Shared Reality: Experiencing Commonality With Others' Inner States About the World

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Shared Reality

Experiencing Commonality With Others' Inner States About the World

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ABSTRACT—*Humans have a fundamental need to experience a shared reality with others. We present a new conceptualization of shared reality based on four conditions. We posit (a) that shared reality involves a (subjectively perceived) commonality of individuals' inner states (not just observable behaviors); (b) that shared reality is about some target referent; (c) that for a shared reality to occur, the commonality of inner states must be appropriately motivated; and (d) that shared reality involves the experience of a successful connection to other people's inner states. In reviewing relevant evidence, we emphasize research on the* saying-is-believing effect, *which illustrates the creation of shared reality in interpersonal communication. We discuss why shared reality provides a better explanation of the findings from saying-is-believing studies than do other formulations. Finally, we examine relations between our conceptualization of shared reality and related constructs (including empathy, perspective taking, theory of mind, common ground, embodied synchrony, and socially distributed knowledge) and indicate how our approach may promote a comprehensive and differentiated understanding of social-sharing phenomena.*

Humans are distinct from other animals in their motivation to comprehend, manage, and share inner states, including beliefs, feelings, attitudes, goals, and standards (see Higgins & Pittman, 2008). Humans are strongly motivated to share their understanding of the world in general and their social world in particular (see Hardin & Higgins, 1996). Other animals will pay attention to what conspecifics are looking at (Call, 2005), but only humans, including young children, actively collaborate to share their inner states about the world with one another (Higgins, 2005; Nelson, 2005; Terrace, 2005; Tomasello, Carpenter, Call, Behne, & Moll, 2005).

Everyday life is replete with examples of the social sharing of inner states. For instance, when people meet a new employee at their workplace, they tend to create their impressions of the newcomer jointly with their colleagues, and they feel more confident in their impressions when others agree. People take into account the (inferred) inner states of others, especially significant others, to construct or verify views about various types of issues. For example, cues as to what others think help or enable us to evaluate other people or groups; to develop a sense of which movies are worthwhile seeing; to decide about a candidate to vote for in an election; or to form general political, moral, or religious convictions. The absence of social sharing can have detrimental consequences not only for people's physical well-being and feelings of connectedness, but also for their sense of reality. When others deny an expected shared reality, such as in the classical conformity studies by Asch (e.g., 1951), people are left uncertain, uncomfortable, even physically agitated. As illustrated by the case of Richard Byrd (1938), who decided to spend 6 months alone at an Antarctic weather station, total removal of options for social sharing can produce not only severe depression but also hallucinations and surreal fantasies.

Theories and empirical research in social psychology and other social sciences have long emphasized the socially shared basis of psychological processes and representations (e.g., Asch, 1952; Bar-Tal, 1990, 2000; Cooley, 1902/1964; Festinger, 1950; Heider, 1958; Higgins, 1992; Levine, Resnick, & Higgins, 1993; Lewin, 1947; Mead, 1934; Merton & Kitt, 1950; Moscovici, 1981; Newcomb, 1959; Resnick, Levine, & Teasley, 1991; Rommetveit, 1974; Schachter, 1959; Schütz, 1932/1967; Sherif, 1935, 1936; J.C. Turner & Oakes, 1997). In one classical example, Festinger (1950) argued that people experience their personal beliefs and opinions as being valid when they are shared by others who are sufficiently similar to themselves.

More than 10 years ago, Hardin and Higgins (1996) provided a comprehensive review of earlier shared reality approaches in social psychology. Since then, interest in the socially shared

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nature of individuals' evaluations and representations has soared in social psychology (e.g., Echterhoff, Higgins, & Groll, 2005; Frey & Schulz-Hardt, 2001; Higgins & Pittman, 2008; Hinsz, Tindale, & Vollrath, 1997; Hogg, 2001; Lau, Chiu, & Lee, 2001; Levine & Higgins, 2001; Levine, Higgins, & Choi, 2000; Levine & Moreland, 2004; Lyons & Kashima, 2003; Pinel, Long, Landau, Alexander, & Pyszczynski, 2006; Postmes, Haslam, & Swaab, 2005; Ruscher, 1998; Semin & Cacioppo, 2008; Sinclair, Huntsinger, Skorinko, & Hardin, 2005; Tindale & Kameda, 2000; Tindale, Meisenhelder, Dykema-Engblade, & Hogg, 2001) and related fields such as memory (Hirst & Manier, 2002; Weldon, 2001), cognition (Barsalou, Niedenthal, Barbey, & Ruppert, 2003; Smith & Semin, 2004), psycholinguistics (Pickering & Garrod, 2004), sociology (Thompson & Fine, 1999), organizational behavior (Mohammed & Dumville, 2001; Salas & Fiore, 2004), developmental psychology (Meltzoff & Decety, 2003), evolutionary psychology (Caporael, 2007; de Waal, 2008), social neuroscience (e.g., Gallese, Keysers, & Rizzolatti, 2004), biology (e.g., Dunbar & Shultz, 2007), and philosophy (e.g., Thagard, 1997). In recent years, scholars have also examined related phenomena, such as empathy (de Vignemont & Singer, 2006; de Waal, 2008), interactive alignment (Garrod & Pickering, 2004), embodied simulation (Barsalou et al., 2003), and neural mirroring (Gallese et al., 2004; Iacoboni, 2008; Oberman, Pineda, & Ramachandran, 2007), thereby enriching and challenging traditional approaches in social psychology (see Semin, 2007).

What is clear is that researchers have recognized the importance of social sharing and related phenomena and have begun paying more attention to them. At this juncture, we think it is important to provide a precise definition of social sharing and shared reality and to demonstrate the distinctive theoretical and empirical contributions of these constructs. What does it mean to share inner states and to create a socially shared reality, and why do people engage in these activities? To what extent is our conceptualization of shared reality supported by empirical evidence, and how does it further our understanding of related empirical phenomena?

To begin, it is necessary to define the key terms: that is, what do we mean when we talk about *shared reality*? The term *shared* generally means "to have in common." However, a closer examination of the term reveals different meanings of *shared* (see Cannon-Bowers & Salas, 2001; Thompson & Fine, 1999). Four meanings can be distinguished that come increasingly close to the social-psychological conceptualization of sharing that we propose in this article—a conceptualization that emphasizes the experience of having common inner states regarding some aspect of the world.

The first possible meaning of *shared* is "communicated or disclosed to others." This meaning focuses on the process whereby speakers make their internal personal reactions, for instance about a new colleague at work, known to others. In this sense, the fact that something is shared implies that the audience becomes aware of what another individual believes or feels, but it does not require that the audience has something in common with the speaker or that the audience agrees with what the speaker communicates. Thus, the first possibility is mute as to whether the inner state of the audience about some aspect of the world is the same as the inner state of the speaker about this aspect of the world. What this meaning of *shared* does highlight, however, is the important role of interpersonal communication in allowing some information to be shared with another person.

According to a second meaning, *shared* means "divided up into portions," such as when we say that a task is shared among different people. This meaning refers to the division of (cognitive) labor or of responsibilities for different subdomains of a task. In this sense, the term implies that there is a joint task or project and that each of the participating individuals is responsible for her or his specialized part in the task. This meaning of *shared* emphasizes the collaborative nature of information being shared between persons. Note, however, that this meaning highlights the differences between the individuals concerned with a common task. As in the first case, it is not required that the individuals have the same inner state about a target referent or have something in common (other than working on the same task or project).

In contrast, a correspondence or commonality between inner states about the world is implied in a third sense of the term: "partaking in a consensus," such as when we say that "people share an opinion." This possibility designates a state in which the views of at least two individuals are consensual or in common. Note that this meaning refers principally to an objective condition of "sharedness" that can be identified by an outside observer, rather than to the feeling of sharedness experienced by the individuals holding the same view. Thus, in this third sense, people may hold similar or identical views without being aware of each other's view or subjectively experiencing a commonality of views.

There is also a fourth possible meaning of *shared*: "held and experienced in common." In this case, the individuals involved do perceive their inner states as being in agreement (see also Bar-Tal, 2000). When we say, for instance, that "A shares B's enjoyment of foreign cuisine when traveling," we imply that Person A experiences a commonality between the inner state of Person B and her or his own inner state about a target referent. This fourth meaning of *shared* comes closest to the concept of sharing that we propose in this article. According to this concept, developed in more detail below, sharing captures people's experience that their inner state about some referent target or entity (such as their beliefs or feelings about a third person, a movie, a political party, or a moral issue) converges with the inner state of one or more others regarding that target.

Subjective experience is not only critical for understanding sharedness, but also for understanding the term *reality*. From a psychological perspective, *reality* refers to people's subjective perception of something as being real and truthful, not to

whether something can be corroborated as real or truthful from an external (scientific) perspective. Thus, what matters is people's experience of what is real (see Brickman, 1978). The motivation to achieve this experience is so strong that people can prefer objectively less rather than more accurate knowledge if the former produces a stronger subjective sense of knowing or establishing what is real (see Higgins, 2008). This greater striving for the subjective experience rather than objectively verifiable knowledge of reality is epitomized by the pervasive power of political and religious ideologies (see also Jost, Ledgerwood, & Hardin, 2007).

In the following section, we elaborate our conceptualization of shared reality. We then review pertinent empirical research with a special emphasis on studies that have investigated the shared reality developed through communication (e.g., Echterhoff et al., 2005; Echterhoff, Higgins, Kopietz, & Groll, 2008; Higgins, Echterhoff, Crespillo, & Kopietz, 2007), and we discuss other pathways to shared reality in addition to communication. Finally, we examine how this conceptualization is distinct from related constructs, such as empathy, perspective taking, common ground, embodied synchrony and mirroring, and socially distributed knowledge. We conclude with perspectives for future research.

