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Journal of Experimental Social Psychology xxx (2007) xxx–xxx

Journal of Experimental Social Psychology

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Movement direction or change in distance? Self- and object-related approach–avoidance motions ☆

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Received 9 January 2007

Abstract

Based on the conceptualization of approach as a decrease in distance and avoidance as an increase in distance, we predicted that stimuli with positive valence facilitate behavior for either approaching the stimulus (object as reference point) or for bringing the stimulus closer (self as reference point) and that stimuli with negative valence facilitate behavior for withdrawing from the stimulus or for pushing the stimulus away. In Study 1, we found that motions to and from a computer screen where positive and negative words were presented lead to compatibility effects indicative of an object-related frame of reference. In Study 2, we replicated this finding using social stimuli with different evaluative associations (young vs. old persons). Finally, we present evidence that self vs. object reference points can be induced through instruction and thus lead to opposite compatibility effects even when participants make the same objective motion (Study 3).

Keywords: Approach and avoidance behavior; Prejudice; Implicit measures; Compatibility effects

Approaching positive objects and avoiding negative ones is a central requirement in motivation (Lewin, 1935). But how is approach or withdrawal accomplished? What concrete behaviors fall under these categories? One can approach a chocolate by reaching out to it or by moving it to one's mouth. And one can withdraw from a spider by leaving the room or by throwing it out of the window. The central assumption of the present paper is that approach and avoidance can be construed *in a flexible manner* either with reference to the self or with reference to the object. When the self is the point of reference, the self is construed as relatively fixed and the distance of the object from the self varies. Moving the object to the self is approach and moving the object away from the self is avoidance. In contrast, when the object is the point of reference, the object is construed as relatively fixed and the self varies its distance from the object by moving toward it (approach) or away from it (avoidance). Hence, whether a movement is approach or avoidance depends on the active reference point, and, ultimately, on the subjective *outcome* of the motion: approach motions result in a *decrease in distance* between oneself and the object whereas avoidance motions result in an *increase in that distance* (Strack & Deutsch, 2004). In the present paper we argue that the active reference point depends on the stimulus configuration and on the interpretative frame of the individual. Consequently, *the same motion* can be represented as approach or avoidance depending on a construal of the currently active frame of reference.

☆ This research was supported by a grant from the Deutsche Forschungsgemeinschaft. We thank Roland Deutsch, Thomas Dunlap, and Michael Häfner for valuable comments on earlier versions of this manuscript.
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0022-1031/$ - see front matter
doi:10.1016/j.jesp.2007.04.013

That approach or avoidance motions are not directly linked to specific muscles but hinge on a construal process was recently shown by Markman and Brendl (2005). They varied the representation of the self in space by presenting the name of the participant in the middle of a corridor displayed on the computer screen and having participants move presented words toward the name or away from it. When the words were presented further away than the name in the corridor the symbolic representation of the self and the actual position of the body had the same relation to the objects whereas when the words were presented nearer than the name moving a word toward the symbolic self was moving it away from the actual self and vice versa. Markman and Brendl found that participants were faster at moving positive words towards their name (i.e., their representation of the self) and negative words away from it regardless of whether this response necessitated an arm extension or flexion. While showing the independence of approach/avoidance from arm flexion/extension, this study still allows for the interpretation that every approach or avoidance motion has a default reference point, in this case the virtual self on the screen. According to our theorizing, however, the active reference point of a movement can be either implied by the stimulus configuration (see Studies 1 and 2) or flexibly construed when the actual stimulus configuration is somewhat ambiguous (Study 3). Accordingly, response compatibility effects in approach/avoidance tasks should depend on (1) the setup of the task to be executed and (2) the interpretation of the task by participants which should then be changeable for example by instructions, by their prior experiences, or by priming.

Supporting evidence for the close association of affective processing and approach or avoidance behavior comes from studies that investigated defensive reflexes which can be conceived of as the most primitive form of avoidance behavior (Lang, Bradley, & Cuthbert, 1990). Lang et al. (1990) have shown that defensive reflexes are differentially modulated by affective processing. Specifically, in their studies the amplitudes of the blink reflex elicited by startle probes were augmented when participants processed negative information. Conversely, when positive information was processed, the blink reflex showed relative inhibition. Related research has shown that not only the intensity but also the speed of appetitive and defensive responses is modulated by the current motivational state. In an early study participants were required to push cards with words either towards themselves or away from themselves (Solarz, 1960). Results showed that participants were faster at pulling pleasant words towards themselves than unpleasant words. In contrast, they were faster at pushing unpleasant words away from themselves than pleasant words. Similar results were obtained in a study by Chen and Bargh (1999), in which participants had to evaluate words presented on the computer screen as "good" or "bad" by either pushing or pulling a lever. Again, participants were faster at pulling a lever towards themselves when they were presented with positive words than when presented with negative words. Conversely, pushing a lever was executed faster when negative words appeared on the computer screen. These results indicate that the active frame of reference was the self.

