Seeing Meaning in Action: A Bidirectional Link Between Visual Perspective and Action Identification Level

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Actions do not have inherent meaning but rather can be interpreted in many ways. The interpretation a person adopts has important effects on a range of higher order cognitive processes. One dimension on which interpretations can vary is the extent to which actions are identified abstractly—in relation to broader goals, personal characteristics, or consequences—versus concretely, in terms of component processes. For example, receiving a college diploma might be understood as “achieving one’s dream” or as “grasping a scroll of paper.” Eating a second helping of a decadent dessert might be understood as “being unhealthy” or as “biting into a piece of cake.” A familiar expression suggests a connection between the perspective from which people view an action and the extent to which they represent that action abstractly or concretely. “Look at yourself!” a proud parent might say, encouraging his graduating child to revel in the significance of her achievement. The same expression might be used, but with a different tone, to remind a friend about the negative consequences of indulging in seconds of that decadent dessert. Of course, this expression is metaphorical—there is no expectation that people would actually step outside of themselves and take a look. But metaphors sometimes do correspond, in a literal sense, to the way people mentally represent and process information (cf. Gentner, Imai, & Boroditsky, 2002; Lakoff & Johnson, 1980). Is thinking about an action in terms of its abstract meaning as opposed to its component processes actually related to viewing that action from an external, third-person perspective, as opposed to an internal, first-person perspective? The present research investigated this question.

One’s own, first-person perspective and an external, third-person perspective can be distinguished on numerous dimensions, including access to internal thoughts and feelings, awareness of relevant past behavior, and visual point of view. Across these conceptualizations, perspective emerges as a fundamental distinction in many psychological processes, such as cognitive development (Piaget, 1932), perception of agency (David et al., 2006; Decety & Grezes, 2006), self-concept (Baldwin & Holmes, 1987; Mead, 1934), self-control (Pencipe & Zelazo, 2005), clinical disorders (Clark & Wells, 1995), attitude change (Bem, 1972), social understanding (Barresi & Moore, 1996), empathy (Batson, Early, & Salvarani, 1997), stereotyping (Marx & Stapel, 2006), culture (Cohen, Hoshino-Browne, & Leung, 2007), and narrative comprehension (Brunyé, Ditman, Mahoney, Augustyn, & Taylor, 2009). With regard to action perception in particular, perspective has been shown to affect various aspects of the process. For example, research in cognitive psychology has demonstrated that the way observers parse a stream of action into meaningful chunks depends on whether they focus on the actor’s perspective or on their own perspective as an observer (Lozano, Hard, & Tversky, 2006). Research in neuroscience has investigated how perspective affects the way actions are represented in the brain, identifying areas that are differentially active depending on whether people mentally simulate doing an action themselves or watching someone else do it (Ruby & Decety, 2001).

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tive. We investigated how this difference in visual perspective relates to the way people understand actions—either in concrete or in abstract terms. Results highlight the functional role of visual imagery and contribute to an understanding of how perspective is involved in action perception and representation at the social, cognitive, and neural levels.

**Action Identification**

We propose that visual point of view in action imagery relates to the abstractness of action representations. An action representation is more abstract to the extent that it focuses on why the action occurs or to what effect, and an action representation is more concrete to the extent that it focuses on the process of how the action is performed (Vallacher & Wegner, 1985). Thus, representations that frame an action in terms of its relation to broader goals, personal characteristics, or consequences (e.g., achieving one’s dream, being unhealthy) are relatively abstract, whereas those that frame an action in terms of its component processes (e.g., grasping a scroll of paper, biting into a piece of cake) are relatively concrete. The extent to which people represent actions in abstract or concrete terms is an important psychological variable, playing a role in a range of processes including stereotyping (Maass, 1999), self-concept formation (Vallacher & Wegner, 1985), control (Fujita, Trope, Liberman, & Levin-Sagi, 2006; Vallacher & Wegner, 1987), decision making, and choice (Trope & Liberman, 2003). In the present experiments we investigated how action identification level is related to the perspective from which people view actions. Specifically, we hypothesized that visual images that depict an action from a third-person perspective serve to represent that action at a higher level of abstraction than do visual images that depict that same action from a first-person perspective. Thus, we predicted that when actions are depicted from a third-person as opposed to first-person visual perspective, they will be interpreted on a more abstract level. And, when actions are defined abstractly as opposed to concretely, third-person visual images will be more likely preferred.

**Visual Perspective**

Given that a common source of variation in visual perspective is the distinction between self and other, visual perspective often covaries with numerous dimensions, such as thoughts, feelings, and background information. The present experiments isolate the visual aspect of perspective by manipulating point of view while holding the identity of the actor—self or other—constant. The predicted pattern of effects is expected to emerge regardless of the identity of the actor.

Some of the experiments reported here use mental imagery to explore variation in the visual perspective that people adopt on their own actions. When people recall or imagine events, they often see those events in their mind’s eye. Sometimes they see the image from their own, first-person visual perspective, but other times they use an outside, third-person visual perspective so that they see themselves in the image (Nigro & Neisser, 1983). Further, people are able to deliberately adopt one perspective or the other in response to instructions. Research in which this method was used to manipulate visual perspective in mental imagery has revealed effects on a range of variables, including attributional judgment (Frank & Gilovich, 1989); perceptions of self-change (Libby, Eibach, & Gilovich, 2005); the experience of anger (Kross, Ayduk, & Mischel, 2005), shame (Libby, Pfent, Valenti, & Eibach, 2009), and other emotions (Robinson & Swanson, 1993); motivation (Vasquez & Buehler, 2007); and even observable behavior such as social skill (Libby et al., 2005), sports performance (Hardy & Callow, 1999), and voting (Libby, Shaeffer, Eibach, & Slemmer, 2007). Thus, existing research demonstrates that visual perspective in mental imagery moderates the impact of pictured actions on subsequent judgment, emotion, and behavior. The present research investigated whether visual perspective in mental imagery relates to a more basic process—how abstractly people define actions they picture themselves doing.

Other experiments reported here used photographic imagery to explore variation in the visual perspective that people adopt on others’ actions. Although in everyday life people usually see others’ actions from a third-person visual perspective, there are circumstances in which people may experience others’ actions from a first-person visual perspective. For example, when learning a manual task a student may sit alongside a teacher to observe the task being done from the actor’s perspective. In the realm of advertising, the camera angle used to photograph a product can vary so that sometimes a product is seen from the perspective of the person who is using it (Meyers-Levy & Peracchio, 1996). Variation in camera angle has also been used in empirical research to create first-person and third-person images of a target’s actions that are then presented as stimuli in experiments. This technique has been used to investigate how visual perspective relates to such variables as causal attribution (Storms, 1973), reaction time for imitation (e.g., Vogt, Taylor, & Hopkins, 2003), and comprehension of narrative (Brunyé et al., 2009). The present research used variation in the perspective of photographic images to investigate how visual perspective relates to abstractness of action representations.

Obtaining consistent relationships between visual perspective and action identification level across manipulations that vary point of view in mental imagery of the self and photographic imagery of others would provide converging evidence for the role of visual perspective in the process of action identification. Replicating the predicted pattern for mental imagery with photographic imagery would support the idea that the mental imagery results are a product of visual images that participants generate internally (cf. Borst & Kosslyn, 2008). Finding the predicted relationship between imagery perspective and action identification both when the actor is the self and when the actor is another person would demonstrate that the predicted relationship does not depend on self–other differences that typically covary with imagery perspective. Further, such findings would suggest the relevance of visual point of view to understanding both intrapersonal and interpersonal effects of perspective.