SHARED REALITY: A PRODUCT OF EXPERIENCING COMMONALITY WITH OTHERS' INNER STATES ABOUT THE WORLD

In brief, we propose that shared reality is the product of the motivated process of experiencing a commonality of inner states about the world. Our conceptualization presumes that four main conditions underlie shared reality. First, the commonality between individuals that is implied by a shared reality refers to their inner states and not just their overt behaviors. Second, shared reality is "about something"—that is, it implies a target referent about which people create a shared reality. Third, shared reality as a product cannot be divorced from the process through which it is attained—in particular, the underlying motives. Fourth, there is no shared reality unless people experience a successful connection to someone else's inner state. We will now elaborate and justify these conditions, with empirical support only being mentioned in passing. The next section will present the empirical evidence for this conceptualization of shared reality in more detail.

As to the first condition, a shared reality involves a commonality between people's inner states, which include their beliefs, judgments, feelings, or evaluations concerning a target referent. To achieve a shared reality, people cannot simply replicate the observable behavior of others—instead, they need to obtain a sense of others' inner states about the world. For the occurrence of a shared reality, a correspondence between externally observable states or behaviors is not sufficient—it needs to involve a commonality between inner states (see Brickman, 1978). This claim is supported by the fundamental and well-established role that the perception of others' inner states plays in human development, motivation, and sociality. People know not only that the outcomes for a person (self or other) depend critically on another person's overt responses to that person (e.g., Ostrom, 1984), but also that the other person's responses are mediated by his or her inner states, such as his or her attitudes and beliefs (Higgins, 2005, in press; Nelson, 2005). Indeed, the discovery of the mediating role of others' inner states in how they respond to the world is a significant step in human development (see Higgins & Pittman, 2008). Once this level of social consciousness is reached, others' inner states begin to play a vital role in human self-regulation. Children, for example, cannot rely merely on observing other people's outward behaviors and the external stimulus conditions associated with their behaviors to ensure their well-being, enter the social world, and establish relationships. Rather, they have to learn to infer a caretaker's beliefs, feelings, attitudes, and so on (e.g., that mashed peas taste good, that a certain behavior is dangerous, or that a particular TV program is fun to watch).

Because understanding others' inner states (rather than overt states or behaviors) is an essential ingredient of human social life, we argue that a socially shared reality involves the experience of common inner states. To be sure, exhibiting the same overt states or behaviors may signal to people that they also share inner states. For instance, two listeners clapping hands at the speech of a political candidate will assume that the other shares their favorable attitude toward the candidate. However, for each listener to achieve a shared reality it is critical to not only observe the other clapping but also to infer the other's inner state from the overt behavior—in this case, to infer a favorable attitude toward the candidate. Inferring that someone is simply mimicking one's own behavior may even be detrimental to the experience of a shared reality. Consider, for example, a teenage boy who mimics every gesture and movement of his sister for a while one evening, including mimicking her head nodding as she listens to her favorite song. From this commonality of overt states, the sister would not derive a sense of shared reality but rather a sense of being mocked or teased by her brother.

The achievement of this first condition, the perceived sharing of inner states, requires processes that allow people to pick up or infer someone else's inner state. Psychological research suggests a plethora of mechanisms by which this can be accomplished (see, e.g., Higgins & Pittman, 2008; Malle & Hodges, 2005). For instance, people draw on various aspects of others' nonverbal behavior, such as their facial expressions and gestures, to intuit their feelings, needs, and intentions. They grasp others' mental states, such as others' beliefs, attitudes, and feelings, drawing on mechanisms like conscious reasoning, unconscious simulation, and theory of mind (e.g., Keysers & Gazzola, 2007; Leslie, Friedman, & German, 2004); causal theories and schemata (e.g., Heider, 1958; Idson & Mischel, 2001; Malle, 1999); or projection of their own inner states (e.g.,

Keysar & Barr, 2002; Nickerson, 2001). Such mechanisms help people to bridge the divide between self and others (Malle & Hodges, 2005), to experience others' inner states in the first place. This precondition is a building block of the first condition for shared reality—the perceived sharing of inner states and not just overt behaviors.

The previous argument makes implicit reference to the second condition of shared reality—shared reality is about some target referent. For a shared reality to occur it is not sufficient that people simply exhibit corresponding inner states, such as corresponding heart rates or mood states. If corresponding inner states are not about (i.e., not in reference to) some aspect of the world, then one cannot not speak of a shared reality. This is because *reality* refers to the objects or referents of knowledge—that is, to phenomena that are experienced by actors as being part of the world in the present, as well as in the past and future (such as future desired end-states; Higgins & Pittman, 2008). Thus, shared reality goes beyond simply replicating another person's inner state in that it requires sharing states that are about some target referent: for example, about a new colleague at work, about a specific TV program, about a particular politician, or about abstract political or religious issues (see Jost et al., 2007).

As suggested by phenomenologists like Husserl (1913/1931) and Brentano (1874/1974), directedness, or "aboutness," is a general characteristic of human thinking (see also Heider, 1958; Higgins, 1998). People want to increase their knowledge of the world and hence represent their own and others' behavioral responses as being about something (Higgins, 1998). Thus, when it comes to social sharing, people try to figure out not only others' inner states but also what these inner states tell them about relevant aspects of the world. In this sense, shared reality permits a perceiver to experience some target referent in common with another person. Thus, shared reality involves a triadic relation, specifically a relation between one person experiencing sharing, another person (a "sharing partner") or group of persons with whom the sharing is experienced, and a target referent of the sharing (for dyadic and triadic relations in social sharing, see Tomasello et al., 2005). There are other related phenomena that do not meet this condition. As we describe in more detail later, phenomena such as empathy (de Vignemont & Singer, 2006; de Waal, 2008) and emotional and mood contagion (Hatfield, Cacioppo, & Rapson, 1994; Neumann & Strack, 2000) do not require that the perceiver share the other person's view about a target referent.

Like the first condition, this second condition—that shared reality is about some target referent—requires that a critical precondition be met. Specifically, it requires mechanisms that allow people to infer the target referent of their sharing partner's inner state, such as the referent of another person's feeling. Once again, previous research has identified various mechanisms by which this can be achieved. One basic mechanism is to follow the direction of someone else's eye gaze (e.g., Baron-Cohen, 1995; Call, 2005; Tomasello et al., 2005) to identify the referent of that person's sustained interest or emotional response, such as what it is that she or he fears. Eye-gaze following, together with imputing intentionality to the other person, allows the allocation of shared interest in an object (Baron-Cohen, 1995). Other mechanisms include following someone else's pointing movements or manipulations of objects (e.g., H.H. Clark, 2003) and interpreting verbal utterances as referring to an object (e.g., H.H. Clark, 1996; H.H. Clark & Marshall, 1981). Last but not least, people may infer the referent of a sharing partner's inner state without concurrent perceptual input or verbal directions from the sharing partner by using, for example, their own background knowledge of the sharing partner and the likely referent of his or her inner states in particular situations. For instance, a person may assume that her or his friend's mother is the likely referent of the attitude the friend expresses after finishing a phone conversation. General knowledge of established rules of interaction for different situations can also be used (e.g., H.H. Clark, 1996; Higgins, 1981, 1998; Krauss & Fussell, 1991). These and other mechanisms allow people to infer the referent of a sharing partner's inner state and to infer what that inner state is about, which is a precondition for the second condition for shared reality—that shared reality is about something.

We now turn to the third condition—that shared reality as a product cannot be divorced from the process by which it is attained, in particular, from the motives that drive the achievement of common inner states. We believe that it is crucial to take into account the source of a commonality between people's inner states in addition to the fact of a commonality. An analogy would be that democracy concerns not only consensus as an outcome or state of agreement but also the processes by which people reach a consensus (see, e.g., Bohman & Rehg, 1997). How a consensus or agreement is reached and whether the right procedures are observed to arrive at a consensus are, in many cases, more important than the product or outcome itself (Mackie & Skelly, 1994; J.C. Turner & Oakes, 1997). More generally, end states often attain their value from how they were reached and not just from the outcome per se (Higgins, 2006). Similarly, conceptualizing shared reality only as an outcome or end product of inner states held in common would overlook important psychological underpinnings, namely the processes through which shared reality is achieved and its underlying motives.

What, then, are the motives driving the creation of a shared reality? Given the variety of core human motives that have been proposed and are still debated (e.g., Crocker, 2007; Fiske, 2007; Higgins & Pittman, 2008), any attempt to provide an exhaustive or exclusive list at this point would be premature. Instead, to exemplify the processes driving the sharing of inner states, we refer to two motives that have figured prominently in the literature on social motivation in general and on shared reality in particular: epistemic and relational motives (Bar-Tal, 2000; Fiske, 2007; Hardin & Conley, 2001; Hardin & Higgins, 1996;

Jost et al., 2007). *Epistemic motive*s refer to the effort after meaning (e.g., Bartlett, 1932; Silver & Wortman, 1980), the need to achieve a valid and reliable understanding of the world (Hardin & Higgins, 1996) and to establish what is real (Higgins, 2008). Improving understanding and knowledge of the world increases the sense of predictability and subjective efficacy in dealing with the environment. The strength of epistemic motives typically increases with uncertainty or ambiguity about a target referent (e.g., Berlyne, 1962; Hogg, 2007; Kruglanski, 2004). Consistent with this notion, Festinger (1950) argued that the more ambiguous and difficult to interpret experiences are, the more people seek a social reality provided by appropriate (i.e., sufficiently trustworthy) others (see also Byrne & Clore, 1967; Deutsch & Gerard, 1955; Festinger, 1954; Gross, Holtz, & Miller, 1995; Sherif, 1936). Given that, as we have argued, shared reality is about a target referent, it follows that the creation of shared reality always serves, at least to some extent, epistemic motives (i.e., of achieving a valid understanding of the target referent).