However, an object frame of reference should lead to the opposite pattern of results. One way to induce an object-related frame of reference, according to our theoretical model, is to use a stimulus configuration that implies a certain reference point. For example, having participants actually touch the representation of an object should induce an object-related frame of reference. In line with this speculation, Wentura, Rothermund, and Bak (2000) observed faster responses away from negative other-relevant traits (i.e., traits that have unconditionally negative consequences for persons in the social environment of the holder of the trait, e.g., selfish) and towards positive other-relevant traits. In their study, the trait terms were depicted on a computer screen and participants had to press a key attached to the computer screen (approach) or withdraw their finger from it (avoidance). Other studies using an object-related frame of reference obtained similar results (De Houwer, Crombez, Baeyens, & Hermans, 2001; Study 4; Vaes, Paladino, Castelli, Leyens, & Giovanazzi, 2003, Study 4). These findings can be interpreted as first support for the assumption that an object-related frame of reference can reverse the findings obtained by Chen and Bargh (1999). They have been obtained using an intuitive understanding of what should be the default reference point in a certain setup as well as reinforcing a certain construction by instructions or visual feedback. For example, Wentura et al. (2000) gave visual feedback of the "effects" of the motions (decreasing vs. increasing stimuli) designed to enhance the association of the reactions with approach and avoidance.

However, most of the published work on compatibility effects between approach/avoidance motions and stimulus valence found effects indicative of a self-related frame of reference (Chen & Bargh, 1999; Mogg, Bradley, Field, & de Houwer, 2003; Moors, De Houwer, & Eelen, 2004; Neumann, Hülsenbeck, & Seibt, 2004; Neumann & Strack, 2000; Rotteveel & Phaf, 2004; Schnabel, Banse, & Asendorpf, 2006; Seibt, Häfner, & Deutsch, 2007; Solarz, 1960). So far, self- and object-related frames of reference have always been found in different studies, by different researchers, in different labs. From the published findings, it cannot be deduced under what conditions self-reference should be expected and under what conditions other-reference. That is because the tasks employed do not only differ in the stimulus configurations and input devices, but also in the instructions and in the feedback given. According to our theoretical model, thus, they manipulated both: the stimulus configuration in the environment as well as the cognitive construction by the participants.

We reasoned that motions directly to or from an object or its representation afford an object-related frame of reference. This should manifest itself in faster reactions to negative stimuli when withdrawing the hand from them and faster reactions to positive stimuli when approaching the hand to them even when completely neutral instructions are used, (i.e. without mentioning approach, change of distance or anything that could help construct a reference point). Furthermore, no study thus far has induced both object- and self-related frames of reference for the same objective motion in the same study. Therefore, our second aim was to show that when there is room for interpretation (i.e., with a more ambiguous stimulus configuration) these reference points can be induced for the same task and serve as interpretation frameworks for construing approach and avoidance, yielding opposite compatibility effects.

Study 1

In the first study we tested the assumption that motions directly to or from the representation of an object on a computer screen imply an object-related frame of reference. Like Wentura et al. (2000), we employed a go/no go task that required participants in one condition to withdraw their finger from a key attached to the computer screen whenever a word was presented on the screen or to leave it on the key when a non-word was presented. In the other condition, the finger was placed on a key of the keyboard and participants were instructed to push the key on the computer screen with their finger whenever a word was presented and to leave it on the keyboard when a non-word was presented. The words presented differed in their valence. According to our rationale, this technique should induce an object-related frame of reference for approach and avoidance motions. Thus, we expected participants to be faster at initializing motions towards the word than away from it when the word was positive, and faster at initializing motions away from the word than towards it when the word was negative. Therefore, our dependent variable was the time elapsed from the onset of the word until the respective key was released.

