes. Accordingly, the Experiment 2 control condition consisted of the word "chair" – a common, concrete object, but one that is neutral and does not have its own motivations. In the context of this comparison, too, we hypothesized an agent by destination valence interaction. A necessary pre-condition for the interaction is that people encode the valence of the potential destination locations and a recognition memory test was added to encourage such encoding processes.

Method

Participants—The sample consisted of 75 undergraduates (40 female; 91% Caucasian) with a mean age of 19.76 ($SD = 4.11$) who were seeking course credit at North Dakota State University. General procedures for the second experiment were identical to those of the first. The implicit approach/avoidance paradigm was altered, though, in a manner described below.

Implicit Approach/Avoidance Tendencies—There were 80 experimental trials. At the beginning of each trial, the words "GOOD" versus "BAD" were presented within white-outlined boxes to the left and right of the computer screen, exactly as in Experiment 1. In Experiment 2, though, we sought to render it more likely that the valence of the locations had been encoded. Accordingly, we told participants that a memory test for these locations would be administered at the end of each trial. There was then a 1000 ms delay before the agent to be moved was presented.

After the 1000 ms delay, the word "me" or "chair" appeared at center screen. Participants had to speak the word into a voicekey microphone. After they had done so, there was a 500 ms delay prior to the appearance of an arrow that instructed them which direction to move their computer mouse, either toward the left or right box. Movements in the wrong direction

were penalized by a 2000 ms error message and these trials were deleted from further scoring. The vast majority of movements were made in the correct direction ($M = 99.78\%$; $SD = 1.01$).

A recognition memory test was administered at the end of each trial. In specific terms, we presented the word “GOOD” or “BAD” at center screen and asked participants to indicate whether the word had been presented toward the left or right side of the computer screen previously, responses made by clicking left or right mouse buttons. Because recognition memory performance was reasonably high ($M = 91.07\%$; $SD = 24.92$), and given the nature of the paradigm (Robinson, 2007), trials involving inaccurate memory performance were deleted as being non-representative of the processes of interest (Ratcliff, 1993).

Subsequently, movement times were quantified as in Study 1 and then averaged for cells of the 2×2 design.³

Results and Discussion

A 2 (Agent: me versus chair) $\times$ 2 (Destination Valence: good versus bad) repeated-measures ANOVA was performed. There was no main effect for Agent, $F(1, 74) = 1.14$, $p = .290$, $PES = .02$. Thus, the delayed movement times for the “not me” agent in Experiment 1 may have in part reflected difficulties in conceptualizing this negated entity. There was, however, a main effect for Destination Valence, $F(1, 74) = 5.32$, $p = .024$, $PES = .07$. Consistent with other sources of data (e.g., De Houwer, Crombez, Baeyens, & Hermans, 2001), movement times were faster when moving toward a positive ($M = 707$ ms; $SD = 158$) than negative ($M = 728$ ms; $SD = 168$) stimulus location. Movements were generally slower in Experiment 2 and this can be attributed to the extra processing load created by the recognition memory test.

Of more importance, there was again a significant Agent by Destination Valence interaction, $F(1, 74) = 5.82$, $p = .018$, $PES = .073$. The interaction is graphed in Figure 3 and it appears parallel to the pattern of results for the first experiment. Follow-up comparisons sought to examine whether this was the case. As in Experiment 1, the self-object (“me”) was moved faster when a positive ($M = 693$ ms; $SD = 153$) relative to negative ($M = 731$ ms; $SD = 175$) location was involved, $F(1, 74) = 13.24$, $p = .001$, $PES = .15$. On the other hand, the control object (“chair”) was moved equally fast to positive ($M = 721$ ms; $SD = 171$) and negative ($M = 725$ ms; $SD = 178$) locations, $F(1, 74) = 0.04$, $p = .852$, $PES = .00$. Additionally, an agent main effect was found when moving toward positive, $F(1, 74) = 5.60$, $p = .021$, $PES = .070$, but not negative, $F(1, 74) = 0.34$, $p = .560$, $PES = .00$, locations. Accordingly, the results of Experiment 2 nicely replicate those of Experiment 1 and do so in the context of a control entity that is concrete and easy to mentally represent. As in the first experiment, implicit approach/avoidance processes appear to favor the self in particular terms.