Relational motives induce people to affiliate and feel connected to others. Feeling connected to others has several positive consequences, including emotional well-being (e.g., Diener & Seligman, 2002), a sense of security, and self-esteem (e.g., Baumeister & Leary, 1995; Bowlby, 1969). The desire for connectedness is reflected, for example, in the affiliative tendency that people exhibit when they are confronted with potentially anxiety-arousing situations (Schachter, 1959). Also, the desire for connectedness can produce identification with a positively valued group which, in turn, fosters one's sense of identity and self-esteem (e.g., Hogg & Abrams, 1988; see Levine & Kerr, 2007, for an analysis of the need for inclusion in groups).

The potential satisfaction of core human motives, particularly epistemic and relational motives, is an important force that drives social sharing (Hardin & Conley, 2001; Hardin & Higgins, 1996; see also Kruglanski, Pierro, Manetti, & De Grada, 2006). Shared realities with others are attractive because they allow individuals to experience a more valid and reliable view of the world and to obtain or maintain a sense of connectedness and belonging. This dual appeal of shared reality can be illustrated by the way in which current members of a group create a shared view about a newcomer (see Levine & Higgins, 2001). Observable information about another person (such as her or his behaviors) is often ambiguous. For example, the talkativeness of the newcomer may signal that she or he is sociable and cordial (positive traits) or boastful and ingratiating (negative traits). The group members can resolve this ambiguity by creating a shared reality about the newcomer, serving their epistemic motives. When the group members share their colleagues' inner states about the newcomer, they will feel more certain about their impressions. But consensus serves more than just this epistemic function. When the group members agree about a newcomer, the social bond between them is strengthened, serving their relational motives. Through sharing their inner states about the newcomer, they feel connected with one another, as they gain or corroborate a sense of sharing the same values and norms, which contributes to identification with others. Supporting the notion that shared reality can satisfy both epistemic and relational motives, research shows that people exchange information consistent with shared stereotypes about others both to confirm their common ground and to connect with the members of their community (A.E. Clark & Kashima, 2007).

We have argued that the motivational process that has led to a commonality of inner states is critical to whether the commonality is a shared reality. Adopting another person's inner state, for example, could be driven by just instrumental goals of securing beneficial social responses or maximizing personal outcomes (see Higgins, 1981; Jones & Thibaut, 1958). Social actors pursue such instrumental goals, for instance, when they ingratiate themselves with others (Jones, 1964) or take the perspective of a competitor to prevail in a social conflict (Epley, Caruso, & Bazerman, 2006). In such cases, actors adopt another person's inner state not because they want to achieve a better understanding of a reference target or to establish what is real, but because they hope to attain other, alternative goals. Because such cases of a commonality of inner states are not driven by epistemic motives that are characteristic of shared reality, we posit that they do not involve a shared reality. Later, we describe communication studies (Echterhoff et al., 2008) in which a commonality between a communicator and an audience is created in the service of motives other than relational or epistemic motives—what we call non-shared-reality goals—and show that such commonalities do not have the same effects as a commonality based on shared reality motives.

The three conditions for shared reality discussed so far (commonality of inner states, aboutness, appropriate motivation underlying the commonality) contribute to a shared reality. However, there is an additional condition that plays a critical role. According to our fourth condition, a shared reality requires that the participating individuals actually experience the sharing—that is, that they experience a commonality with someone else's inner state. Consistent with this view, Bar-Tal (2000) has argued that sharing of beliefs entails more than merely an objective commonality between people that can be identified by an external observer. Instead, sharing must involve the subjective experience or awareness of a commonality. Even if people are motivated to share inner states with others, they may end up not establishing a commonality (e.g., due to a failure in communication). Thus, it is not enough to have taken action to create a commonality with another person's inner state in the service of appropriate (such as relational or epistemic) motives. It is also necessary that one perceive the commonality to have been, in fact, established.

By including the fourth condition that individuals actually experience the sharing, we emphasize the critical role of the subjective sense of sharing. This aspect can be further elaborated in the context of the first and second conditions for shared

reality, thus suggesting possible interrelations among the conditions. For the achievement of shared reality, people need to subjectively experience both the commonality of inner states and the referential aboutness of inner states. From this perspective, there can be a shared reality even if both assumptions of sharing are objectively wrong. That is, for Person A to experience a shared reality with Person B, it is not necessary for B to actually have the same inner state as A or for B's inner state to actually refer to the same referent that A has in mind. What is critical is that A believes that B's inner state and the referent of that inner state match A's inner state and referent. Consider, for example, a new member (A) in a research lab who believes that the current members in the lab are arrogant and wants to create a shared reality with another newcomer (B) about these members. For Newcomer A to have a shared reality with B, it is critical that A infer (e.g., by observing that B acts in a tense and uncomfortable manner at a lab meeting) that B has a shared inner state about the current members as referent (i.e., B also believes that they are arrogant). If Newcomer B later makes clear that the current members are her academic idols and that she always feels uncomfortable in encounters with admired people, then A's sense of a shared reality will be eliminated.

Research on egocentric projections of knowledge (e.g., Nickerson, 2001) and false consensus (e.g., Ross, Greene, & House, 1977) demonstrates that people tend to presume inner states in others that match their own inner state. Indeed, the motivation to establish a subjective experience of reality by social sharing is so strong that people often assume that most others agree with them even when this is not the case (see also Higgins, 2008). There is also evidence of the importance of the subjective experience of sharing as compared with objective sharedness alone. Pinel, Long, Landau, Alexander, and Pyszczynski (2006), for instance, found that the subjective sense of sharing inner states had a robust effect on liking of an interaction partner, whereas objective sharedness of characteristics, such as coming from the same hometown, only had an effect when the subjective experience of sharing was also high. Such findings testify to the dissociability of individual experiences of sharing from objective sharedness.

People not only tend to presume inner states in others that match their own inner state, but they also tend to presume shared referents. For instance, research on referential communication has found that listeners assume that a speaker is referring to whichever object they are paying attention to or have in mind (e.g., Keysar, Barr, Balin, & Brauner, 2000; see also Keysar & Barr, 2002). This assumption of a common referent is not always correct, but, fortunately for effective conversation, it is often correct (H.H. Clark, 1996; H.H. Clark & Marshall, 1981).

So far, we have proposed four conditions for shared reality in order to sharpen the concept. Although our approach is new, it is compatible with earlier conceptualizations in phenomenological sociology (Schütz, 1932/1967) and ethnomethodology (Garfinkel, 1967; see also J.H. Turner, 1987). Scholars in these fields understood that social actors "are motivated to create a sense, even an illusory sense, that they share a common universe," so that they might "generate a tacit presumption that there is an external factual order 'out there'" (J.H. Turner, 1987, p. 19). Also, these scholars realized that although people do not have direct access to each others' inner states, they can still "put themselves in each others' place" (J.H. Turner, 1987, p. 18) by means of interpersonal practices such as exchanging and interpreting signs. Researchers have assumed that such practices produce the subjective experience of successfully connecting to others' inner states.

In the next section, we will review evidence from communication studies that supports our definition of shared reality. Such evidence does not "prove" our definition. Ultimately, as with all definitions, the question is not whether our definition of shared reality is correct but whether it is useful. The important aspects of a definition's usefulness are the extent to which it can further our understanding of specific phenomena and the distinctions it allows with reference to related concepts. Later, we will address this second aspect by discussing how our conceptualization of shared reality differs from such related concepts as empathy, perspective taking, theory of mind, common ground, embodied synchrony, and socially shared knowledge.

EMPIRICAL EVIDENCE FOR THE CONCEPT OF SHARED REALITY

To summarize the discussion thus far, we argue that shared reality is the result of experiencing a commonality between one's own and others' inner states about the world, a commonality that is driven by appropriate motives (including epistemic and relational motives). In this section, we focus on interpersonal communication as a pathway for creating a shared reality and on empirical studies of such communication that have employed the saying-is-believing paradigm (Higgins, 1992; Higgins & Rholes, 1978). When people are motivated to create a shared reality with others, they often communicate to these others about a target referent. As we will see, interpersonal communication is not always necessary; other pathways, such as awareness of someone's inner state about the target, can also lead to the experience of shared reality. However, to date, studies on the effects of interpersonal communication provide the most compelling empirical evidence regarding the creation of shared reality.

The communication studies we present here are based on the hypothesis that communicating about a target referent can affect communicators' cognitive representations of that target. Studies employing the saying-is-believing paradigm were among the first to demonstrate such communication effects on subsequent cognition (e.g., Higgins & Rholes, 1978; McCann, Higgins, & Fondacaro, 1991; Sedikides, 1990; for reviews, see Higgins, 1992, 1999; McCann & Higgins, 1992). In this paradigm, participants are introduced to an ostensible referential

communication task (involving a communicator, a target, and an audience) in which they take the role of the communicator. The participants, who are typically students, read an essay about another student (the target person) who supposedly has volunteered to be part of a long-term research project on interpersonal perception. They are told that their task is to describe the target person's behaviors—without mentioning the target's name—to another volunteer (the audience) who knows the target person. On the basis of their message description, the "audience" volunteer would try to identify the target person as the referent of the message from among a set of several possible targets in the alleged research project.

A short essay consisting of several passages provides the input information about the target person. The behaviors described in each passage are evaluatively ambiguous; they can be interpreted as indicating either a positive or a negative trait with approximately equal likelihood (e.g., "persistent" vs. "stubborn" or "independent" vs. "aloof"). For example, the behavior described in the following sample passage could be labeled as either "independent" or "aloof": "Other than business engagements, Michael's contacts with people are surprisingly limited. He feels he doesn't really need to rely on anyone" (e.g., Echterhoff et al., 2008).

To manipulate the audience's supposed attitude toward the target person, the researchers informed the participants (in an offhand way) that their audience either likes the target (positive audience attitude) or dislikes the target (negative audience attitude). In their subsequent communication, participants typically exhibit audience tuning: They evaluatively tailor, or "tune," their messages to their audience's attitude (i.e., they create evaluatively positive messages for an audience who likes the target and evaluatively negative messages for an audience who dislikes the target).