**Overview of Experiments**

Seven experiments measured and manipulated visual perspective in action imagery to test for causal relationships between visual perspective and action identification level. The first two pairs of experiments followed parallel designs to test whether viewing actions from the third-person, as opposed to first-person, perspective causes actions to be labeled in more abstract terms and
whether labeling actions in more abstract terms causes third-person images to be more likely preferred. The first pair of experiments varied visual perspective in mental images of the self, and the second pair of experiments varied visual perspective in photographic images of others. The remaining experiments tested the same predictions as the first two pairs of experiments did but employed additional methodological variations in an effort to gain converging evidence for the hypothesized relationships. If visual perspective in action imagery functions to code the abstractness of action representations, then regardless of how the key variables are measured or manipulated, there should be a bidirectional causal relationship between visual perspective and action interpretation, linking third-person images and abstract action identifications.

Experiment 1a

In Experiment 1a, participants visually imagined themselves performing a variety of common actions. We manipulated the visual perspective that participants used and then measured whether they preferred abstract or concrete action descriptions. We predicted that abstract descriptions would be more preferred when actions were pictured from the third-person than from the first-person perspective.

Method

Participants. Fifty-three undergraduates (42 women, 11 men) participated in exchange for extra credit in psychology or human development classes.

Materials and procedure. Experiment sessions involving 1–5 participants were assigned randomly to condition, with the stipulation that there be an approximately equal number of participants per condition (first-person: n = 24; third-person: n = 29). The 25 actions that participants imagined performing (see Table 1) and the concrete and abstract descriptions used to test action identification were taken directly from Vallacher and Wegner’s (1989) Behavioral Identification Form (BIF).

It was explained that participants would be picturing themselves doing a series of different actions and that it was important for them to picture these actions in a certain way. In the first-person condition, participants were instructed as follows:

You should picture yourself doing the action from the first-person visual perspective. With the first-person perspective you see the scene from the same visual perspective you would have if you were actually performing the action; in other words, you are looking through your own eyes at the situation around you as you perform the action.

In the third-person condition, participants were instructed as follows:

You should picture yourself doing the action from the third-person visual perspective. With the third-person perspective you see the scene from the visual perspective an observer would have if you were actually performing the action; in other words, you can see yourself performing the action in the image, as well as other aspects of the situation.

For each action, participants closed their eyes and the experimenter read the action (e.g., “talking to a child”) aloud. When participants had an image in mind from the specified perspective, they opened their eyes and indicated their action identification preference in an answer booklet that presented two descriptions for the action—one concrete (e.g., using simple words) and one abstract (e.g., teaching a child something). Participants circled the description they preferred and then closed their eyes to imagine the next action as the experimenter read it aloud.

At the end of the session, participants indicated how often they had performed each action in the past and how likely they would be to perform each action in the future on scales ranging from 0 (never/extremely unlikely) to 6 (extremely often/extremely likely). For these ratings, actions were presented using the same words that the experimenter had read aloud during the imagination task.

Results and Discussion

We wanted to assess the effect of visual perspective on action identification level. However, level of experience with actions also affects action identification level (Vallacher & Wegner, 1987). To ensure that the effect of visual perspective was independent of this

1 Indeed, greater experience with actions in Experiment 1a tended to be associated, on average, with choosing abstract as opposed to concrete descriptions: future experience, r(24) = 2.84, p < .01; past experience, r(24) = 1.60, p = .12.
potential contaminant, we used participants’ ratings of past and expected future experience with each action as covariates.

We predicted that picturing actions from the third-person as opposed to first-person perspective would increase the likelihood that those actions would be defined in abstract as opposed to concrete terms. To address this question, we conducted a logistic regression for each action, predicting action identification level from visual perspective as well as past and likely future experience with that action. Table 1 lists the coefficients for visual perspective for each action. The effect was in the predicted direction for 19 of the 25 actions (binomial $p < .05$), and on average, the coefficient for perspective was significantly different from zero in the predicted direction ($M = 0.34, SD = 0.71$), $t(24) = 2.36, p < .05, d = 0.48$. On average, actions were 1.89 times more likely to be described in abstract terms when they were pictured from the third-person as opposed to first-person perspective. Experiment 1b investigated whether the effect also works in the opposite causal direction.

### Experiment 1b

As in Experiment 1a, participants in Experiment 1b visually imagined themselves performing a variety of common actions. However, this time we manipulated whether the actions were described in abstract or concrete terms and measured the visual perspective that participants used to picture themselves performing the actions. We predicted that actions would be more likely pictured from the third-person perspective when they were described in abstract as opposed to concrete terms.

#### Method

**Participants.** Fifty-one undergraduates (32 women, 19 men) participated in exchange for extra credit in psychology or human development classes.

**Materials and procedure.** Experiment 1b involved an imagery task similar to the one in Experiment 1a and used the same actions and action descriptions. However, this time we manipulated action identification level and measured visual perspective. Experiment sessions involving 1–5 participants were assigned randomly to condition, with the stipulation that there be an approximately equal number of participants per condition (concrete: $n = 24$; abstract: $n = 27$).

For each action, participants closed their eyes and the experimenter read aloud the action with either the concrete description (e.g., using simple words as you are talking to a child) or abstract description (e.g., teaching a child something as you are talking to a child), depending on the condition. Participants formed a visual mental image of themselves performing the action and then opened their eyes to circle either first-person perspective or third-person perspective in an answer booklet to indicate the visual perspective of their mental image. The two perspectives had been defined at the beginning of the session with the same words as in Experiment 1a.

At the end of the session, participants used the same scales as in Experiment 1a to indicate their past and expected future experience with each action. For these ratings, actions were presented with the same words that the experimenter had read aloud during the imagination task.

### Results and Discussion

We wanted to assess the effect of action identification level on visual perspective. However, level of experience with actions also affects visual perspective (Libby & Eibach, 2002; Lozano, Hard, & Tversky, 2008). To ensure that the effect of action identification level was independent of this potential contaminant, we used participants’ ratings of past and expected future experience with each action as covariates.

We predicted that describing actions in abstract as opposed to concrete terms would cause those actions to be more likely pictured from the third-person perspective. We analyzed data with the same strategy as in Experiment 1a, conducting a logistic regression for each action and predicting visual perspective from action identification level as well as past and likely future experience with that action. Table 1 lists the coefficients for action identification level for each action. The effect was in the predicted direction for 18 of the 25 actions (binomial $p < .05$), and on average, the coefficient for action identification level was significantly different from zero in the predicted direction ($M = 0.40, SD = 0.75$), $t(24) = 2.66, p < .05, d = 0.53$. On average, actions were 2.09 times more likely to be pictured from the third-person perspective when they had been described abstractly as opposed to concretely.