Method

Design and participants

The study took the form of a 2×2 factorial design. The factors were valence (positive vs. negative) and motion (approach vs. withdrawal) with valence as within-subjects factor and motion as between-subjects factor. Release time was the primary dependent measure. Fifty-two German-speaking students at the University of Würzburg majoring in disciplines other than psychology were recruited for a battery consisting of several unrelated experiments. The battery lasted about 60 min and participants were paid 6 Euros for their participation.

Material

Participants were placed at a distance of 50–60 cm from a computer screen. The presented words were approximately a quarter inch high. A round key with a diameter of a quarter inch was attached to the screen about half an inch beneath the words. A second key was the 0 key on the numpad of the keyboard. Participants' task (in both conditions) was to release one key and press the other. As dependent variable the release time was recorded. The stimuli were 15 positive and 15 negative adjectives with a strong valence according to pretests and 15 non-words constructed so as not to resemble any of the adjectives (see Appendix A).

Procedure

On arrival, participants spent about 30 min completing several tasks unrelated to the experiment. The present task started with six practice trials. Participants were asked to either press the key attached to the screen (withdrawal condition) or the key on the keyboard (approach condition) whenever instructed to. They were told to keep their finger on the key until a star appeared on the screen in which case they had to release the key and press the other key as fast as possible. They were also told to keep their finger on the key whenever a circle was presented.

Following the practice trials, participants completed 45 test trials (30 with words and 15 with non-words). They were instructed to react to words but not to non-words. Each trial began with the instruction "Please put your finger on key A (B)!" When the key was pressed, a fixation cross was presented in the middle of the screen for 2000 ms. Then, it was immediately replaced with a letter string (either a word or a non-word). In the go-trials (i.e., the words trials), the stimulus remained on the screen until the second key was pressed. Release time was recorded and the next trial began after an intertrial-interval of 1000 ms. In the no-go trials (i.e., the non-words trials), the stimulus remained on the screen for 2000 ms. Then, it was replaced by the instruction to press the right key of the mouse which started the next trial. Each word was presented once in random order.

Results and discussion

A few participants regularly removed their finger from the key before stimulus onset, despite being instructed differently. These participants were excluded from analysis (six participants who removed their finger too early in more than 20% of the test (go-)trials). The remaining 46 participants released the key too early in 0.7% of the test-go-trials. Furthermore, release times larger than 2000 ms were excluded from analysis (0.8% of the trials). The remaining reaction times were averaged per stimulus type and subjected to a valence by motion mixed-model ANOVA.

As Fig. 1 shows, participants were faster at responding if a positive rather than a negative word appeared on the computer screen, $F(1,44) = 24.63$, $p < .001$, $\eta_p^2 = .36$. However, this main effect was qualified by a Valence $\times$ Motion interaction, $F(1,44) = 6.79$, $p = .012$, $\eta_p^2 = .13$, indicating that when reacting to a positive word, participants were faster at approaching their finger to the computer screen

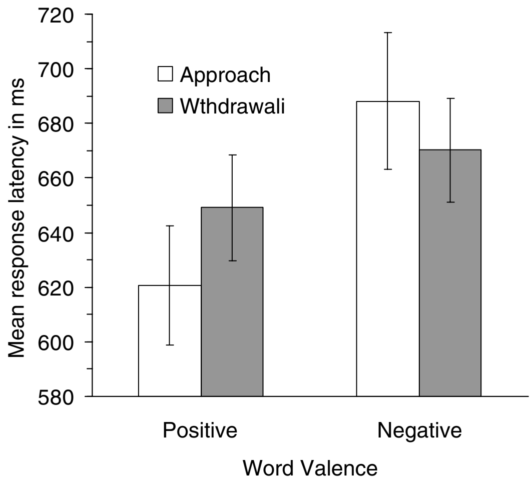

Fig. 1. The influence of word valence and motion on response latencies in Study 1. Error bars indicate standard errors of the means.

than at withdrawing it from the computer screen, whereas the reverse was true when a negative word appeared. The effect of motion was non-significant, $F < 1$. These results are in line with our expectation that motions directly to positive stimuli and away from negative stimuli are facilitated, indicating an object-related frame of reference.

Study 2

If the results of Study 1 are due to a link between affect and motivation, this effect should even be observed in reaction to in-versus outgroups. So far, there is very little evidence that prejudice is reflected in automatic avoidance reactions away from pictures of persons (but see Neumann et al., 2004; Vaes et al., 2003). Because implicit measures consistently show negative evaluations of the elderly (Dasgupta & Greenwald, 2001), we used old and young persons as social groups. We expected that an object frame of reference leads to faster responses away from pictures of old persons and faster responses towards pictures of young persons.