After a delay (from approximately 10 min in some studies to several weeks in other studies), researchers tested the participants' memory for the original input information. Participants were asked to recall, as accurately as possible, the original essay about the target person in a free, written format. It is important to note that in demonstrations of the saying-is-believing effect the evaluative tone of the communicators' own recall for the original input information matches the evaluative tone of their previous, audience-tuned message. In other words, communicators' own memory representations of the message topic reflect the audience-tuned view expressed in their message rather than just the original target information. Communicators end up believing and remembering what they said rather than what they originally learned about the target. (The evaluative tone of participants' message and recall protocols is often determined by two coders who rate the overall valence based on positive or negative distortions relative to the original input information, with intercoder reliabilities typically above .85.)

After the initial demonstrations of the saying-is-believing effect, a number of studies using other paradigms have shown that people's mental representations of an experience can be profoundly shaped by how they verbally describe the experience to others (e.g., Adaval & Wyer, 2004; Schooler & Engstler-Schooler, 1990; Tversky & Marsh, 2000; for reviews, see Chiu, Krauss, & Lau, 1998; Marsh, 2007). Thus, the influence of verbal communication on subsequent cognition is well established. Also, the saying-is-believing effect in particular has been replicated with several variations in methodology and extended to new areas. For instance, although the effect was originally demonstrated for tuning to the audience's attitude toward the target (Higgins & Rholes, 1978), it has also been found for tuning to the audience's knowledge about the target (Higgins, McCann, & Fondacaro, 1982). Also, the effect occurs regardless of whether communicators know their audience's view before or after encoding the input information (Kopietz, Hellmann, Higgins, & Echterhoff, in press, Experiment 1). The effect has been extended from situations in which the communication topic is a single individual to situations in which the topic is a small group (Hausmann, Levine, & Higgins, 2008). Furthermore, the effect occurs not only with verbal stimulus material as input information about a target, but also with complex visual input material, namely video-filmed behaviors of target persons (Hellmann, 2007; Kopietz, Echterhoff, Niemeier, Hellmann, & Memon, 2009). Using a procedure that greatly differed from the standard saying-is-believing paradigm, Kopietz, Echterhoff, et al. (2009) recently found that audience-congruent retellings of a witnessed event can bias eyewitnesses' own event memory, thus extending the evidence to a new domain.

Critical to our current analysis, recent research (e.g., Echterhoff et al., 2005, 2008; Echterhoff, Lang, Krämer, & Higgins, 2009; Higgins et al., 2007; Kopietz, Echterhoff, et al., 2009; Kopietz, Hellmann, et al., in press) has demonstrated that the saying-is-believing effect occurs to the extent that communicators create a shared reality (characterized by the four conditions outlined earlier) with their audience about the target person. In the studies by Echterhoff, Higgins, and colleagues, communicators' memory representations of the target person (assessed by free recall) were biased by their audience tuning under conditions that support creating a shared reality but not under conditions that undermine creating a shared reality. The creation of a shared reality can fail when any one of the four conditions described earlier fails to be sufficiently satisfied. Because the relevant evidence in our communication studies is more straightforward regarding the fourth condition for creating a shared reality (i.e., the participating individuals actually experience the sharing), we will discuss evidence for this condition first.

A Successful Shared Reality Experience

The fourth condition—experiencing a successful connection to someone else's inner state—is relatively straightforward

to manipulate within the context of the saying-is-believing paradigm. In an early study, Higgins and Rholes (1978) found that the audience-congruent memory bias in postcommunication memory representations (i.e., recall of the target information that matches the audience's attitude toward the target) disappeared when communicators were exposed to the audience's attitude, read the target information, and expected to communicate a message but did not actually do so (see also Higgins et al., 2007). This result indicates that, in the standard paradigm, the mere knowledge of another person's inner state is not sufficient to produce an audience-congruent memory bias.[1] Thus, the finding suggests that the creation of a shared reality requires that communicators create an interpersonal connection to their audience. In the study by Higgins and Rholes (1978), this interpersonal connection was created by producing a tuned message about the target and sending it to the audience. (Later, we address alternative ways of experiencing a shared reality, specifically how knowledge of others' inner states can create a shared reality without the communication of audience-tuned messages.)

Even when communicator participants in saying-is-believing studies do produce audience-tuned messages, their experience of sharing should be influenced by the audience's response to their messages. Consistent with this assumption, Hausmann et al. (2008) found that, when the audience consisted of three persons and communication success was uncertain, the audience-tuning bias in communicators' recall occurred only when the audience explicitly validated communicators' messages by correctly identifying the target. Also, in two studies by Echterhoff et al. (2005, Experiments 1 and 3) using one-person audiences, the audience-tuning bias was found when communicators learned that the audience successfully identified the target person but not when communicators learned that the audience failed to identify the target person. Echterhoff et al. (2005) assessed communicators' experience of shared reality using a measure of epistemic trust in the audience's view. Epistemic trust was significantly higher after successful communication than it was after unsuccessful communication. Consistent with our theorizing, these findings suggest that a shared reality is achieved to the extent that people experience a successful connection to someone else's inner state about a target referent.

Future studies could examine what happens when communicators' experience of successful connection to their audience's attitude toward the target is challenged in a different way by events following message production. Rather than challenging whether they and their audience have connected on the same target referent, the challenge could be whether they have connected on the same attitude toward the target. In saying-is-believing studies, communicators have no reason to doubt the audience's attitude. After all, the experimenter gave them the corresponding information. However, the experience of successfully connecting to the audience's inner state could be eliminated, for instance, by telling communicator participants—after they have produced their audience-tuned message—that the experimenter erroneously gave them the wrong information concerning their audience's attitude toward the target. Now the communicators would no longer experience having successfully connected to the audience's inner state about the target. Under these circumstances, even if the communicators are explicitly told that the audience successfully identified the target person from the message despite this mistake, the saying-is-believing effect should be reduced or even eliminated.

The Motivation Leading to a Shared Reality

Other studies using the saying-is-believing paradigm provide evidence consistent with the idea that the motivation behind the creation of commonality with another person's inner state (i.e., the third condition) is a key condition for the achievement of shared reality. The experiments suggest that communicators create a shared reality with their audience only when their production of audience-congruent messages is appropriately motivated. In one set of studies, Echterhoff et al. (2008) manipulated the goals underlying audience tuning. It was assumed that, in the standard saying-is-believing conditions (e.g., Higgins & Rholes, 1978), audience tuning serves epistemic motives that are characteristic of shared reality. Specifically, the evaluative ambiguity inherent in the behavioral-input information about the target person should elicit the epistemic motivation to reduce uncertainty. By tuning messages to the attitude of the audience, communicators construct an audience-congruent representation of the target and, thus, attain a greater sense of certainty about what the target is like.

In the Echterhoff et al. (2008) studies, this standard shared-reality-goal condition was compared with conditions in which audience tuning served non-shared-reality goals. The non-shared-reality goals included obtaining monetary incentives for producing an audience-congruent message and entertaining the audience with an exaggerated, caricature-like description of the target person (Echterhoff et al., 2008, Experiments 2a and 2b). Based on the above rationale, it was hypothesized that communicators in the shared-reality-goal condition should adopt the audience's inner state during message production to reduce uncertainty about the target person. In contrast, in the non-shared-reality-goal conditions communicators should adopt

[1] Additional evidence confirmed that the phenomenon requires the act of communication (i.e., the process of saying). Regression analyses from several studies showed that the effect of audience attitude on communicators' subsequent recall was mediated by message valence: When message valence is included as a second independent variable, the effect of audience attitude is greatly reduced (often to nonsignificance), whereas the effect of message valence remains significant (see Higgins, 1992; McCann & Higgins, 1992). Together with the evidence from Higgins and Rholes (1978) and Higgins et al. (2007), these findings suggest that mere informational social influence is not sufficient to explain the phenomenon.

their audience's inner state primarily to attain goals unrelated to the epistemic motivation that is characteristic of shared reality; they pursue alternative, or "ulterior," goals that are not conducive to a shared reality.

As predicted, it was found that communicators in these alternative, non-shared-reality-goal conditions tuned their messages even more strongly to their audience's attitude than did communicators in the shared-reality-goal condition. However, the audience-tuning memory bias was not found when messages were tuned in the service of these alternative, non-shared-reality goals, whereas it was found as usual in the standard shared-reality-goal condition. Consistent with shared-reality assumptions, additional measures revealed that audience tuning was motivated by external demands to a greater extent in the alternative-goal conditions than it was in the shared-reality-goal condition. Also, communicators' epistemic trust in the audience and their audience-congruent message was significantly higher in the shared-reality-goal condition than in the alternative, non-shared-reality-goal conditions.

Follow-up research by Kopietz, Hellmann, et al. (in press, Experiment 1) revealed similar effects of the audience tuning goal (i.e., shared-reality goal vs. non-shared-reality goal), even when communicator participants had already encoded the target input information at the time of the goal manipulation. Furthermore, the researchers assessed the communicators' attainment of epistemic motives by asking them to indicate their certainty about their own view of the target after audience tuning. Communicators in the shared-reality-goal condition exhibited both the usual recall bias and higher certainty (relative to an alternative-goal condition). The effects of the audience-tuning goal were statistically mediated by communicators' epistemic trust in the audience's view, lending further support to the critical role of epistemic motives that are assumed to be characteristic of shared reality.

These findings suggest that when people merely want to go along with another person—for instance, to obtain rewards from this person—a shared reality with that person is not produced. Although communicators pursuing such goals generate audience-congruent representations, as reflected in their audience-tuned messages, their motivation does not lead them to experience a shared reality with the audience. Thus, when people generate representations corresponding to another person's inner state without being motivated to create a shared view about a target, they do not achieve a shared reality. What matters is not the fact of a commonality with another person per se, but the motivation which produces that commonality.