Together, Experiments 1a and 1b demonstrate the predicted bidirectional causal relationship between visual perspective and action identification level. We sought converging evidence for our interpretation of this pattern in the next two studies. These studies conceptually followed the same designs as Experiments 1a and 1b did but measured and manipulated visual perspective in photographic images of others as opposed to mental images of the self. This modification affords greater control over visual perspective than is possible with mental imagery and also tests whether the relationship between visual perspective and action identification level that was observed when people thought about their own actions extends to the context of thinking about others’ actions. Replicating the bidirectional causal link between visual perspective and action identification level in these experiments would strengthen our claim about the role of visual perspective in producing the results of Experiments 1a and 1b.

### Experiment 2a

As did Experiment 1a, Experiment 2a manipulated the visual perspective of action images and measured action identification level. The action images that participants saw in Experiment 2a were photographs of other people rather than mental images of the self, but we expected the effect of the visual perspective manipulation on action identification to be the same: Abstract descriptions would be more preferred when actions were pictured from the third-person than from the first-person perspective.

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2 Indeed, greater experience with actions in Experiment 1b tended to be associated, on average, with first-person as opposed to third-person imagery: future experience, $t(24) = 2.26, p < .05$; past experience, $t(24) = 2.22, p < .05$. 
Method

Participants. Eighty-eight undergraduates (34 women, 54 men) participated in exchange for course credit in introductory psychology.

Materials and procedure. Experiment 2a involved 30 actions, some of which had appeared in Experiments 1a and 1b and others of which were new. We varied the visual perspective for each action by using a pair of color photographs—one taken from a first-person visual perspective and the other from a third-person visual perspective (see Figure 1 for a representative example). Action identification level was measured with pairs of concrete and abstract action descriptions modeled on Vallacher and Wegner’s (1989) BIF (see Appendix).

Participants were randomly assigned to condition, with the stipulation that there be an approximately equal number of participants per condition (first-person: n = 45; third-person: n = 43). They arrived at the lab in groups of 1–5 and were seated at individual computer stations to complete the experiment. Participants were told either that they would see photographs depicting actions from the perspective of the person doing the action (first-person condition) or that they would see photographs depicting actions from the perspective of an outside observer (third-person condition).

For each action, the computer presented a screen displaying either the first-person or third-person photograph (depending on the condition) along with both the concrete and abstract action descriptions. Participants’ task was to choose the description they felt best fit the photograph. The order of the concrete and abstract descriptions was counterbalanced across participants.

At the end of the session, participants indicated their past experience with each action on a scale ranging from 0 (never) to 5 (always), and they rated their expected future experience with each action on a scale ranging from 0 (not at all likely) to 4 (extremely likely). For these ratings, actions were presented with the same mid-level description in both conditions.

Results and Discussion

We predicted that photographically depicting actions from the third-person as opposed to first-person visual perspective would cause those actions to be more likely described in abstract as opposed to concrete terms. To test this hypothesis, we used the same analytic strategy as in the previous experiments, conducting a logistic regression for each action and predicting action identification level from visual perspective as well as past and likely future experience with that action. Table 2 lists the coefficients for visual perspective for each action. The effect was in the predicted direction for 22 of the 30 actions (binomial p < .05), and on average, the coefficient for visual perspective was significantly different from zero in the predicted direction (M = 0.34, SD = 0.68), t(29) = 2.69, p < .05, d = 0.50. On average, actions were 1.76 times more likely to be described in abstract terms when they were photographically depicted from the third-person, as opposed to first-person, visual perspective. Experiment 2b investigated whether the effect also works in the opposite causal direction.

Experiment 2b

As in Experiment 2a, participants in Experiment 2b viewed photographs of other people engaging in a variety of common actions. However, this time we manipulated action identification level and measured the effect on preferences for visual perspective. Thus, the design of Experiment 2b was conceptually the same as that for Experiment 1b, and we expected the same results: Third-person images would be more preferred when actions were described in abstract as opposed to concrete terms.

Method

Participants. Fifty-one undergraduates (31 women, 20 men) participated in exchange for course credit in introductory psychology.

Materials and procedure. Experiment 2b involved the same actions as Experiment 2a did, but this time we manipulated action identification level rather than visual perspective. Participants were randomly assigned to condition, with the stipulation that there be an approximately equal number of participants per condition (concrete: n = 25; abstract: n = 26). They arrived at the lab in groups of 1–5 and were seated at individual computer stations to complete the experiment.

Instructions explained that photographs can depict actions from the perspective of the person who is doing the action or from the perspective of an outside observer. For each action, the computer presented a screen displaying either the concrete or the abstract description (depending on the condition), along with both the first-person and third-person photographs. Participants’ task was to choose the photograph they felt best fit the description they received. The position of the first-person and third-person images was counterbalanced across participants. At the end of the session, participants indicated their past and expected future experience with each action by using the same action descriptions and scales as in Experiment 2a.

Results and Discussion

We predicted that describing actions in abstract as opposed to concrete terms would cause third-person depictions of those ac-

Figure 1. An example of the action photograph pairs used to manipulate and measure visual perspective in Experiments 2a, 2b, and 3. These photographs depict the action of picking up mail. Left: First-person perspective (image: Brand X Pictures/PunchStock). Right: Third-person perspective (image: Comstock/PunchStock).
In Experiments 2a and 2b, controlling for past and expected future experience, for each action in Experiments 2a, 2b, and 3