³When including trials involving inaccurate recognition memory responses, the results were parallel to those reported. For example, the agent by destination valence interaction was significant, $p = .031$, there was a destination valence main effect for the self-object (“me”), $p = .003$, and no destination valence main effect for the control object (“chair”), $p = .964$. Condition means were substantially the same as those reported in the text.

General Discussion

At a certain point in evolutionary history, we developed the capacity to represent the self symbolically, which in turn resulted in major changes in the manner in which motivation and behavior worked (Sedikides & Skowronski, 1997). Behavior became much less reflexive and the self became a key guide to our motivational strivings (Carver & Scheier, 1998). Indeed, consider that many of the most prominent motivation-relevant constructs of our field – such as self-affirmation, self-enhancement, self-esteem, self-regulation, and self-verification – all include the word “self”. That this is true suggests some degree of consensus that it is the self that we are particularly interested in promoting, maintaining, and protecting (Alicke & Sedikides, 2009).

Somewhat surprisingly, this self-related perspective of approach and avoidance (Elliot, 2006) had not been directly examined in implicit experimental terms. To determine whether the symbolic self matters in this context or does not, we systematically manipulated whether a self-relevant or non-self entity was to be moved to a location occupied by a positive or negative stimulus. Clear and consistent evidence was found for the idea that speedier movements toward positive than negative locations were particular to the symbolic self. By contrast, there was no evidence that a non-self agent, conceptualized as such, is favored in the same manner. In the General Discussion, we locate our findings in the experimental literature on approach/avoidance tasks, consider methodological points, and then broaden the analysis a bit.

Approach and Avoidance in Experimental Tasks

Chen and Bargh (1999) posited relatively fixed relations between affective stimuli and muscular or motoric responses – the so-called “hard interface” (Zajonc & Markus, 1985). Our results join some others in showing that, perhaps with the exception of very low-level reflexes, there is a more strategic and flexible relation between affect and movement. Seibt, Neumann, Nussinson, and Strack (2008), for example, were able to reverse the pattern observed by Chen and Bargh (1999) in a condition in which participants were asked to imagine backward movements as pulling one’s hand away from a word and forward movements as approaching a word. Our results add the idea that it may only be when movements are represented in terms of the self that such movement-related biases are likely to be found.

Although Markman and Brendl (2005) also suggested a role for the symbolic self in approach/avoidance movements, they lacked a non-self control condition and the paradigm was subsequently shown to be problematic (e.g., Proctor & Zhang, 2010). Part of the problem is likely that Markman and Brendl (2005) chose to have participants move positive or negative words rather than the self-relevant stimulus (in their case, one’s own name). This procedural choice seems odd because people are more typically agents of motion with respect to valenced objects in the environment (Bandura, 2001). It was this perspective of approach/avoidance that we sought to model and, at least in this active agent context, the symbolic self was special in terms of its favoring of positive over negative locations. We call for conceptual replication in other approach/avoidance tasks.

Methodological Features and Questions

We placed the words “good” and “bad” in regions of space to be moved toward. These are somewhat abstract concepts, but theories of affect (e.g., Osgood, Suci, & Tannenbaum, 1957; Zajonc, 1998) emphasize them as a common currency for desirable versus undesirable events and outcomes. Moreover, it seemed best not to present specific words like “food”, “sex”, or “insult” as people exhibit complicated reactions to such stimuli, even in implicit approach/avoidance paradigms (Fishbach & Shah, 2006).

Although approach and avoidance movements should vary by motivational state (McClelland, 1987), it is not clear what sort of motivational state manipulation would be relevant to the present paradigms. For example, rewarding fast movements toward positive locations would render *all* trials self-relevant, thus likely eliminating a key variable (i.e., agent) from our conceptual analysis and design. Nonetheless, it is possible that the present interactive pattern would be accentuated in the context of ego threats, a possibility that follows from a social judgment literature on the self (Alicke & Sedikides, 2009).