In another set of studies, the creation of a shared reality was shown to depend on whether communicators were or were not motivated to share inner states with the particular person who was the audience for their message (Echterhoff et al., 2005, Experiment 2; Echterhoff et al., 2008, Experiment 1; Kopietz, Hellmann, et al., in press). Presumably, communicators do not regard just any person to be an appropriate partner with whom to share inner states. As suggested by research on social comparison (e.g., Suls, Martin, & Wheeler, 2002) and group-anchored knowledge (e.g., Festinger, 1950; Kruglanski et al., 2006), individuals regard others who possess certain qualities, such as sufficient similarity and trustworthiness, as more appropriate partners with whom to share reality than others who lack these qualities. Among these qualities, membership in a perceiver's ingroup (versus outgroup) is likely to be particularly important.

Group research suggests that contact with members of one's in-group is rewarding because it fulfills various motives (Yzerbyt, Castano, Leyens, & Paladino, 2000), including fundamental epistemic motives (e.g., Hogg, 2007; Kruglanski et al., 2006) and relational needs (see Fiske, 2007; Levine & Kerr, 2007). Thus, people should be less motivated to create a shared reality with outgroup members than they are with ingroup members. Nonetheless, in the standard saying-is-believing paradigm, which involves a referential communication task, communicator participants can still be expected to tune their message to an outgroup audience. However, in comparison with tuning messages to an ingroup audience, tuning messages to an outgroup audience should be motivated more by task fulfillment and politeness demands than by the desire to achieve a shared reality with the audience for epistemic and relational motives. In the standard saying-is-believing paradigm, shared reality motives are typically induced, but when the audience is an outgroup member alternative, non-shared-reality motives should take precedence. Thus, if the motivation behind audience tuning is critical, then communicators tuning to an outgroup audience should exhibit little if any audience-congruent recall bias, even when they tune their message to their audience.

This is precisely what Echterhoff, Higgins, and colleagues found. Although communicators with an outgroup audience tailored their message to their audience's attitude to the same extent as did communicators with an ingroup audience, they did not incorporate the audience-tuned message into their own memory of the target. They also exhibited lower epistemic trust in their audience's view than did communicators tuning to an ingroup audience (Echterhoff et al., 2005, Experiment 2; Echterhoff et al., 2008, Experiment 1). Furthermore, participants (German students at a German university) who communicated to an audience belonging to a stigmatized outgroup (Turks) reported more often that they made an active effort to adapt their messages to their audience's views than did participants communicating to an ingroup (German) audience (Echterhoff et al., 2008, Experiment 1). These findings suggest that people producing audience-congruent messages merely to comply with external demands (e.g., behaving in a polite or unprejudiced manner; see Dovidio, Gaertner, Kawakami, & Hodson, 2002; Richeson & Trawalter, 2005) do not create a shared reality.

Researchers have also examined eyewitness retellings toward different audiences and found evidence consistent with this view, thereby extending the scope of findings beyond the stan-

dard saying-is-believing paradigm. In a study by Kopietz, Echterhoff, et al. (2009), student participants tuned their retelling of a witnessed incident to their audience's evaluation of the suspects in the incident. It was found that participants' own memories and judgments regarding the incident were more biased toward their audience when they were more motivated to create a shared view with a particular audience (a student with a similar vs. a dissimilar academic background).

In another study, Kopietz, Hellmann, et al. (in press, Experiment 2) directly manipulated the extent to which communicators are motivated by the epistemic benefits afforded by a shared reality. These investigators assumed, as suggested above, that audience tuning in the saying-is-believing paradigm reduces uncertainty about the target person arising from the evaluative ambiguity of the original information about the target. To directly examine the role of epistemic uncertainty, the investigators provided communicators at the beginning of the experiment with (bogus) feedback about their performance in a task that required forming judgments of people embedded in social settings. The depicted scenes allowed several different interpretations and were highly ambiguous, like the pictures in the well-known Thematic Apperception Test (Murray, 1943). Communicators who received negative feedback about their performance (presumably the reliability of their judgments about others) were induced to feel more uncertainty about their social judgments than were those who received positive feedback on their performance.

The study found that the high-uncertainty communicators tuned to their audience more than did the low-uncertainty communicators, which is consistent with their stronger epistemic motive to share reality with another person. Furthermore, a saying-is-believing effect (assessed by the association between audience-congruent message and subsequent recall) was found for high-uncertainty communicators but not for low-uncertainty communicators. These findings support the idea that the creation of a shared reality as a function of message tuning depends on the strength of epistemic motives. Additional evidence for greater social sharing under high uncertainty has also been obtained with other paradigms (e.g., Fu et al., 2007; Kruglanski et al., 2006; Lun, Sinclair, Whitchurch, & Glenn, 2007).

As outlined above, the communicators' motivation to share reality with a given audience can depend on the audience's membership in the communicator's ingroup or outgroup. However, although group membership is an important attribute of interaction partners, there may be additional attributes that affect communicators' motivation to share reality. Echterhoff, Lang, et al. (2009) examined the role of other audience characteristics in the saying-is-believing paradigm in the context of personnel assessment in an organization. Student communicators described an employee to either an equal-status audience (a student temp) or a higher status audience (a company board member). The higher status audience clearly possessed higher domain-specific expertise, such as professional competence in the assessment of employees. Although audience tuning occurred in both audience-status conditions, the memory bias from audience-tuning was found only in the equal-status condition. Apparently, communicators were more willing to share reality with the equal-status audience than with the higher status audience. An extended measure of trust in the audience, which include epistemic components (e.g., trust in the audience's judgments in general and about other people in particular) and relational components (e.g., readiness to affiliate and be close), was also higher in the equal-status condition and statistically mediated the audience-status effect on memory bias.

These findings show that an audience's domain-specific expertise or status is not sufficient to motivate communicators to create a shared reality with the audience. Rather, the audience's epistemic and relational trustworthiness is more critical. The feelings of general trust and the readiness to connect and affiliate covered by the extended trust measure in Echterhoff, Lang, et al. (2009) cannot be reduced to mere expertise. What matters is whether communicators want to make an epistemic and relational connection to the audience. Last but not least, finding differences in the memory bias for different types of audiences belonging to the same principal group (i.e., the same company) also suggests that shared reality is not an all-or-nothing affair but instead varies within audiences from the same social ingroup.

In regard to the role of epistemic motivation, Echterhoff, Lang, et al. (2009) found that study participants exhibiting stronger epistemic needs, as indicated by higher scores on the Need for Cognitive Closure scale (Kruglanski, Webster, & Klem, 1993), also exhibited a stronger audience-tuning memory bias. When presented with ambiguous input information, people with a greater need for definite and unambiguous representations apparently use audience tuning to a greater extent to create a confident, unambiguous memory representation of the target person.

With the exception of the latter experiment by Echterhoff, Lang, et al. (2009), all other evidence regarding the motives underlying the saying-is-believing effect involves the epistemic dimension. As stated earlier, the desire for connectedness and affiliation with others is another core motive that can drive the creation of shared reality. Further evidence for the role of relational motives in the sharing of inner states has been found in several recent studies. These investigations have employed procedures other than the saying-is-believing paradigm, thus extending the scope of empirical evidence for our concept of shared reality.

In one program of research investigating participants' motive for forming a positive relationship with an interaction partner, Sinclair, Hardin, and colleagues (Sinclair, Huntsinger, et al., 2005; Sinclair, Lowery, Hardin, & Colangelo, 2005) examined how participants' views of a social category (e.g., endorsement of stereotypes of African Americans) or themselves (self-stereotyping) shifted toward the ostensible views of that

partner. The relational motive varied as a function of either a situational induction (the partner's manipulated similarity or likability) or participants' existing affiliative motivation (assessed by personality scales). Results showed that participants' views shifted more toward their interaction partner's ostensible views when the social relationship motive was strong than they did when the relationship motive was weak. There was also evidence that an independent measure of participants' relational motivation mediated these effects (Sinclair, Lowery, et al., 2005). These authors concluded that participants created a shared reality with their interaction partners to the extent that they were motivated to have a positive relationship with them.

Additional studies by Pinel and her colleagues (2006) provide evidence for the role of relational motives in social sharing of experiences unrelated to stereotypes, such as being amused by a target person's unusual voice, loving a particular band, or exhibiting the same spontaneous responses to word stimuli. The investigators focused on effects of sharing subjective experiences on an important interpersonal variable, namely liking one's interaction partner. Participants' need for connectedness differed as a function of either individual differences (assessed by a personality questionnaire, Pinel et al., Study 4) or an experimental manipulation (inducing feelings of existential isolation, Pinel et al., Study 5). Results showed that the effect of sharing inner states on liking their partner was higher when participants' need for connectedness was high.

These two lines of research demonstrate the role of relational motives in the sharing of inner states. The findings supplement the evidence from studies conducted within the saying-is-believing paradigm that has largely emphasized epistemic factors.

Sharing Inner States About a Target

We now turn to the first and second conditions for shared reality. The second condition is that shared reality involves sharing inner states about something (i.e., some aspect of the world), experiencing some aspect of the world in common with another person. Communication between participants about a target person is an inherent element of the standard saying-is-believing paradigm. With different communication motives, however, communicators may tune their message descriptions of the target to suit the audience's attitude toward the target without tuning what their own inner state is about to what the audience's inner state is about. The studies by Echterhoff et al. (2008, Experiments 2a and 2b)—which were primarily designed to examine the role of audience-tuning motives—illustrate this point. When communicators tuned their message to an extreme extent—for instance, by exaggerating their description of the target person to entertain their audience—there was no saying-is-believing effect and the communicators did not perceive their message to be a valid description of the target. They did not feel that they actually conveyed trustworthy or valid information about the target. In this case, although the target person was the message topic, the communicators' message was about exaggerating their target description—the referent was a caricature. This did not match the audience's attitude, which was about the actual target person. Without a shared aboutness, there was no shared reality and the saying-is-believing effect disappeared.