<table>
<thead>
<tr>
<th>Action</th>
<th>Experiment 2a</th>
<th>Experiment 2b</th>
<th>Experiment 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Voting</td>
<td>0.05</td>
<td>1.67</td>
<td>0.49</td>
</tr>
<tr>
<td>Toothbrushing</td>
<td>0.16</td>
<td>-19.40</td>
<td>0.27</td>
</tr>
<tr>
<td>Donating blood</td>
<td>0.16</td>
<td>0.78</td>
<td>0.37</td>
</tr>
<tr>
<td>Flying on a plane</td>
<td>0.55</td>
<td>-1.22</td>
<td>-0.36</td>
</tr>
<tr>
<td>Riding a bike</td>
<td>0.80</td>
<td>-0.33</td>
<td>0.19</td>
</tr>
<tr>
<td>Reading a watch</td>
<td>0.68</td>
<td>-0.37</td>
<td>0.14</td>
</tr>
<tr>
<td>Driving a car</td>
<td>0.08</td>
<td>0.55</td>
<td>-0.18</td>
</tr>
<tr>
<td>Eating a peach</td>
<td>0.02</td>
<td>-2.09</td>
<td>-0.33</td>
</tr>
<tr>
<td>Taking a test</td>
<td>0.40</td>
<td>0.76</td>
<td>0.48</td>
</tr>
<tr>
<td>Flying a kite</td>
<td>-0.13</td>
<td>2.68</td>
<td>0.24</td>
</tr>
<tr>
<td>Reading the newspaper</td>
<td>0.38</td>
<td>1.32</td>
<td>-0.35</td>
</tr>
<tr>
<td>Painting a room</td>
<td>0.37</td>
<td>1.45</td>
<td>0.05</td>
</tr>
<tr>
<td>Playing piano</td>
<td>-0.89</td>
<td>3.10</td>
<td>0.32</td>
</tr>
<tr>
<td>Potting a plant</td>
<td>1.21</td>
<td>4.17</td>
<td>0.42</td>
</tr>
<tr>
<td>Playing poker</td>
<td>0.36</td>
<td>1.18</td>
<td>0.14</td>
</tr>
<tr>
<td>Getting proposed to</td>
<td>0.56</td>
<td>2.55</td>
<td>0.23</td>
</tr>
<tr>
<td>Pumping gas</td>
<td>-1.20</td>
<td>0.21</td>
<td>0.03</td>
</tr>
<tr>
<td>Riding a rollercoaster</td>
<td>-0.01</td>
<td>1.56</td>
<td>0.23</td>
</tr>
<tr>
<td>Snorkeling</td>
<td>1.02</td>
<td>1.61</td>
<td>-0.06</td>
</tr>
<tr>
<td>Taking a shower</td>
<td>0.93</td>
<td>0.75</td>
<td>-0.15</td>
</tr>
<tr>
<td>Typing on a computer</td>
<td>1.96</td>
<td>4.23</td>
<td>0.59</td>
</tr>
<tr>
<td>Using an ATM</td>
<td>1.18</td>
<td>1.33</td>
<td>0.15</td>
</tr>
<tr>
<td>Reading help wanted ads</td>
<td>-0.45</td>
<td>-0.57</td>
<td>-0.23</td>
</tr>
<tr>
<td>Dialing a phone</td>
<td>0.78</td>
<td>22.35</td>
<td>0.28</td>
</tr>
<tr>
<td>Weighing oneself</td>
<td>-0.52</td>
<td>-0.32</td>
<td>-0.19</td>
</tr>
<tr>
<td>Paying the rent</td>
<td>-0.40</td>
<td>0.06</td>
<td>0.17</td>
</tr>
<tr>
<td>Grocery shopping</td>
<td>1.49</td>
<td>1.16</td>
<td>-0.10</td>
</tr>
<tr>
<td>Ringing a doorbell</td>
<td>-0.06</td>
<td>2.08</td>
<td>0.50</td>
</tr>
<tr>
<td>Washing hands</td>
<td>0.16</td>
<td>-0.47</td>
<td>0.16</td>
</tr>
<tr>
<td>Picking up mail</td>
<td>0.37</td>
<td>0.87</td>
<td>0.26</td>
</tr>
<tr>
<td>M 0.34 1.03*</td>
<td>0.12</td>
<td></td>
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</tbody>
</table>

Note. Numbers in bold indicate the effect is in the predicted direction. Coefficients in Experiments 2a and 2b were computed with logistic regression; coefficients in Experiment 3 were computed with linear regression.

*Calculation of mean excludes two outliers (dialing a phone: \( z = 3.76 \); toothbrushing: \( z = -3.61 \)).

Together, the experiments reported thus far provide converging evidence for a bidirectional causal relationship between visual perspective and action identification level. Across these experiments, the identity of the actor in the images (self vs. other) and the modality of the imagery (internally generated vs. externally presented) varied, but this did not change the relationship between visual perspective and action identification level. Visually depicting actions from the third-person as opposed to first-person perspective caused those actions to be more likely defined in abstract terms, and defining actions abstractly rather than concretely caused third-person images of those actions to be more likely preferred. We believe that this pattern of results emerged because third-person images represent actions on a more abstract level than first-person images do, and it is for this reason that people prefer third-person images when actions are described more abstractly. To obtain further evidence for this interpretation, we conducted three more experiments.

Although the preceding experiments conceptually replicated the link between visual perspective and action identification level across different methods of varying visual perspective, the method of varying action identification level was the same in all experiments—concrete and abstract labels that were provided to participants. Experiments 3 and 4 were designed to rule out the possibility that the relationship between visual perspective and action identification level depends on some artifact of this particular method of varying action identification level, rather than on the abstractness of the action representation, as we propose.

**Experiment 3**

Experiment 3 sought converging evidence for the idea that third-person images represent actions on a more abstract level than do first-person images. The same action photographs were used as in Experiments 2a and 2b, but this time participants rated the photographs on the basis of the extent to which those photographs communicated why the actions were performed versus how the actions were performed. Describing an action in terms of why it is performed is, by definition, a more abstract way of representing that action than is describing that action in terms of how it is performed (Vallacher & Wegner, 1985). We believe that this conceptual variable of abstraction, not the specific pairs of descriptions used in the previous experiments, is ultimately responsible for the link between action identification level and visual perspective. Thus, we expected that in Experiment 3, photographs would be rated as relatively better at communicating why actions are performed as opposed to how they are performed when those photographs depicted the actions from the third-person as opposed to first-person visual perspective.

**Method**

Participants. Eighty-nine undergraduates (54 women, 35 men) participated in exchange for course credit in introductory psychology.
Materials and procedure. Experiment 3 used the same 30 pairs of color photographs as Experiments 2a and 2b did. Participants were randomly assigned to view either the first-person or third-person photographs, with the stipulation that there be an approximately equal number of participants in each condition.

Participants arrived at the lab in groups of up to 5 and were seated at individual computer stations to complete the experiment. Participants began by reading a screen that introduced the experiment as a study of how photographs of actions might be used to convey different types of information about those actions. Instructions then went on to explain that for every action there is a process of how people do the action and reasons why people do the action. As a test of whether participants understood the how/why distinction, all were asked to briefly describe how and why a person might cook a meal.

Next, instructions explained that participants would see a series of photographs of different actions and that for each photograph they would be asked to rate the extent to which the photograph better showed how a person does the action or why a person does the action. An example action photograph was provided (first-person or third-person, depending on the condition), along with a 6-point rating scale with end points labeled shows how a person does the action MUCH BETTER than why a person does the action and shows why a person does the action MUCH BETTER than how a person does the action.

After viewing the example, participants went on to rate photographs of the 30 target actions, one at a time. For each action, the computer presented a screen displaying the photograph (either first-person or third-person, depending on the condition). Above the photograph was the mid-level description of the action (e.g., The action in this photograph is PICKING UP MAIL) and the question To what extent does this photograph show HOW a person does the action versus WHY a person does the action? Participants responded using the 6-point scale that had been presented in the example. After rating all of the photographs, participants indicated their past and expected future experience with each action by using the same question wording and response options as in Experiments 2a and 2b.

Results and Discussion

Two participants (one in each condition) were excluded from analyses because their responses on the open-ended how/why test question suggested that they did not understand this crucial distinction. The final sample consisted of 87 participants (first-person: n = 40; third-person: n = 47).

We predicted that action photographs would be rated as relatively better at communicating why an action is performed when the photographs depicted the action from the third-person as opposed to first-person perspective. To test this hypothesis, we conducted a linear regression for each action, predicting how/why ratings from visual perspective and past and expected future experience with each action. Table 2 lists the coefficients for visual perspective for each action. The effect was in the predicted direction for 21 of the 30 actions (binomial p < .05), and on average, the coefficient for visual perspective was significantly different from zero in the predicted direction (M = 0.12; SD = 0.27), t(29) = 2.56, p < .05, d = 0.44.

These results converge with our interpretation of the findings from the preceding experiments. Regardless of whether action identification level was measured with descriptions we provided or participants’ ratings on the how versus why dimension, actions were interpreted on a more abstract level when images depicted them from the third-person as opposed to first-person visual perspective. If this pattern does reflect differences in how visual images represent actions depending on perspective, and if people’s preferences for perspective in visual imagery reflect its representational value, we should also find that people are more likely to use the third-person visual perspective to picture actions when they aim to define those actions on an abstract rather than concrete level. Experiment 4 used the how versus why methodology to test this prediction.