Method

Participants

Fifty-nine students at the University of Würzburg who were enrolled in introductory courses participated in the experiment as a partial fulfillment of their course research requirement.

Experimental design

The experimental design was a $2 \times 2 \times 2$ design, comparing group (elderly vs. young), order of group (first elderly go, then young go or first young go, then elderly go) and motion (approach vs. withdraw) with the first variable as within-subjects factor and the other two as between-subjects factors.

Material

Fifteen pictures of elderly and 15 pictures of young persons were employed as target stimuli in this study (photos taken by the authors). The pictures were selected from a larger sample of pictures depicting very young (aged 3–20 years) and very old persons (aged 70–90 years). Pictures of young and old persons were matched on gaze direction (8 gazing into the camera and 7 sideways), facial expressions (5 with a slight smile and 10 completely neutral) and gender (10 female, 5 male). Each photo depicted only the face, neck and hair of the person in a 680×700 resolution colored image file. The portraits were placed on the screen such that the key attached to the screen was on the cheek of the person depicted.

Procedure

Participants first practiced with 16 trials with a star and 16 trials with a circle (as in Study 1), either reacting to the star or to the circle. For the test trials, participants were either instructed to react whenever a picture of an elderly person appeared on the computer screen and not to react when a picture of a young person appeared, or to react to a picture of a young person and not to react to a picture of an elderly person. Half the participants executed the approach motion and the other half the avoidance motion. After every picture had been presented once in randomized order, the assignment of group to go versus no-go was reversed. The sequence and presentation times of the individual trials were the same as in Study 1.

Results and discussion

As in Study 1, a few participants regularly removed their finger from the key before stimulus onset, despite being instructed differently. These participants were excluded from analysis (six participants who removed their finger too early in more than 20% of the test (go-)trials). The remaining 53 participants released the key too early in 0.4% of the test-go-trials. Release times larger than 2000 ms were excluded from analysis (0.4% of the trials). One further participant was excluded from analyses because she complained to the experimenter about muscle aches due to the task (withdrawal condition). The remaining release times were averaged per stimulus type and then subjected to a Group × Order × Motion ANOVA.

As shown in Fig. 2, participants were faster at responding to an old than to a young picture, $F(1,48) = 6.90$, $p = .012$, $\eta_p^2 = .13$. However, this main effect was qualified by a Group × Motion interaction, $F(1,48) = 4.80$, $p = .033$, $\eta_p^2 = .09$, indicating that pictures of elderly persons could be faster responded to when withdrawing the finger from the computer screen than when approaching it to the computer screen, and pictures of young persons could be faster responded to when approaching the finger to the computer screen than when retracting it. All other effects were non-significant, all Fs < 1.5, all ps $> .23$. To conclude, using the same procedure as in Study 1, motions towards a pos-

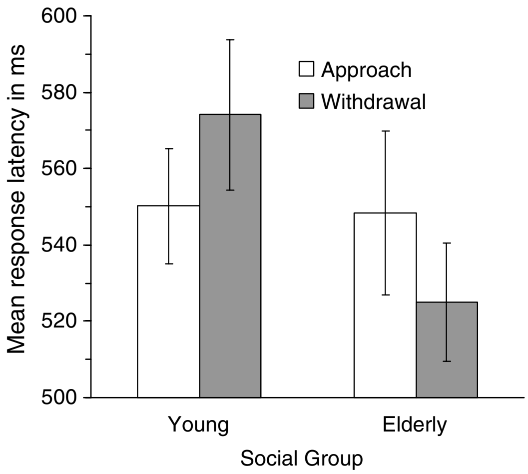

Fig. 2. The influence of social group and motion on response latencies in Study 2. Error bars indicate standard errors of the means.

itively evaluated group (young persons) and away from a negatively evaluated group (the elderly) were facilitated, again indicating that participants represented the objects as reference points.

Study 3

Study 3 was designed to test whether the cognitive construal of the active reference point for one and the same task can be changed through instructions. In this study a joystick was used to assess the onset of approach and avoidance motions. The paradigm was similar to the one used by Chen and Bargh (1999). First, we sought to replicate Chen and Bargh's (1999) finding by inducing a self-related frame of reference. Second, we attempted to replicate the findings of Study 1 by inducing an object-related frame of reference, this time with a different procedure. Importantly, we expected that instructing participants to either move the joystick towards or away from the self (self-related frame of reference) or to move the joystick towards or away from the word (object-related frame of reference) would lead to opposite compatibility effects. In addition, this experiment allows to test whether the divergent findings in the literature are due to the different devices employed (joystick, key on the screen, computer mouse, special keyboard) or to the induced reference point.