To provide further support for the role of aboutness in shared reality, future studies should manipulate it more directly. For instance, imagine a study in which all participants receive evaluatively ambiguous information describing the recent behaviors of a target person who is presumably a colleague of their audience. They also learn that their audience is either satisfied or dissatisfied with the target person's behaviors. In one condition, they are asked to communicate their evaluative impression of the target person's behaviors to the audience. In this case, what this message is about would be the same as what the audience's attitude is about, namely evaluation of the target person. In another condition, participants are told that, in order to empathize with the audience, it is helpful to communicate in a way that matches the audience's feelings—feeling good from being satisfied or feeling bad from being dissatisfied. In this case the message is not about the target person. The message tries to capture the same general mood that the audience is experiencing while being independent from any reference to the outside world. In both conditions, we would expect the message to be tuned positively in the satisfied condition and negatively in the dissatisfied condition. However, participants in the first condition (those sharing an evaluation about the target person) should exhibit a greater saying-is-believing effect than should participants in the second condition (those duplicating the general mood of the audience).

Finally, in support of the first condition for shared reality, the findings from the communication studies already discussed provide evidence that shared reality requires a commonality between the communicator's and the audience's inner states and not merely between externally observable states or behaviors. This is because several of our studies have found that when one of the other conditions for creating a shared reality was not sufficiently satisfied, the saying-is-believing effect disappeared despite significant message tuning to the audience (Echterhoff et al., 2005, 2008; Echterhoff, Lang, et al., 2009; Kopietz, Hellmann, et al., in press, Experiment 1)—that is, despite the participants' communication behaviors providing a clearly observable commonality with the audience. Thus, external behavioral commonality with the audience, as displayed in an audience-tuned message, is not sufficient to create the shared reality underlying the saying-is-believing effect.

As another example, in one saying-is-believing study (Echterhoff et al., 2008, Experiment 3), communicators were either blatantly exhorted or not blatantly exhorted to adapt their description of the target person to the audience's attitude (i.e., to describe the target person in a positive or negative way, depending on the audience-attitude condition). When there was no such blatant demand, the usual saying-is-believing effect was

found. However, when communicators were blatantly instructed to take their audience's attitude into account, the effect was eliminated. In this latter condition, the observable commonality between communicator and audience was an external commonality that did not correspond to an internal commonality because it was plainly just doing what the experimenter demanded. What matters is not external commonality but rather motivated and experienced commonality involving people's inner states.

Conditions for Creating Shared Reality Without the Need for Message Tuning

Earlier, we described the finding of Higgins and Rholes (1978) that the saying-is-believing effect disappeared when communicators knew the audience's attitude and read the target information but did not actually produce a message. A recent experiment by Higgins et al. (2007) extended this study by manipulating the size of the audience (a single addressee vs. a group of three addressees with the same attitude) as well as whether participants did or did not produce a message. Communicators' epistemic trust in the audience's judgment was also measured. When the audience was a single individual, the saying-is-believing effect was found when participants actually produced a message, but not when they were prevented from producing a message, thus replicating the original findings of Higgins and Rholes (1978). However, when the audience was composed of three people, an audience-congruent recall bias was found *without* message production (see Hausmann et al., 2008, for additional evidence for the impact of audience size). Participants also indicated higher epistemic trust in the group audience than in the individual audience. This suggests that when epistemic trust in others is sufficiently high, knowledge of their inner states, such as knowledge of their attitude about someone, can create a shared reality without the need for message tuning. That is, engaging in message tuning is not a necessary condition for shared reality to be created—what is necessary is experiencing epistemic trust in others' inner states and being motivated to connect with their inner states about some object in the world.

This conclusion also resolves an inconsistency between the findings of Higgins and Rholes (1978) and earlier findings by Schramm and Danielson (1958) and Zimmerman and Bauer (1956). These studies from the 1950s found that merely knowing the attitude of an anticipated audience *did* lead to an audience-congruent memory bias in the absence of overt communication—a bias that could be described as a result of direct social influence from the audience. However, the audience in the Higgins and Rholes (1978) study was an individual (and also a stranger), whereas the audience in the earlier studies was a group of people holding a consensual view about a target topic (i.e., a lobby or interest group that was either in favor of or against some position). It is likely that the epistemic trust in the audience was higher in the earlier studies than in the study by Higgins and Rholes (1978).

The shared reality account can, then, be used to predict other conditions under which overt communication is required for the occurrence of audience-congruent memory biases. For instance, for a shared reality without message tuning, the audience might not have to be a group as long as epistemic trust in the audience is sufficiently high. This might be the case, for example, when a single-person audience is a significant other (a close friend, parent, or spouse). Conversely, if epistemic trust in a group audience—even an ingroup audience—is sufficiently low regarding some topic, then message tuning toward the audience might be necessary to create a shared reality with them. For instance, a teenager may initially not share her or his family members' attitude toward a friend but later create a shared reality by tuning her or his communication to the family members. These possibilities should be tested in future studies.

DIFFERENCES BETWEEN SHARED REALITY AND ALTERNATIVE EXPLANATIONS OF THE SAYING-IS-BELIEVING EFFECT

As discussed above, there are conditions in which an audience-congruent memory bias can occur without message tuning toward the audience. Nonetheless, most of the evidence for an audience-congruent memory bias has been obtained in studies in which message tuning toward the audience did take place—the saying-is-believing studies. The findings from these studies are consistent with the theory of shared reality outlined in this article. In this section, we consider alternative mechanisms that might explain or contribute to these findings and discuss why a shared reality mechanism is needed to account for the full pattern of findings.

According to one account, originally advanced by Higgins and Rholes (1978), the saying-is-believing effect is driven by basic information processing mechanisms. Higgins and Rholes (1978) proposed that an audience-congruent, evaluatively biased representation of the target person is created during message production and stored along with the representation that is initially encoded when participants read the original input information about the target person. Thus, it was assumed that there were two stored representations of the target person. Higgins and Rholes (1978) proposed that, over time, communicators' reconstructive memory would increasingly rely on the message-based representation because the representation of the original input information would decay more rapidly (i.e., become increasingly inaccessible). A similar mechanism would be selective rehearsal and retrieval of the audience-congruent target information (Pasupathi, Stallworth, & Murdoch, 1998).

From this information-processing perspective, the production of a biased message about a communication topic is responsible for the saying-is-believing effect, rendering the audience attitude-congruent aspects of the original stimulus information

more accessible than the audience attitude-incongruent aspects. Such a view is consistent with prominent theoretical models (e.g., Higgins, 1996; Mussweiler, 2003) and numerous findings in social cognition (e.g., Bargh, Bond, Lombardi, & Tota, 1986; Higgins, Rholes, & Jones, 1977; Srull & Wyer, 1979) that highlight the important role of information activation and accessibility in response to stimuli. However, two types of evidence from studies by Echterhoff, Higgins, and colleagues are inconsistent with such information-processing accounts. First, in two studies (Echterhoff et al., 2005, Experiments 1 and 3), the audience-tuning effect was eliminated by a failure-feedback manipulation that was employed after communicators had already produced audience-congruent messages. In the case of such a feedback manipulation, message production cannot differ between the experimental feedback conditions (here, successful vs. unsuccessful identification of the target person). Thus, audience-attitude-congruent rehearsal or the production of a biased message per se is not sufficient for the saying-is-believing effect to occur.

Second, in their studies comparing the shared reality goal with alternative non-shared-reality goals for message tuning, Echterhoff et al. (2008) examined whether the reduced saying-is-believing effect found with alternative goals (e.g., complying with a blatant demand) could be due to better rehearsal of or better access to the original target information (i.e., less biased information). To this end, Echterhoff et al. (2008) analyzed the amount of accurate reproductions of idea units from the original target information in communicators' message and recall protocols. It was found that communicators in the alternative-goal conditions included, if anything, fewer accurate reproductions of the original information in their messages and free recall than did communicators in the shared-reality-goal condition. Moreover, a greater number of correct original information in the message and recall protocols was associated with, if anything, a slightly higher saying-is-believing effect. These findings are inconsistent with the notion that the reduced effect in the non-shared-reality goal conditions was due to better (or less biased) rehearsal or retrieval (i.e., accessibility) of the content of the original target information.

What other information processing mechanisms—other than effects from rehearsal or variation in information accessibility—might account for the saying-is-believing effect? One possibility suggested by recent memory research is the ability to discriminate between the information from the original input and the information in the message (see Bayen, Murnane, & Erdfelder, 1996; Johnson, Hashtroudi, & Lindsay, 1993). For instance, when communicators tune to their audience predominantly for alternative motives such as compliance (rather than a shared-reality goal) they may be better at keeping track of what they communicated about the topic than what they originally learned about the topic (also see Wyer, 2004). Thus, enhanced source discrimination could reduce the size of the saying-is-believing effect.

To assess the validity of a source-discrimination account, Echterhoff et al. (2008) included a source-memory test in their studies. Participants were asked to indicate the source of test items (consisting of short statements such as "The person tries to save money") that were taken either from the original target information or from their own messages. Across three studies, there was no evidence that a reduced audience-congruent recall bias was due to better discrimination between the original target information and the audience-congruent messages. Thus, any processing differences that might lead communicators to keep track of what they communicated (rather than what they originally read) were not responsible for the differences in the saying-is-believing effect. Even if features associated with, or "tagged" to, the message information differed across the communication-goal conditions, these tagged features did not produce differences in the saying-is-believing effect. Hence, an account based on source tagging and discrimination is not plausible.

In sum, the basic information processing mechanisms that have been proposed to explain the saying-is-believing effect are not sufficient to account for the obtained findings, although they do perhaps contribute to the effect in some cases. What other mechanisms might account for the effect? A different kind of alternative to a shared-reality account involves differences in communicators' awareness or perception of a bias in their message (e.g., Strack & Hannover, 1996; Todorov, 2002). According to this view, the magnitude of the saying-is-believing effect would depend on the extent to which communicators perceive that their message was distorted relative to the original target information. Communicators who perceive their message as more biased might be better able to keep track of the biasing information from their message and hence might subsequently try harder to resist reporting biased information.