Regardless, there are several considerations in favor of the motivated nature of the observed findings. Our instantiation of destination valence closely follows from the idea that good and bad consequences may be the primary motivators of behavior (Zajonc, 1998). Approach/avoidance processes were particular to the self, a key motivational structure (Carver & Scheier, 1998). Finally, our interactive findings occurred for movement times and movement times are thought to be particularly motivated in nature (Boyd et al., 2011).

Further Social Implications and Extensions

Although people are motivated to approach positive outcomes and avoid negative ones, the strength of these motivations may not be equal. For the vast majority of people, approach motivation is stronger than avoidance motivation (Elliot & Thrash, 2010) and it also tends to dominate in most situational contexts (Cacioppo, Gardner, & Berntson, 1997). Along these lines, Alicke and Sedikides (2009) suggest that enhancing the self is a default strategy whereas protecting the self operates under the rarer circumstances in which the self feels significantly threatened. It is perhaps for these reasons that me/not me differences were more robust on trials involving positive locations than on trials involving negative locations.

The results indicate that the symbolic self is special relative to neutral control objects (e.g., “chair”), but the identified processes should not be entirely unique to the symbolic self. In particular, Aron’s (e.g., Aron, Mashek, & Aron, 2004) cognitive model of relationship representations might predict a similar approach/avoidance bias for a close other agent such as “a friend” or “my partner”. By this logic, also, the paradigm could be altered to investigate variations in the extent to which a relationship partner is “included in the self” (Aron et al., 2004) in implicit, process-based terms. To the extent that this is the case, one would expect similar approach/avoidance movement time differences for self- and other-objects.

As a final point, our results emphasize the value of a spatial analysis of the self. Whatever else the self is, it is also manifest in a body that must move through space to achieve its aims (Bandura, 2001). By comparing movements of the symbolic self to control objects, and by

creating a simple spatial “environment”, we have shown that these motivated movements through space can be modeled and understood. Paradigms of the present type can therefore add considerable concreteness to more metaphorical treatments of social approach and avoidance.

Conclusion

Lewin (1936) suggested that the self is a special entity in relation to approach and avoidance processes. The present results confirm this important suggestion in that it was only the symbolic self that favored positive to negative locations. The self’s role in implicit approach/avoidance should be given a new look, particularly given the self’s central posited role in motivation and self-regulation (Carver & Scheier, 1998).