Method

Participants and design

Participants were 75 students at the University of Würzburg not majoring in Psychology. The study was run as the first study in a multi-study session lasting about an hour. Participants received 6.-Euro (7.-$) for compensation. The experimental design was a $2 \times 2 \times 2 \times 2$ design, comparing valence (positive vs. negative), motion (toward body vs. toward screen), reference point (self vs. word), and reaction mapping order (first positive toward body vs. first negative toward body) with the first two variables as within-subjects factors and the last two variables as between-subjects factors.

Material

Participants' task was to decide if an adjective that was presented on the computer screen possessed a positive or negative valence. To indicate the valence of the word participants were required to move the joystick as fast as possible either in the direction of the computer screen or in the direction of the self. In the self-reference condition, participants were asked to imagine pulling the word towards themselves or pushing it away from themselves, depending on its valence. In the word reference condition, they were asked to imagine pulling their hand away from the word or approaching the hand to the word. Accordingly, the same physical joystick movement was framed as a motion toward the self in the self-reference condition and a motion away from the word in the word reference condition.

Each trial started with a fixation cross presented for 1000 ms, followed by the stimulus word (see Appendix A) which remained on the screen until the joystick was moved. After 1000 ms, the next trial started, except when the wrong motion was detected, in which case an error feedback was given for 1000 ms.

Procedure

Half of the participants in each point-of-reference condition began with the positive toward-body-mapping, and the other half began with the negative-toward-body mapping. After the instruction, participants completed six practice trials. Then, the instruction was repeated and the 30 test words appeared once each in randomized order. This was followed by six practice trials and 30 test trials in the reversed reaction mapping. In the end, participants were thanked, fully debriefed, and paid.

Results and discussion

Errors (4.3%) and reaction times slower than 2000 ms (3.1%) were excluded, the remaining reaction times averaged per stimulus type and subjected to a 4-way mixed model ANOVA.

As Fig. 3 shows, participants in the self-reference condition were faster when pulling the joystick towards themselves for positive and towards the screen for negative than in the reverse mapping, whereas participants in the object reference condition were faster when pulling the joystick towards themselves for negative words and towards the screen for positive words than in the reverse mapping. This resulted in the predicted three-way interaction between valence, motion, and reference point, $F(1, 71) = 11.11$, $p < .001$, $\eta_p^2 = .14$. Thus, both groups showed response facilitation when instructed to move *toward* the self or the word whenever a positive word appeared and *away* from the self or the word when a negative word

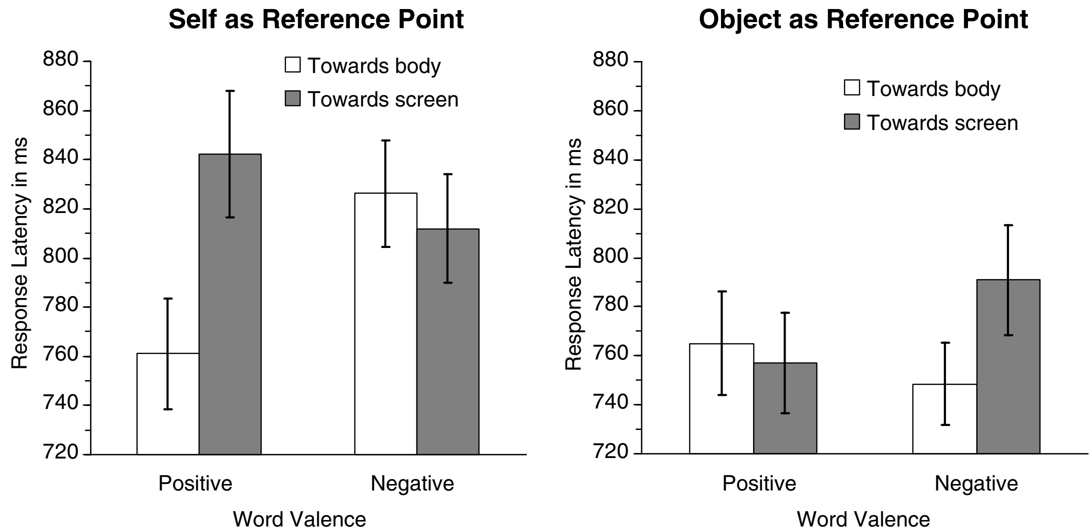

Fig. 3. The influence of reference point, word valence and motion on response latencies in Study 3. Error bars indicate standard errors of the means.

appeared than when instructed to move *toward* for a negative word and *away* for a positive word.