Perception of bias could conceivably differ when communicators perform audience tuning under different conditions, such as with shared-reality versus non-shared-reality goals (see Echterhoff et al., 2008). However, several findings from the studies by Echterhoff et al. (2008) are inconsistent with this view. First, correlations between a measure that tapped communicators' perception of bias (communicators' ratings of whether they felt their audience tuning was motivated by external demands) and the size of the saying-is-believing effect were small (−.11 to .06) and nonsignificant. Second, as described earlier, there was no evidence that the presumed greater perception of bias in the non-shared-reality-goal conditions produced better discrimination between the original target information and the message information. Third, there was no evidence for a correction away from extremely tuned messages, which one would expect to find if perception of bias was the underlying mechanism. Finally, the mechanism of bias perception can hardly account for the differences in the saying-is-believing effect that were obtained from manipulations employed after the communication was completed, such as

success–failure feedback about the audience's identification of the target (Echterhoff et al., 2005, Experiments 1 and 3).

Finally, another alternative mechanism that might underlie the saying-is-believing effect is cognitive dissonance (e.g., Festinger, 1957). According to dissonance theory, it could be argued that the memory bias occurs because communicators reduce dissonance arising from producing an evaluatively distorted message (contrary to their self-concept of being truthful) by aligning their own memory representation with the biased message. That is, to reduce the dissonance resulting from the production of a biased message (relative to the original input information), communicators could decide that what they said was, in fact, not a distortion of the input information. Thus, they would feel that their message was an accurate description of the input information, and they would use this message as a basis for reconstructing the original information in the free-recall memory test. Communicators would, however, not need to reduce dissonance this way when a sufficient external inducement can account for the production of the biased message. It could be argued, for instance, that the monetary incentive or blatant instruction for audience tuning, which eliminated the saying-is-believing effect in the studies by Echterhoff et al. (2008, Experiments 2a, 2b, and 3), are perceived as such external inducements. This process would be similar to the one demonstrated in the classical study by Festinger and Carlsmith (1959). In that experiment, external inducements for performing behaviors (such as a $20 reward for performing a tedious task) reduced the effect of counterattitudinal advocacy on subsequent cognition (an attitude).

However, several findings from audience-tuning studies are not easily reconciled with a cognitive dissonance account. First, failure feedback (Echterhoff et al., 2005, Experiments 1 and 3) is a negative consequence of freely choosing to bias one's message in the direction of the audience. Such a negative consequence of message tuning should, if anything, increase dissonance and lead to a stronger saying-is-believing effect than would the positive consequence of success feedback. However, the opposite finding was obtained. Second, consider the cognitive dissonance implications of tuning messages to an outgroup audience versus an ingroup audience (Echterhoff et al., 2005, Experiment 2; Echterhoff et al., 2008, Experiment 1). When communicators tune to an outgroup audience, they should experience greater dissonance than when they tune to an ingroup audience, because adapting one's behavior to the attitude of a rejected audience is more inconsistent than adapting to the attitude of an accepted audience. Thus, the saying-is-believing effect should be stronger for audience tuning to an outgroup audience. But, once again, the opposite finding was obtained.

Third, a dissonance account would predict that the more that participants feel they constructed their message to comply with external demands, the more they can justify what they did as externally determined—thus adding consonant cognitions and reducing dissonance. Therefore, if dissonance were the mechanism underlying the observed effects, the audience-tuning memory bias should have been weaker as more participants complied with external demands to tune their message—a predicted negative correlation between feeling that one's message complied with external demands and the size of the audience-tuning memory bias. However, evidence from saying-is-believing studies does not support this prediction. In three experiments (Echterhoff et al., 2008, Experiments 2 and 3; Kopietz, Hellmann, et al., in press, Experiment 1), participants rated how much they felt they were complying with external demands when they constructed their message. The correlations between this measure of perceived compliance and the magnitude of the memory bias were between .06 and .02—nonsignificant and not even negative correlations.

Finally, dissonance theory would predict a negative correlation between trust in the audience and the size of the memory bias toward the message. According to dissonance theory, if people can readily rationalize an inconsistency, then there is little, if any, dissonance to begin with and thus no need to resolve it (e.g., Festinger, 1957, p. 2). If communicators trust their audience's view about the target person, then tuning the message to the audience's attitude about the target person would be telling the truth about the target person. Thus, tuning one's message would be perceived as reasonable and appropriate from the beginning. This means that the more communicators trust their audience, the less dissonance they should experience to begin with, and the less they would need to bias their memory toward their message to reduce dissonance. According to this rationale, there should be a negative correlation between trust in the audience and the magnitude of the memory bias toward the message. However, consistent with shared reality theory, the opposite finding (i.e., a positive correlation) has been obtained in several studies—that is, the memory bias was stronger for communicators with greater epistemic trust in the audience (Echterhoff et al., 2005, 2008).

It should be noted that the arguments against a dissonance account also speak against an explanation based on a closely related account: self-perception theory (Bem, 1967). For instance, the differential saying-is-believing effect found with feedback about audience success versus audience failure in identifying the target (Echterhoff et al., 2005, Experiments 1 and 3) is inconsistent with a self-perception account. Failure feedback cannot be perceived as a situational force producing the message in the first place—after all, the feedback information was given only after message production. Using the terms of Bem's (1967) theory, the audience-tuning behavior should be perceived to have the same level of *mandedness* (i.e., level of external inducement) in both the success and the failure condition. A self-perception account, therefore, cannot explain the weaker saying-is-believing effect in the failure-feedback condition.

To sum up, the evidence from studies on the saying-is-believing effect is consistent with our concept of shared reality

but not with several alternative mechanisms (rehearsal, retrieval accessibility, discrimination between original target information and audience-congruent message information, perception of bias, dissonance, self-perception). The greater support for our shared-reality theory than for the information processing alternatives is also reflected in the results of meta-analyses conducted by Echterhoff et al. (2008). These meta-analyses focused on variables that represent the main possible mechanisms that might underlie differential audience-tuning effects: epistemic trust (a measure derived from shared reality theory), rehearsal of the original target information (accurate reproductions in the messages), retrieval of the original target information (assessed by accurate reproductions in free recall and inferred hit rates from the source-discrimination tests), and the ability to discriminate between the original message and the current message information. The meta-analyses showed that the association between epistemic trust and the audience-congruent recall bias was highly significant, both in bivariate regressions and multiple regressions. In contrast, the mean effects of the other variables were considerably smaller and were not significant, even given a large sample size and the resulting high power. Another meta-analysis showed that the mediation by epistemic trust of the experimental effects (here, of audience-tuning goals) on the audience-congruent recall bias was highly significant (see R.M. Baron & Kenny, 1986). No mediation effect was obtained for the alternative factors. These findings suggest that epistemic trust, which is one important index of experienced shared reality, is superior to other potentially mediating factors.

BROADER PERSPECTIVES: COMPARISONS BETWEEN SHARED REALITY AND RELATED CONCEPTS

It has long been understood that people's behaviors, thoughts, motivation, and feelings are shaped by exchange and contact with others. The social sciences and social psychology are replete with accounts arguing that individuals jointly create meaning and that their representations of the world are interdependent (e.g., Cooley, 1902/1964; Festinger, 1950; Heider, 1958; Mead, 1934; Moscovici, 1981; Newcomb, 1959; Resnick et al., 1991; Rommetveit, 1974; Schachter, 1959; Sherif, 1935, 1936; Smith & Semin, 2004). As noted in the introduction, research in recent years has made great strides in the empirical demonstration and investigation of various related phenomena (see Semin, 2007). So what can our notion of shared reality tell us about such interpersonal phenomena that is not yet covered by the large and rapidly accumulating body of research in this field? What is the distinctive contribution of our concept? We believe that shared-reality theory addresses issues that are not fully captured by existing accounts and hence provides a new and comprehensive perspective on social-sharing phenomena. In this section, we discuss relations between phenomena described by other, related concepts (empathy, perspective taking, theory of mind, embodied synchrony, common ground, interactive alignment, and socially shared knowledge) and phenomena captured by our notion of shared reality. In addition to some similarities, this analysis reveals important differences.

As a way to suggest how shared reality and other concepts can be integrated, we propose that some of the neighboring phenomena can be regarded as building blocks for shared reality, as they provide preconditions for creating common inner states (corresponding with our first condition) or determining the aboutness of these states (corresponding with our second condition). Some of the discussed phenomena—such as empathy, theory of mind, and embodied synchrony—involve processes by which perceivers pick up or infer another person's inner state. Thus, these phenomena can play a role in the experience of common inner states (our first condition). Other phenomena—such as perspective taking and common ground—also entail awareness or inferences about the target referent of another person's inner state. These latter phenomena can thus play a role in satisfying the aboutness of common inner states (our second condition).