Experiment 4

In Experiment 4, we instructed participants to think about either how they would complete each of the actions from Experiments 1a and 1b or why they would complete each of those actions. Then we asked participants to visually imagine themselves performing each action and report the visual perspective they were using. Experiment 3 established that third-person images are perceived to better represent the abstract why of actions than are first-person images. If people use visual perspective in mental imagery as a means of coding the abstractness of action representations, then actions should more likely be pictured from the third-person perspective in Experiment 4 when participants think about why they would perform those actions than when they think about how they would perform those actions.

Method

Participants. One hundred fifty undergraduates (46 women, 104 men) participated in exchange for course credit in introductory psychology.

Materials and procedure. Experiment 4 used the same 25 actions as did Experiments 1a and 1b. Participants were randomly assigned to the how and why conditions with the stipulation that there be an approximately equal number of participants in each condition.

Participants arrived at the lab in groups of up to 5 and were seated at individual computer stations to complete the experiment. Depending on the condition, the experiment was either introduced as investigating how people engage in actions or introduced as investigating why people engage in actions. In both conditions, instructions explained that during the session participants would be presented with a variety of different actions and that they would be
asked some questions about each one. In the how condition, participants were told that they would be asked how they would complete each action (i.e., the specific procedures that might be involved in carrying it out). In the why condition, participants were told that they would be asked why they would complete each action (i.e., the ultimate goal they would be trying to achieve by doing the action or the traits or characteristics that would cause them to do the action).

In both conditions, it was then explained that participants would also be asked to picture themselves completing each action and to report the visual perspective in their imagery. First-person and third-person perspectives were introduced in a way similar to that used in Experiment 1b.

After reading the instructions, participants proceeded at their own pace. For each action, a screen appeared with the action identified using the same mid-level description in both conditions (e.g., Talking to a child). Depending on the condition, this label was followed by a question asking either how or why the participant would complete the action (e.g., either How would you talk to a child? or Why would you talk to a child?). After typing an answer in their own words, participants were instructed to close their eyes and picture themselves engaging in the action. When they had the image in mind, they opened their eyes and proceeded to the next screen, where they indicated whether they were picturing the action from the first-person or third-person visual perspective. After completing the how or why description and imagery measure for an action, participants proceeded to do the same for the next action until they finished all 25 actions.

Next, they responded to two questions asking about the quality of the images they formed as they were picturing themselves engaging in the actions. The first question was In general, how vivid were the pictures that you formed in your mind? Participants responded either by indicating I couldn’t form any pictures in my mind at all or by choosing an option along a fully labeled 4-point scale ranging from vague and dim to perfectly clear and as vivid as normal vision, with the midpoints labeled moderately clear and vivid and clear and reasonably vivid (Marks, 1973). The second image quality question was In general, how detailed were the images that you formed in your mind? Participants responded by choosing an option on a fully labeled 5-point scale ranging from not at all detailed to extremely detailed, with midpoints labeled slightly detailed, moderately detailed, and very detailed. Finally, participants indicated their past and expected future experience with each action using the same question wording and response options as in Experiments 2 and 3.

Results and Discussion

The responses of three participants in the why condition revealed that they had not followed instructions correctly (2 participants indicated in response to the vividness measure that they had not formed any images at all during the session, and 1 participant’s open-ended responses suggested he was not taking the task seriously). Data from these participants were excluded from analyses, leaving a final sample of 147 (how: n = 72; why: n = 75).

Analyses of imagery quality ratings revealed that there were no significant condition differences in imagery vividness or detail (ps > .16) and no relationship between vividness or detail of imagery and frequency of third-person images (ps > .25).

We predicted that actions would be more likely pictured from the third-person perspective when participants had been thinking about why they would engage in those actions as opposed to how they would engage in them. To test this hypothesis, we conducted a logistic regression for each action, predicting visual perspective from action identification level (how vs. why), using past and expected future experience with each action as covariates.6 Table 1 lists the coefficients for action identification level for each action. The effect was in the predicted direction for 19 of the 25 actions (binomial p < .05), and on average, the coefficient for action identification level was significantly different from zero in the predicted direction (M = 0.18, SD = 0.22), t(24) = 3.99, p < .01, d = 0.82.7 On average, actions were 1.22 times more likely to be pictured from the third-person perspective when participants had thought about why they would complete the actions as opposed to how they would complete them.

We believe that this effect is the result of participants’ employing visual perspective in mental imagery as a means of coding the level of abstractness in action representations. In Experiment 3, third-person images were perceived to be relatively better at communicating why actions are done than were first-person images, and in Experiment 4 actions were more likely pictured from the third-person perspective when participants thought about why they would perform actions as opposed to how they would perform them. Thus, together with the preceding experiments, the results of these experiments suggest that visual-perspective preferences reflect people’s impressions of how well each perspective represents the action at the level of abstraction that they seek to define it. The goal of the final experiment was to gain further support for this interpretation by replicating the results of Experiment 4 with photographs rather than mental imagery. This experiment also introduced an additional methodological variation to even more precisely isolate the role of visual viewpoint in accounting for the relationship between visual perspective and action identification level.

Experiment 5

Participants’ task in Experiment 5 was to choose action photographs to accompany text that would describe those actions. Participants were either told that the text would describe the process of how the actions were performed or told that the text would describe the process of why the actions were performed. For each action, participants chose between a first-person and a third-person photograph. If, as the preceding experiments show, third-person images represent actions on a more abstract level than first-person images do, then third-person photographs should more likely be chosen when text is expected to describe why the action is performed as opposed to how it is performed.

As mentioned earlier, differences in visual perspectives are often confounded with the identity of the actor (self vs. other),

6 Greater experience with actions in Experiment 4 was associated, on average, with first-person as opposed to third-person imagery: future experience, t(24) = 5.34, p < .001; past experience, t(24) = 6.06, p < .001.

7 The effect of action identification level on visual perspective remained significant when vividness and detail were included as additional covariates in the logistic regression equations (mean coefficient for action identification = .18, SD = .23), t(24) = 3.95, p < .01, d = 0.78.
knowledge of internal thoughts and feelings, and awareness of relevant past behavior. The preceding experiments demonstrate that the link between visual perspective and action identification level is not dependent on differences on these dimensions. Rather, results are consistent with our hypothesis that the link between visual perspective and action identification level is due to the visual point of view from which images are depicted. Experiment 5 used a new set of action photographs to obtain converging evidence for this interpretation.

In addition to the identity and knowledge dimensions, first-person versus third-person images could vary in the physical distance to the action and the objects that are included in the image. Third-person images may be viewed from a greater distance and thus include more objects with less detail. We propose, however, that the link between visual perspective and action identification level is not dependent on such differences but rather is a function of whether the action is depicted from the actor’s point of view or an external point of view. Thus, we predicted that the relationship between visual perspective and action identification level that was observed in the preceding experiments should emerge, even when the physical distance to the action and the objects that are included in the image are held constant across perspectives. Experiment 5 involved pairs of action photographs that did just this. For example, the two photographs depicting the action of wiping up a spill both depicted the same hand using a sponge to wipe up spilled liquid. Both images included the same objects, and both were shot at approximately equal distance and visual angle from the action (see Figure 2). Thus, the only dimension on which the pairs of action photographs in Experiment 5 varied was the visual perspective from which the action was viewed. Since we believe that this dimension alone influences how actions are interpreted, we predicted that Experiment 5 would replicate the link between visual perspective and action identification level that was obtained in the preceding experiments.