This interaction effect was qualified by a marginal 4-way interaction, Reference Point × Valence × Motion × Order, $F(1,71) = 3.37$, $p = .071$, $\eta_p^2 = .045$: the predicted three-way-interaction was stronger when starting with positive towards screen and negative towards body than for the other order ($\eta_p^2 = .26$ vs. .03), but within all 4 between cells, the valence by motion interaction was in the predicted direction. Also, the manipulation we used influenced reaction latencies for *both valences*, as indicated by significant Reference Point × Motion interactions for positive, $F(1,71) = 7.88$, $p = .001$, $\eta_p^2 = .10$, as well as for negative words, $F(1,71) = 6.09$, $p = .016$, $\eta_p^2 = .08$.

In addition, a marginal main effect of valence emerged, $F(1,71) = 3.02$, $p = .086$, $\eta_p^2 = .04$: reaction times were faster for pos. words; as well as a main effect of motion, $F(1,71) = 9.11$, $p = .004$, $\eta_p^2 = .11$: participants responded faster when pulling the lever towards the body than when pushing it towards the screen. This main effect, however, was qualified by the predicted three-way-interaction and might have resulted from the two reference points having different effects on positive and negative valence (i.e., in the self-reference condition, the difference in motion was greater for positive words and in the object reference condition, it was greater for negative words). Further, we found a significant Motion × Reference Point × Order interaction, $F(1,71) = 8.48$, $p = .005$, $\eta_p^2 = .11$: the motion towards the body was faster in all between cells, except in the object reference group who started with positive towards body and negative towards screen. Finally, a marginal main effect of reference point emerged, $F(1,71) = 2.79$, $p = .099$, $\eta_p^2 = .04$: Reaction times in the object reference condition were overall faster. To summarize, our findings suggest that the instruction to either move the joystick towards or away form the word or towards or away from the self leads to opposite compatibility effects.

General discussion

Our starting point was that approach and avoidance are defined by two points of reference: the self and the object. In line with other compatibility effects documented in psychology (Wascher, Schatz, Kuder, & Verleger, 2001) we assumed that approach and avoidance motions are in part based on a construal of the currently active frame of reference. Consistent with this assumption Studies 1 and 2, in which an object frame of reference was induced, showed that motions towards a screen displaying positive words or young persons are executed faster than motions away from it and that motions away from a screen displaying negative words or elderly persons are executed faster than motions towards it. In Study 3 we framed joystick motions either as self- or as object-related through instruction. When participants were instructed to respond with self-related movements (i.e., motions towards the self or away from it), reactions to positive words were faster with motions towards the body and to negative words with motions away from the body than when the mapping was reversed. When participants were instructed to respond with object-related movements (i.e., motions towards the words or away from them), however, reactions to positive words were faster with motions away from the body and to negative words with motions towards the body than when the mapping was reversed.

To conclude, when an object frame of reference is made accessible either through the task setup or through instructions, approach and avoidance motions are constructed in relation to the object. In contrast, when the self is more accessible as frame of reference, approach and avoidance motions are constructed in relation to the self. In addition, our findings show that the divergent findings in the literature are due to (1) different construal processes instigated through instructions, examples, feedback etc., as well as (2) differences in the paradigms and input devices employed, like whether the representation of the attitude object is directly touched or not. As we did not systematically vary the ambiguity of the task and the reference point instructions, it remains an open question whether even a clear default reference point as in Studies 1 and 2 can be switched around through instruction. This is an interesting topic for future research. We suspect that the more clearly a situation instigates the construal of one reference point rather than the other, the more difficult it is to instruct individuals to use the other one instead. Nor did we test whether the task employed in Study 3 has a default reference point or not. What we did demonstrate, however, is that approach/avoidance tasks can have a default reference point that is not induced through instructions, and that different reference points can be induced within the same task through instructions, leading to opposite affect-motor compatibility effects.

