



The role of visual perspective in information processing

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ABSTRACT

Social events can be described from the perspective of either a person in the situation in which the event occurs (e.g., “John came into...”) or that of an outside observer (“John went into...”). We find that when individuals are disposed to form visual images, they have difficulty comprehending both verbal statements and pictures when the perspective from which the event is described differs from the perspective from which they have encountered similar events in daily life. Furthermore, the disposition to form visual images increases the intensity of emotional reactions to an event when the event is described from the perspective of someone in the situation in which it occurs. These effects are not evident, however, among individuals who typically process information semantically without forming visual images.

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People can employ at least two different strategies in comprehending the description of a social event. On one hand, they might interpret the information in terms of semantic concepts pertaining to the type of event described or the situation in which it occurred. In this case, their reactions to the event are likely to be similar regardless of the form in which the information is presented. Alternatively, recipients might try to form a visual image of the event being described and base their reactions on this image. In this case, their reactions are likely to depend on characteristics of the information that influence the type of image they construct and the difficulty of forming it.

The tendency to construct visual images from verbal information can depend on how the information is presented. Adaval and her colleagues (Adaval, Isbell, & Wyer, 2007; see also Adaval & Wyer, 1998), for example, found that when the events that occurred in the life of a politician were described in a temporally-ordered narrative, participants appeared to form a mental image of the sequence of events as a whole. In this case, accompanying the verbal event descriptions with a picture facilitated their construction of this image and increased the extremity of the evaluations they based on it. When the same events were described in an ostensibly unordered list, however, recipients appeared to evaluate the semantic implications of each event independently without forming images. In this case, pictures interfered with recipients' integration of these semantic implications and decreased the extremity of their evaluations.

The present research examined not only *whether* individuals construct visual images from verbal descriptions of behavioral events but also *how* they form these images. Of particular interest

was the perspective from which images are constructed. For example, “the man went into the prison” is likely to elicit an image of the event from the perspective of someone outside the prison, whereas “the man came into the prison” elicits an image from the perspective of someone inside. The ease of constructing this image may depend on the frequency with which similar events have been encountered from these perspectives in the past. The importance of this possibility is suggested by research on the impact of perceptual fluency (for reviews, see Schwarz, 1998, 2004). That is, if individuals find it difficult to extract the implications of information they receive, they typically react less favorably to the information and its referents than they otherwise would (Winkielman & Cacioppo, 2001; Winkielman, Schwarz, Fazendeiro, & Reber, 2003). In the present context, this suggests that when individuals are disposed to form visual images on the basis of verbal information, their unfamiliarity with the perspective from which they form these images could decrease the favorableness of their reactions to the event or the persons involved in it. Note, however, that this difference in comprehension difficulty, and thus in the evaluations that result from it, should not be evident if individuals process the information semantically without forming visual images.

On the other hand, the perspective from which people imagine an event could have an impact independently of ease of processing. For example, the statements “The terrorist went into the restaurant and shot 12 customers” and “The terrorist came into the restaurant and shot 12 customers” describe the same event. However, the first statement elicits a visual image of the event from the perspective of someone outside the restaurant, whereas the second elicits an image from the perspective of someone inside. Therefore, individuals who construct visual images in the course of comprehending the two statements may have different emotional reactions to them. As in the previous example, however, the

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descriptive implications of the two statements are the same. Consequently, individuals who construe the semantic implications of the statements without forming visual images should react to them similarly.

These examples emphasize that people's comprehension of verbal information and reactions to it cannot be inferred from the descriptive implications of the information alone. In addition, one must understand the nature of the visual images that are elicited by the information and when these images will actually be constructed. The present research attempted to provide this understanding. To provide a framework for evaluating this research, we first discuss more generally the role of visual images in the comprehension of social information and the role of perspectives in the construction of these images. We then consider the implications of situational and individual differences in the disposition to form visual images. Finally, four experiments are reported that explore implications of these differences for both comprehension and judgment.

Theoretical background

Visual imagery in comprehension

A mental image is a mental representation of an object, event or situation whose features are spatially and temporally organized (cf. Kosslyn, 1975; Kosslyn, 1976; Kosslyn, 1988; Shepard & Metzler, 1971). The construction of such a representation can be based on direct experience with its referent, a picture, or a verbal description. To this extent, an image is somewhat analogous to a "picture in the head". The validity of a visual image construct has sometimes been questioned (e.g., Anderson, 1978; Pylyshyn, 1973; for a review, see Tye, 1991). However, Kosslyn (1988) and Kosslyn et al. (1999) showed that instructions to form visual images activated areas of the brain that are specifically associated with visual information processing. More recently, Kirchoff and Buckner (2006) found that self-reported tendencies to process information visually are correlated with fMRI indices of activity in the occipital temporal lobes of the brain whereas tendencies to process information verbally are associated with activation of prefrontal regions. In short, self-reported dispositions to engage in visual or verbal processing are associated with brain activation in areas implied by this processing.