Method

Participants. One hundred seventy-two undergraduates (113 women, 59 men) participated in exchange for course credit in introductory psychology.

Materials and procedure. Experiment 5 involved 11 different actions (see Table 3). Visual perspective was measured for each action using a pair of first-person and third-person black-and-white photographs. Each pair of photographs depicted the same person doing the action in exactly the same way, and care was taken to shoot each photograph from approximately the same distance away and at the same angle. Thus, visual perspective was the only difference between each pair of action photographs (e.g., see Figure 2).

Participants arrived at the lab in groups of up to 10 and were seated at individual computer stations to complete the experiment. Participants were randomly assigned to condition, with the stipulation that there be an approximately equal number of participants in each (how: n = 84; why: n = 88). Instructions began by referring to the common practice of pairing photographs with text for the purposes of enhancing communication and explained that the experiment was designed to learn about the types of photographs that most effectively illustrate particular kinds of information. Instructions then distinguished between instances in which the purpose of communication is to convey information about HOW a particular action is performed, with a focus on the specific steps involved in carrying out the action, and instances in which the purpose is to convey information about WHY a particular action is performed, with a focus on the reasons for the action and the goals it serves. An example referred to a hypothetical cooking magazine article that mentioned the action of cracking an egg; such an article might seek to describe a technique for neatly cracking an eggshell or to explain why eggs are needed to help cakes rise.

Having defined the terms how and why, instructions then focused participants on one level of action identification or the other, depending on the condition. Specifically, instructions explained either that the purpose of the experiment was to investigate the use of photographs to accompany text that describes HOW different actions are performed or that the purpose of the experiment was to investigate the use of photographs to accompany text that describes WHY different actions are performed. Instructions in each condition referenced the relevant type of article from the cooking magazine example, and participants were invited to imagine being an editor who had to choose a photograph to accompany that type of article. They were shown the first-person and third-person photographs of cracking an egg, which differed only in the visual perspective from which the action was viewed. Depending on the condition, participants were asked either which photograph would better fit with the type of article where the text describes

<table>
<thead>
<tr>
<th>Action Logistic regression coefficient</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cracking an egg</td>
</tr>
<tr>
<td>Wrapping a gift</td>
</tr>
<tr>
<td>Stamping an envelope</td>
</tr>
<tr>
<td>Laying out silverware</td>
</tr>
<tr>
<td>Chopping vegetables</td>
</tr>
<tr>
<td>Installing flashlight batteries</td>
</tr>
<tr>
<td>Ironing a shirt</td>
</tr>
<tr>
<td>Using a can opener</td>
</tr>
<tr>
<td>Stapling papers</td>
</tr>
<tr>
<td>Wiping up a spill</td>
</tr>
<tr>
<td>Cutting up a credit card</td>
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<tr>
<td>M</td>
</tr>
</tbody>
</table>

Note. Numbers in bold indicate the effect is in the predicted direction.

Table 3 Logistic Regression Coefficients for the Effect of Action Identification Level on Visual Perspective, Controlling for Past and Expected Future Experience, for Each Action in Experiment 5
how the action is performed or which photograph would better fit with the type of article where the text explains why the action is performed.

After indicating their choice, participants then went on to make a similar choice regarding the remaining 10 pairs of action photographs. For each action, participants were presented with both the first-person and third-person photographs. The question participants responded to varied by condition. For example, for the action of wiping up a spill, participants were asked either Which photograph would fit better with text that describes HOW someone would WIPE UP A SPILL? or Which photograph would better fit with text that explains WHY someone would WIPE UP A SPILL? All actions were identified by a mid-level description that was consistent across conditions (see Table 3). The order of first-person and third-person photographs was counterbalanced across actions and participants. At the end of the session, participants reported their past and expected future experience with each action by using question wording and response options similar to those in the preceding experiments.

Results and Discussion

We predicted that third-person images would be more likely preferred when text was expected to describe why the action was performed as opposed to how it was performed. To test this hypothesis, we conducted a logistic regression for each action, predicting visual perspective from action identification level (how vs. why), using past and expected future experience with each action as covariates.8 Table 3 lists the regression coefficients for action identification level for each action. The effect was in the predicted direction for 10 of the 11 actions (binomial p < .05), and on average, the coefficient for action identification level was significantly different from zero in the predicted direction (M = 1.00, SD = 0.67), t(10) = 4.95, p < .001, d = 1.49. On average, third-person images were 3.26 times more likely to be chosen when the text was expected to describe why those actions were performed than when it was expected to describe how those actions were performed. The fact that visual point of view was the only dimension on which the pairs of photographs differed attests to the power of this variable in defining the extent to which actions are interpreted on an abstract or concrete level.

General Discussion

Consistent with linguistic metaphors suggesting that people gain insight into the broader implications of their own actions by “looking at” themselves, the present experiments show that picturing oneself performing actions from a third-person as opposed to first-person perspective causes those actions to be understood on a more abstract level. Moreover, the effect also works in the opposite causal direction: Describing actions more abstractly causes those actions to be more likely pictured from the third-person perspective. The same relationships between visual perspective and action identification level emerged when visual perspective was manipulated and measured in photographs of other people engaging in actions. Thus, this link between visual perspective and action identification level is not dependent on the modality of the imagery (internally generated vs. externally presented) or the identity of the actor (self vs. other). Additional experiments demonstrated that the link was also robust across two different methods of varying action identification level and that it was not dependent on perspective differences in the objects that images included or the physical distance to the action that was depicted.9 Overall, the present experiments show that the visual point of view from which images depict actions is integrally related to the meaning those actions are perceived to have. These results contribute to an understanding of the consequences and mechanisms of perspective effects in action perception, highlighting the functional role of visual imagery.

A Mechanism by Which Perspective Influences Judgment, Emotion, and Behavior

Perspective has proven to be an important variable across many domains of psychology. The present results suggest that one reason is that point of view affects action identification, a process fundamental to many aspects of higher order cognition (e.g., Fujita et al., 2006; Maass, 1999; Trope & Liberman, 2003; Vallacher & Wegner, 1985). Closely related to the present findings, a growing body of work shows that the point of view people use when forming visual mental images of life events—past and future—affects subsequent judgment, emotion, and behavior. One pattern observed across a range of contexts is that individuals’ reactions to thinking about an event are more consistent with their general theories about themselves and their lives as a whole when they picture that event from the third-person as opposed to first-person perspective (Libby et al., 2005, 2009; Marigold, Libby, Ross, & Holmes, 2009). For example, preexisting and experimentally manipulated theories of self-change have a stronger effect on people’s judgments of how much they have changed since a particular event occurred when they picture that event from the third-person as opposed to first-person perspective (Libby et al., 2005). The tendency to identify actions more abstractly when using the third-person perspective helps to explain this pattern. Abstract identifications should promote the connection between specific actions and general theories, leading people to define the actions they recall or imagine in terms of those general theories and react accordingly.