Across our experiments it became clear that it is not the direction of the motion itself that determines whether it should be classified as approach or avoidance, but rather the relation of the motion to the reference point. In Study 3, for example an increase in distance was realized by either moving the joystick away from the negative word (object frame of reference) or by moving the joystick away from the self (self frame of reference). What the present studies show is that both of these possibilities can be flexibly induced through instruction as evidenced by valence compatibility effects that follow the instructed reference point. These findings thus support the theoretical assumption made by the reflective-impulsive model (Strack & Deutsch, 2004) that the crucial feature of approach motions is the experienced decrease in distance and the crucial feature of avoidance motions the experienced increase in distance, not their concrete manifestations in the form of motor actions. According to our theoretical model, then, approaching somebody in anger in order to push that person away is an avoidance action with the self as the reference point. In this case, the motion towards the opponent is instrumental in *increasing distance* by pushing him away.

If the regulation of *spatial* distance towards objects and other persons crucially depends on the active reference point, the same might be true for other kinds of distance as well, such as temporal or psychological distance. Indeed, there are two kinds of spatial metaphors for time: the ego-moving metaphor as in "I am looking forward to the concert" and the time-moving metaphor as in "I will take the Math exam before the English exam", as Gentner, Imai, and Boroditsky (2002) explain. They found that these metaphors are not just ways of speaking about time but also ways of thinking about time: In an ego-moving frame, we see ourselves traveling through time towards the future, whereas in a time-moving framework, events are moving from the future to the past. Thus, an approach motivation towards a longed-for event can either result in trying to bring that event closer or it can result in trying to move faster towards that event. Similarly, when trying to avoid an exam, for example, people might try to slow time down or try to move more slowly towards the future. It could be that even different actions are chosen in order to reach one or the other goal. It would be very intriguing to find that even such an abstract dimension as temporal distance is—virtually—manipulated the same way that spatial distance is.

In many situations, the reference point of a movement will be readily determined by real life constraints but especially in the kinds of situations we tend to produce in our laboratories (impoverished movements in relation to symbols of objects presented on two-dimensional screens), minimal input from instruction can suffice to point participants in quite different ways of making this situation become real. The present findings suggest that approach and avoidance do not primarily depend on whether participants use a joystick, a computer mouse, a keyboard, or a key attached to the screen to perform the motions, but rather on the way these motions are instructed or construed.

Appendix A

Words used in Study 1

Positive: rücksichtsvoll, mitfühlend, gerecht, kooperativ, freundlich, herzlich, warmherzig, hilfsbereit, zuverlässig, tolerant, einfühlsam, verständisvoll, ehrlich, aufrichtig, liebevoll (considerate, compassionate, fair, cooperative, friendly, hearty, warmhearted, helpful, reliable, tolerant, empathic, understanding, honest, sincere, loving).

Negative: grausam, bösartig, gewalttätig, heimtückisch, niederträchtig, erbarmungslos, böswillig, jähzornig, herablassend, abweisend, unfreundlich, unsozial, aggressiv, intolerant, aufdringlich (cruel, cankered, violent, cattily, abject, merciless, malicious, irascible, condescending, abradant, unfriendly, aggressive, intolerant, brash).

Non-words: memitar, robeling, tarimor, beglabeln, porufend, larimeln, arbilegen, narimone, klarturant, narrlig, varbugsten, beliegerter, bauftrale, zeiligere, kroblingen.

Words used in Study 3

Positive: gerecht, freundlich, herzlich, warmherzig, froh, tolerant, glücklich, ehrlich, aufrichtig, liebevoll, toll, schön, human, treu, gut (fair, friendly, hearty, warmhearted, glad, tolerant, happy, honest, sincere, loving, great, beautiful, humane, faithful, good).

Negative: grausam, bösartig, gewalttätig, heimtückisch, tot, elend, depressiv, jähzornig, schlecht, aggressiv, gemein, zerstörerisch, einsam, brutal, böse (cruel, cankered, violent, cattily, dead, miserable, depressive, irascible, bad, aggressive, mean, destroying, lonely, brutal, bad).

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Please cite this article in press as: Seibt, B. et al., Movement direction or change in distance? Self- and ..., *Journal of Experimental Social Psychology* (2007), doi:10.1016/j.jesp.2007.04.013

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Please cite this article in press as: Seibt, B. et al., Movement direction or change in distance? Self- and ..., *Journal of Experimental Social Psychology* (2007), doi:10.1016/j.jesp.2007.04.013