The utility of a visual image construct in conceptualizing comprehension and judgment processes is incontrovertible. For example, Bransford, Barclay, and Franks (1972) found that people's memory for apparently anomalous sentences (e.g. "The haystack was important because the cloth would rip".) is improved substantially by adding a cue word (e.g. "parachute") that facilitates the construction of a mental image of a situation in which the statement was meaningful. Although these results could perhaps be interpreted without referring to the imagery construct, an explanation in terms of mental imagery is more parsimonious.

Mental images are often formed spontaneously in the course of comprehension (Garnham, 1981; Glenberg, Meyer, & Lindem, 1987). However, only a few conceptualizations of social information processing have explicitly taken visual imagery into account. Carlson's (1994) multi-modality conception of processing postulated that visual processing and semantic processing were governed by different cognitive systems. This difference in processing was subsequently formalized in a theory of social comprehension by (Wyer, 2004; Wyer & Radvansky, 1999). According to this theory, individuals who comprehend a statement about persons or objects first construct a semantic equivalent of the statement in the form of a subject-predicate proposition. Then, if the predicate denotes an action or state of affairs that is temporally and situationally constrained, they construct a mental simulation of the situation or

event depicted, or *situation model*. This model has both a metalinguistic component (e.g., a semantic representation of the proposition) and a nonverbal, image component.¹ Thus, for example, the model of "the boy kicked the ball" would consist of both a linguistic representation of the proposition itself and a visual image that conveys the spatial and temporal relatedness of the actor, the action, and the object. If the configuration of actor and object described in the statement has not previously been encountered but if visual representations of its components exist in memory, these components can function as perceptual symbols (Barsalou, 1999) that are extracted and combined to form a new representation. (Thus, for example, an image of "a lion walked into the classroom" can be constructed by retrieving a previously formed representation of walking into a classroom and substituting the perceptual symbol of a lion for the actor.)

According to Wyer and Radvansky (1999), however, image-based situation models are formed spontaneously only if the information describes events that are situationally and temporally constrained. For example, the event described by "the man bought a car" occurred at a particular time and place and so an image-based situation model would theoretically be formed of it. However, "the man owns a car" is not temporally specific and would not elicit a verbal image. Rather, it would be coded only metalinguistically (Radvansky, Wyer, Curiel, & Lutz, 1997).

The effect of perspective in image-based processing

Although the role of visual imagery in comprehension and judgment is well established, little research has examined the particular characteristics of a visual image that have an impact on these processes. The present research focused on one specific characteristic of visual images, namely, the perspective from which the images are constructed. The potential importance of considering this characteristic is suggested by early research on social attribution. Storms (1973), for example, showed that participants who watched a videotaped conversation between two persons attributed more responsibility to the individual who was prominent from the vantage point at which the tape was videoed. (For more recent evidence that the camera angles from which pictures are taken can affect viewers' person impressions, see Kraft, 1987; Meyers-Levy & Peracchio, 1992). However, Regan and Totten (1975) found that participants' attributions could be affected similarly by simply instructing them to imagine a conversation from the perspective of one party or the other.

The perspective from which verbally described situations are imagined could have similar effects. For example, the image of "George went into the bordello" is formed from a perspective of someone outside, whereas the image of "George came into the bordello" is formed from someone who is already inside. If the content of these images and the relative salience of these features differ, comprehension and judgments could differ correspondingly.

Effects of perspective on comprehension

We know of only one previous attempt to investigate the impact of visual perspective on the comprehension of verbal information. Black, Turner, and Bower (1979) found that when a shift in visual perspective was required to imagine the events described by a pair of statements, the statements were more difficult to comprehend. Thus, for example, participants took less time to comprehend "Mary was reading a book in her room. John came in to talk to

¹ A distinction should of course be made between a picture and a visual image. For one thing, an image may be less detail, omitting features that would be essential in a picture. For example, the image formed of "The boy kicked the ball" might contain a representation of a boy engaging in this action but might not indicate the color of his shirt.

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