References

- Alicke MD, Sedikides C. Self-enhancement and self-protection: What they are and what they do. *European Review of Social Psychology*. 2009; 20:1–48.
- Aron, AP.; Mashek, DJ.; Aron, EN. Closeness as including other in the self. In: Mashek, DJ.; Aron, AP., editors. *Handbook of closeness and intimacy*. Mahwah, NJ: Lawrence Erlbaum Associates; 2004. p. 27–41.
- Bamford S, Ward R. Predispositions to approach and avoid are contextually sensitive and goal dependent. *Emotion*. 2008; 8:174–183. [PubMed: 18410191]
- Bandura A. Social cognitive theory: An agentic perspective. *Annual Review of Psychology*. 2001; 52:1–26.
- Boyd RL, Robinson MD, Fetterman AK. Miller (1944) revisited: Movement times in relation to approach and avoidance conflicts. *Journal of Experimental Social Psychology*. 2011; 47:1192–1197.
- Cacioppo JT, Gardner WL, Berntson GG. Beyond bipolar conceptualizations and measures: The case of attitudes and evaluative space. *Personality and Social Psychology Review*. 1997; 1:3–25. [PubMed: 15647126]
- Carver, CS.; Scheier, MF. *On the self-regulation of behavior*. New York: Cambridge University Press; 1998.
- Carver CS, Sutton SK, Scheier MF. Action, emotion, and personality: Emerging conceptual integration. *Personality and Social Psychology Bulletin*. 2000; 26:741–751.
- Chen M, Bargh JA. Consequences of automatic evaluation: Immediate behavioral predispositions to approach or avoid the stimulus. *Personality and Social Psychology Bulletin*. 1999; 25:215–224.
- De Houwer J, Crombez G, Baeyens F, Hermans D. On the generality of the affective Simon effect. *Cognition and Emotion*. 2001; 15:189–206.
- De Houwer J, Teige-Mocigemba S, Spruyt A, Moors A. Implicit measures: A normative analysis and review. *Psychological Bulletin*. 2009; 135:347–368. [PubMed: 19379018]
- Elliot AJ. The hierarchical model of approach-avoidance motivation. *Motivation and Emotion*. 2006; 30:111–116.
- Elliot AJ, Thrash TM. Approach and avoidance temperament as basic dimensions of personality. *Journal of Personality*. 2010; 78:865–906. [PubMed: 20573129]
- Fishbach A, Shah JY. Self-control in action: Implicit dispositions toward goals and away from temptations. *Journal of Personality and Social Psychology*. 2006; 90:820–832. [PubMed: 16737375]
- Higgins ET. Self-discrepancy: A theory relating self and affect. *Psychological Review*. 1987; 94:319–340. [PubMed: 3615707]
- Lewin, K. *Principles of topological psychology*. New York: McGraw-Hill; 1936.
- Markman AB, Brendl CM. Constraining theories of embodied cognition. *Psychological Science*. 2005; 16:6–10. [PubMed: 15660844]

- Mayo R, Schul Y, Burnstein E. 'I am not guilty' vs 'I am innocent': Successful negation may depend on the schema used for its encoding. *Journal of Experimental Social Psychology*. 2004; 40:433–449.
- McClelland, DC. *Human motivation*. New York: Cambridge University Press; 1987.
- Osgood, CE.; Suci, GJ.; Tannenbaum, PH. *The measurement of meaning*. Champaign, IL: University of Illinois Press; 1957.
- Panksepp, J. *Affective neuroscience: The foundations of human and animal emotions*. New York: Oxford University Press; 1998.
- Proctor RW, Zhang Y. 'Mother nature doesn't have a bullet with your name on it': Coding with reference to one's name or object location? *Journal of Experimental Social Psychology*. 2010; 46:336–343.
- Ratcliff R. Methods for dealing with reaction time outliers. *Psychological Bulletin*. 1993; 114:510–532. [PubMed: 8272468]
- Robinson, MD. Lives lived in milliseconds: Using cognitive methods in personality research. In: Robins, RW.; Fraley, RC.; Krueger, R., editors. *Handbook of research methods in personality psychology*. New York: Guilford Press; 2007. p. 345–359.
- Sedikides C, Skowronski JJ. The symbolic self in evolutionary context. *Personality and Social Psychology Review*. 1997; 1:80–102. [PubMed: 15647130]
- Seibt B, Neumann R, Nussinson R, Strack F. Movement direction or change in distance? Self- and object-related approach-avoidance motions. *Journal of Experimental Social Psychology*. 2008; 44:713–720.
- van Dantzig S, Zeelenberg R, Pecher D. Unconstraining theories of embodied cognition. *Journal of Experimental Social Psychology*. 2009; 45:345–351.
- Zajonc, RB. Emotions. In: Gilbert, DT.; Fiske, ST.; Lindzey, G., editors. *The handbook of social psychology*. New York: McGraw-Hill; 1998. p. 591–632.
- Zajonc, R.; Markus, H. Affect and cognition: The hard interface. In: Izard, CE.; Kagan, J.; Zajonc, RB., editors. *Emotions, cognition, and behavior*. New York: Cambridge University Press; 1985. p. 73–102.

Figure 1.
Graphical Display of Trial Sequence, Experiment 1

Figure 2.
Movement Times as a Function of Agent and Destination Valence, Experiment 1

Figure 3.
Movement Times as a Function of Agent and Destination Valence, Experiment 2