8 Greater experience with actions in Experiment 5 tended to be associated, on average, with first-person as opposed to third-person imagery, although the difference was reliable for only future experience, t(24) = 4.92, p < .01, and not past experience, t(24) = 1.26, p = .26.

9 Because our hypothesis concerned how visual perspective relates to the identification of actions in general, our experiments were designed to sample a range of different actions and our analyses were conducted to determine whether the predicted pattern held up, on average, across this range of actions. Indeed, in seven experiments, which together sampled 58 different actions, we found the predicted link between third-person imagery and abstract action identification. We also evaluated the pattern of means in each experiment by using participant, rather than action, as the unit of analysis. In every case, at the participant level the means followed the predicted pattern, and in five of the seven experiments, the effect was significant. When we used the Stouffer method (Cooper, 1979) to combine experiments that manipulated visual perspective (Experiments 1a, 2a, and 3), the effect on action identification level was significant (z = 2.50, p < .01), and when we combined experiments that manipulated action identification level (Experiments 1b, 2b, 4, and 5), the effect on visual perspective was significant (z = 6.37, p < .001).
The fact that visual perspective affects how people identify others’ actions as well as their own suggests that the present results have relevance for understanding the mechanism by which perspective affects interpersonal perception as well as self-perception. For example, classic work in social psychology suggests that observers tend to perceive actions as more a function of actors’ dispositions and less a function of the situation than the actors themselves do (Jones & Nisbett, 1971). The role of visual perspective in contributing to this effect has been demonstrated in experiments that manipulate perspective by means of camera angles (Storms, 1973) and mental imagery (Frank & Gilovich, 1989). The effect of visual perspective on attribution has typically been understood as a function of actor–observer differences in the perceptual salience of the actor and the situation. The present results suggest another contributing factor. Before people can attribute a cause for an action, they must first identify what the action is (Gilbert, Pelham, & Krull, 1988; Trope, 1986). Because abstract action descriptions link a specific action to broader goals and identities, they tend to provide more information about the person doing the action than concrete descriptions do (Vallacher & Wegner, 1985). Therefore, the tendency to label an action more abstractly when viewing it from an observer’s rather than an actor’s perspective may contribute to the tendency for observers to perceive actions as more a function of dispositions than actors do.

In addition to providing insight into previously documented effects of perspective, the present results also lead to novel predictions. For example, we have begun to investigate the role of mental imagery in goal pursuit. Thinking about desirable future actions in terms of their connection to goals and identities can make people more likely to behave in line with those goals and identities (Fishbach, Dhar, & Zhang, 2006; Losier & Koestner, 1999). We predicted that people should be more motivated to follow through with a desirable action when they picture it from the third-person as opposed to the first-person perspective because the third-person perspective should lead them to define the behavior in terms of its connections to their goals and desired selves. Data support this hypothesis with regard to the effect of visual imagery perspective on both motivation (Vasquez & Buehler, 2007) and important observable behaviors such as voting (Libby et al., 2005, 2009, 2007).

The Functional Role of Imagery in Action Representation

The results of the present experiments show that not only does perspective affect action identification level, but action identification level affects perspective: There is a bidirectional link between third-person imagery and abstract action representation. Other research shows that abstraction is related to psychological distance on many dimensions, including spatial, temporal, and interpersonal (Liberman, Trope, & Stephan, 2007). The relationship between visual perspective and action identification level in the present experiments did not depend on perspective differences in distance—spatial or interpersonal (self vs. other). Visual perspective might be interpreted to represent another dimension of psychological distance in itself, in which case the present results are consistent with previous findings. On the other hand, although it is often assumed that the third-person perspective necessarily creates psychological distance between the self and the pictured action (e.g., Kross et al., 2005; Sanitioso, 2008; Wilson & Ross, 2003), empirical evidence does not clearly support this assumption.

Recent research investigating the phenomenon of psychological distance suggests that different dimensions of psychological distance are interrelated, with greater distance on one dimension being associated with greater distance on other dimensions. For example, visual depth cues signaling greater spatial distance facilitate the processing of words that represent greater distance on the dimensions of social relationships, time, and hypotheticality (Bar-Anan, Liberman, Trope, & Algom, 2007). If dimensions of psychological distance are interrelated in this way, and if actions and events are more psychologically distant when pictured from the third-person as opposed to first-person perspective, then those actions and events should consistently be judged as more psychologically distant on other dimensions when pictured from the third-person as opposed to the first-person perspective. However, this does not appear to be the case. In Experiment 4 the frequency of third-person imagery was not associated with the vividness or detail in participants’ action imagery—features that function as visual cues to spatial distance. This null result may not be informative on its own, but in our ongoing program of research we frequently include measures of image vividness and detail as well as perceived realness of imagined events, and as of yet we have failed to find any systematic relationships with the visual perspective of images, despite finding systematic effects involving visual perspective and other variables. Further, under certain conditions, third-person imagery can actually decrease psychological distance between the self and the pictured event on dimensions such as psychological ownership of past and future actions, as well as perceived impact of pictured actions on present circumstances (Libby et al., 2005, 2009, 2007).

Thus, if the experience of psychological distance does play a role in explaining effects involving visual perspective, it appears that the mechanism is not straightforward. If visual perspective is considered to be its own dimension of psychological distance, then the idea that all dimensions of psychological distance function analogously would need revision. These are important questions to resolve, but they are beyond the scope of the present research. Regardless of how or if the present findings relate to the broader phenomenon of psychological distance, they make a unique contribution by demonstrating how visual imagery, and in particular the point of view in that imagery, relates to action representation. Focusing on this aspect of the present findings illuminates connections to research in cognitive psychology and neuroscience, suggesting how the present findings both inform and are informed by work in these areas.

A tradition of work in cognitive psychology provides evidence consistent with the idea that visual mental imagery plays a functional role in the representation and manipulation of objects and information (for a review, see Kosslyn, Thompson, & Ganis, 2006). The present findings contribute to this work by suggesting another domain in which visual mental imagery plays a role in cognition. Specifically, it appears that visual perspective in action imagery has representational value with regard to the concrete–abstract dimension. Although the present experiments involved explicit instructions to use mental imagery, people do spontaneously experience mental imagery when thinking about events in their lives (Atance & O’Neill, 2001; Pillemier, 1998), and they also spontaneously shift visual perspectives in this imagery (Nigro &
Neisser, 1983). The present results suggest that one function of this mental imagery is to code the abstraction of action representations, by means of visual perspective. Further evidence consistent with this conclusion comes from analyses of visual perspective in autobiographical memory imagery. When people recall a real life event, reflecting on what that event means in relation to more general self-knowledge (vs. focusing on the details of the experience) prompts people to picture that event from the third-person perspective (Libby & Eibach, 2009). And, indeed, using this perspective facilitates the process of gaining a broader understanding of the event by prompting people to think about how the event relates to other events in their life and to achieve insight as to why the event occurred the way it did (Kross et al., 2005).

The idea that visual perspective is functionally involved in the mental representation of actions also finds support in research on the mirror neuron system. This system involves brain areas that are activated both when people observe an action being executed by someone else and when they execute that action themselves (Rizzolatti & Craighero, 2004). As do the present experiments, investigations of the mirror neuron system reveal a bidirectional relationship between visual images of actions and mental representations of those actions. Whereas the present experiments demonstrate a link between visual imagery and conceptual representations, research on the mirror neuron system demonstrates a link between visual imagery and motor representations. Seeing someone else perform an action tends to activate the motor representation of that action, and the motor representation of an action directs subsequent visual processing of action images (Schutz-Bosbach & Prinz, 2007).

Further, it appears that the visual perspective of action images moderates the involvement of the mirror neuron system. Again with regard to motor representations of action, people are quicker to imitate simple movements when they see them depicted from a first-person rather than third-person perspective (Vogt et al., 2003), and sensory-motor areas of the brain are more active upon viewing first-person rather than third-person depictions of such actions regardless of whether the viewer intends to imitate the action (Jackson, Meltzoff, & Decety, 2006; Vogt et al., 2003). Similar patterns have been observed when comparing the brain activation associated with imagining one’s self engaging in an action versus imagining watching someone else engage in it (Ruby & Decety, 2001). These results suggest that people more closely simulate the immediate experience of action when picturing it from the first-person perspective rather than third-person perspective, and this may help explain why participants in the present experiments were relatively less likely to focus on the broader significance of an action and relatively more likely to focus on its concrete details when they pictured it from the first-person rather than third-person perspective.

The mirror neuron system has been implicated in social processes such as learning through imitation. This learning is not limited to simple rote copying of discrete movements but involves gaining an understanding of an actor’s goals and intentions (Vogt & Thomaschke, 2007). Certain components of the mirror neuron system are sensitive to the goals and intentions of actions (Iacoboni et al., 2005; Johnson-Frey et al., 2003). Given that abstract action descriptions highlight the broader meaning of actions, the present findings suggest the possibility that seeing images from the third-person perspective could facilitate the learning of abstract goals.

The present findings also have implications for understanding the mechanisms by which language contributes to action perception and imitative learning. People gain information about actions not just through direct observation but also through linguistic communication. The language used to describe actions necessarily defines those actions at a certain level of abstraction, and the present experiments suggest that variability in abstraction as communicated through language corresponds with the perspective of visual mental images. Given the role of visual information in activating the mirror neuron system, the present results raise the possibility that visual mental imagery serves as an interface between linguistic and nonlinguistic aspects of action perception. In this way, the present findings also contribute to a growing body of work showing interconnections between linguistic, perceptual, and motoric representations of actions (e.g., Barsalou, 2008; Dijkstra & Bargh, 2001; Niedenthal, Barsalou, Winkielman, Krauth-Gruber, & Ric, 2005; Prinz, 1997; Zwaan & Taylor, 2006).

Conclusion

The expression “Look at yourself!” is used to encourage a person to think about the meaning of his or her actions in a broader sense. This metaphor, which equates looking at one’s self from an external perspective and gaining insight into the broader meaning of one’s actions, may reflect the phenomenological experience involved in shifting to a more abstract level of action representation. Indeed, picturing actions from a third-person perspective causes people to represent actions more abstractly, and representing actions more abstractly causes people to picture those actions from the third-person perspective. These findings demonstrate that the point of view from which an action is viewed is functionally connected with the meaning that action is understood to have, and this basic effect may have wide-reaching implications for understanding the mechanisms and consequences of action perception.

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**Appendix**

Concrete and Abstract Action Descriptions Used in Experiments 2a and 2b

<table>
<thead>
<tr>
<th>Action</th>
<th>Concrete description</th>
<th>Abstract description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Voting</td>
<td>Marking a ballot</td>
<td>Influencing the election</td>
</tr>
<tr>
<td>Toothbrushing</td>
<td>Using a toothbrush</td>
<td>Preventing tooth decay</td>
</tr>
<tr>
<td>Donating blood</td>
<td>Getting stuck with a needle</td>
<td>Donating blood</td>
</tr>
<tr>
<td>Flying on a plane</td>
<td>Sitting on a plane</td>
<td>Taking a trip</td>
</tr>
<tr>
<td>Riding a bike</td>
<td>Peddling a bike</td>
<td>Getting exercise</td>
</tr>
<tr>
<td>Reading a watch</td>
<td>Checking one’s watch</td>
<td>Making sure one is on time</td>
</tr>
<tr>
<td>Driving a car</td>
<td>Keeping a car on the road</td>
<td>Traveling to a destination</td>
</tr>
<tr>
<td>Eating a peach</td>
<td>Eating a peach</td>
<td>Getting nutrition</td>
</tr>
<tr>
<td>Taking a test</td>
<td>Answering questions</td>
<td>Showing one’s knowledge</td>
</tr>
<tr>
<td>Flying a kite</td>
<td>Holding a kite string</td>
<td>Enjoying a windy day</td>
</tr>
<tr>
<td>Reading the newspaper</td>
<td>Reading lines of print</td>
<td>Learning about the news</td>
</tr>
<tr>
<td>Painting a room</td>
<td>Rolling paint onto the wall</td>
<td>Making the room look fresh</td>
</tr>
<tr>
<td>Playing piano</td>
<td>Pressing keys</td>
<td>Making music</td>
</tr>
<tr>
<td>Potting a plant</td>
<td>Potting a plant</td>
<td>Enjoying a hobby</td>
</tr>
<tr>
<td>Playing poker</td>
<td>Looking at playing cards</td>
<td>Hoping to win a gamble</td>
</tr>
<tr>
<td>Getting proposed to</td>
<td>Accepting a ring</td>
<td>Agreeing to marry him</td>
</tr>
<tr>
<td>Pumping gas</td>
<td>Filling a tank</td>
<td>Fueling a vehicle</td>
</tr>
<tr>
<td>Riding a rollercoaster</td>
<td>Sitting in a coaster</td>
<td>Seeking a thrill</td>
</tr>
<tr>
<td>Snorkeling</td>
<td>Kicking one’s feet</td>
<td>Exploring underwater</td>
</tr>
<tr>
<td>Taking a shower</td>
<td>Standing in a shower</td>
<td>Becoming clean</td>
</tr>
<tr>
<td>Typing on a computer</td>
<td>Pressing keys</td>
<td>Getting work done</td>
</tr>
<tr>
<td>Using an ATM</td>
<td>Putting a card in a machine</td>
<td>Withdrawing funds</td>
</tr>
<tr>
<td>Reading help wanted ads</td>
<td>Following lines of print</td>
<td>Searching for a job</td>
</tr>
<tr>
<td>Dialing a phone</td>
<td>Pressing buttons</td>
<td>Getting in touch with a friend</td>
</tr>
<tr>
<td>Weighing oneself</td>
<td>Standing on a scale</td>
<td>Measuring progress</td>
</tr>
<tr>
<td>Paying the rent</td>
<td>Writing a rent check</td>
<td>Maintaining a place to live</td>
</tr>
<tr>
<td>Grocery shopping</td>
<td>Pushing a cart</td>
<td>Buying food for one’s family</td>
</tr>
<tr>
<td>Ringing a doorbell</td>
<td>Pressing a doorbell</td>
<td>Checking if someone is home</td>
</tr>
<tr>
<td>Washing hands</td>
<td>Using a bar of soap</td>
<td>Killing germs</td>
</tr>
<tr>
<td>Picking up mail</td>
<td>Reaching into a mailbox</td>
<td>Getting the mail</td>
</tr>
</tbody>
</table>

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