The Interpersonal Matching of Affective States: Empathy and Mood Contagion

Empathy (de Vignemont & Singer, 2006; de Waal, 2008) and emotional or mood contagion (Hatfield et al., 1994; Neumann & Strack, 2000) are among the most prominent phenomena that involve the sharing of inner states between self and other. In these cases, people try to replicate or simply "catch" another person's affective state, resulting in an interpersonal matching of affective states. From our perspective, these phenomena are similar to shared reality in that they involve a subjectively experienced commonality of inner states. However, the phenomena differ from shared reality because they can occur without the perceiver sharing the other person's view about an object or target referent—that is, without satisfying our second condition for shared reality. For instance, Person A may feel sorrow after hearing that Person B's wife has left him. Person A feels sorrow about the simple fact that Person B is clearly in pain, whereas Person B feels sorrow about his wife leaving him. In this case, the commonality of feeling sorrow does not extend to sharing the referent or target of the sorrow—there is no sharing of what the sorrow is about.[2]

Indeed, according to current definitions (e.g., de Vignemont & Singer, 2006; de Waal, 2008), empathy requires that empathizers share another person's inner state, but it does not require that the sharing extend to a referent target (i.e., what the inner state is about). For instance, among three potential criteria for empathy discussed by de Waal (2008) ("the capacity to (a) be

[2]In this example, there could be a shared reality if Person B feels sad about his wife's behavior and Person A similarly feels sad about B's wife's behavior. Note that the cases in which the conditions for shared reality are given involve a triadic constellation (between Person A, Person B, and a target referent), whereas the cases in which the conditions for shared reality are not sufficiently satisfied involve a dyadic constellation (between Person A and Person B).

affected by and share the emotional state of another, (b) assess the reasons for the other's state, and (c) identify with the other, adopting his or her perspective" (p. 281), only the first is explicitly identified as necessary: "the term 'empathy' (. . .) applies even if only criterion (a) is met" (p. 281). This view is consistent with empirical approaches to empathy that do not entail target referents of emotional states (e.g., Carr, Iacoboni, Dubeau, Mazziotta, & Lenzi, 2003; Schulte-Rüther, Markowitsch, Fink, & Piefke, 2007).

A similar case can be made for commonalities of emotional states that do not involve attempts to empathize. For instance, fear can rapidly spread in a flock of birds just as distress may spread in a room full of newborns without a commensurate awareness of what triggered the initial reaction (see de Waal, 2008). Also, the aboutness of inner states is sometimes not clearly established in empirical studies on the interpersonal matching of emotions. For instance, Wicker et al. (2003) measured brain activity while participants viewed short movie clips of actors sniffing the contents of a glass and reacting with a pleased or disgusted facial expression. Participants were then themselves exposed to pleasant or disgusting odorants. It was found that anterior insula, a brain region implicated in the processing of both olfactory and painful stimuli, was activated both by the experience of disgust and the observation of the disgusted facial expressions of others. However, it was not reported whether the observing and observed person actually felt similarly about the object of their experience (i.e., the glass or its content). Thus, it remained unclear whether there was a sharing of inner states about the target of the observed experience. Of course, if it is ascertained that the matching responses in the observer extend to the same target object, our second condition for shared reality would be satisfied. However, the motivational processes leading to such a commonality of emotional states (our third condition) would still have to be analyzed for the particular phenomenon.

In regard to another type of affective state, when a perceiver picks up another person's positive or negative mood, that mood is not necessarily in reference to something. For instance, Neumann and Strack (2000) demonstrated that mood states can be transferred interpersonally without the perceiver being aware of its origin or referent object. Thus, it is not necessary that the person catching another person's mood knows the source of the other person's mood state.

Although these cases of matching affective states do not satisfy the aboutness condition of shared reality (our second condition), they still might contribute to a shared reality because they involve processes by which perceivers pick up another person's inner (here, affective) state. Earlier in this article, we have argued that such processes are necessary for the achievement of the first condition for shared reality: the sense of a commonality of inner states. In other words, some type of (subjectively experienced) access to another person's inner state is a critical precondition or building block of shared reality. By our view, then, processes involved in empathizing and mood contagion can be regarded as such building blocks and thus might serve as precursor mechanisms in the unfolding of a full-blown shared reality.

Perspective Taking

In contrast to mood matching or the discussed cases of empathy, perspective taking or role taking requires aboutness or referentiality because it involves views about some aspect of the world (Higgins, 1981; Krauss & Fussell, 1991; Mead, 1934; Piaget & Inhelder, 1956).[3] In perspective taking, a person intuits, as accurately as possible, another person's viewpoint, perceptions, thoughts, knowledge, attitudes, or goals. More generally, perspective taking entails taking the role of someone else (Mead, 1934). Its primary purpose is to see and appreciate a situation, state, or object as it is experienced by others. We suspect that the difference between this notion of perspective taking and our notion of shared reality lies in the extent to which perceivers experience a commonality of inner states. To the extent that perspective taking implies an appreciation of the difference between one's own and another person's view—that is, non-egocentrism (see Piaget & Inhelder, 1956)—it does not entail the experience of having common inner states. For instance, when a company executive takes the perspective of a blue-collar employee advocating a strike, the executive recognizes ways in which the employee views the salary negotiations differently. Clearly, taking the employee's perspective does not require that the executive hold the same view or inner state about the negotiations or the strike. Similarly, when a professor takes the perspective of a student regarding the work load in her seminar she may recognize the student's attitude toward the work assignments, but this does not mean that she shares that student's attitude. Perspective taking can even lead to changes in beliefs or attitudes about a target referent, but it does not have to lead to a commonality of inner states. Indeed, realizing another party's views, beliefs, or goals through perspective taking may even increase people's resolution to stick to or bolster their own position, especially in the context of diverging interests or social conflict (Epley et al., 2006).

Although perspective taking differs in these respects from shared reality, there are also possible interactions between the two phenomena. Because perspective taking implies an awareness of the object or referent of another person's view, it may involve processes that allow perceivers to recognize or infer the target of others' inner states. Thus, mechanisms implicated in perspective taking may be building blocks or precursor processes for the creation of shared reality. To achieve a sense of shared inner states about a target referent, perceivers first need

[3]Some scholars focus on the empathic aspect of perspective taking, defining it as the sharing of someone else's affective or emotional reactions to a distressing situation (Batson, 1994). For the purpose of this article, however, we focus our analysis on definitions that permit distinctions between constructs.

to identify the target referent of another person's inner state. Processes of perspective taking may allow perceivers to examine whether another person actually has in mind or is attending to the same object that they have in mind.

Theory of Mind

Given that we have emphasized the appreciation of others' inner states in mediating their overt behavior, we also want to address the relation between our notion of shared reality and the concept of theory of mind. Theory of mind is another phenomenon in which people obtain access to others' inner states in relation to some target referent. In comparison with the commonality of affective states that we have analyzed, theory of mind encompasses a wider range of inner states, such as beliefs, intentions, and desires. Historically, there has been a close relation between the concept of perspective taking and the concept of theory of mind, given that they were both offered as explanations for an important developmental shift in young children's understanding of their social world: the recognition that individuals have inner states like thoughts and feelings that influence their behavior. (The two concepts differ, however, in the mechanism postulated as underlying the inference about others' inner states.)

In their seminal paper, Premack and Woodruff (1978) defined theory of mind as the ability to impute mental (i.e., inner) states such as beliefs or desires to others and to predict behavior on the basis of such states. A theory of mind allows humans to represent propositions about the world (e.g., "The new colleague is nice") at a second-order level by relating them to a person's mental state concerning the world: "Thomas believes that the new colleague is nice." As for perspective taking, the difference between our notion of shared reality and the concept of theory of mind is clear with respect to our first (and fourth) condition for shared reality— experiencing a successfully created commonality of inner states. You know that Thomas believes the new colleague is nice, but that does not mean that you share this belief about the new colleague. To the extent that theory of mind underlies people's ability to influence others, it implies an initial discrepancy of inner states rather than a commonality. Social influence situations involve attempts at managing others' inner states (Higgins & Pittman, 2008) precisely because, by applying your theory of mind, you have discovered that their inner state (e.g., their belief, attitude, or feeling about something) is different from your own on some matter. Given this, you try to change the other's inner state in order to bring it closer to your own.

There is a further implication of this difference. As described by Leslie (1987), the result of the mentalizing involved in theory of mind is that the primary proposition (that the new colleague is nice) becomes opaque (Quine, 1961). The proposition is placed in parentheses, stripping it of its referential truth value. When it is said that "Thomas believes that the new colleague is nice," the question of whether the new colleague is actually nice is suspended. In theory of mind, then, the recognition of another person's inner state does not involve assigning objectivity or truth to that inner state (see also Leslie et al., 2004). Inferring that Thomas believes the new colleague is nice does not say anything about whether Thomas's belief is accurate. In contrast, if someone creates a shared reality with Thomas about the new colleague being nice, then that person will experience the shared belief about the new colleague as being the truth.

Embodied Synchrony and Mirroring

How does shared reality relate to the phenomena of embodied social synchrony (e.g., Barsalou et al., 2003; Gallese et al., 2004; Iacoboni, 2008) that have recently commanded much attention and inspired debates about the nature of interpersonal and social processes (see Semin, 2007; Semin & Cacioppo, 2008)? In embodied synchrony or mirroring, an observer is assumed to replicate or simulate the observed person's inner state. In other words, the observation of another person's expression of an inner state creates a matching inner state in the observer—typically patterns of neural or mental activation that underlie the performance of an action (Oberman et al., 2007) or the expression of an emotion (e.g., Carr et al., 2003).

Studies on embodied synchronization typically assess the correspondence of inner (neural) states between observing and observed individuals. However, such correspondence does not necessarily mean that the observer shares the observed person's inner state about a target referent (beliefs, attitudes, etc.). First, there are pertinent studies that do not examine or discuss whether the correspondence of inner states extends to corresponding experiences of a target or object (e.g., Carr et al., 2003; Schulte-Rüther et al., 2007; Wicker et al., 2003). Second, some studies have revealed neural simulation for intransitive actions. Intransitive actions such as dancing, lack any specific reference object (Calvo-Merino, Glaser, Grèzes, Passingham, & Haggard, 2005; Cross, Hamilton, & Grafton, 2006; see also Tomasello et al., 2005, p. 678). Thus, phenomena of embodied synchrony can occur without the aboutness that we have described as one condition of shared reality.

We recognize that many other studies in this field have investigated neural mirroring for actions that are related to a reference object. Indeed, the groundbreaking studies by Rizzolatti, Gallese, and colleagues (see Gallese et al., 2004) demonstrated mirror neuron activity in the brain of monkeys who observed actions directed at an object (e.g., food items). Furthermore, research with human participants indicates that the activity of the mirror neuron system may be sufficiently context sensitive to allow the distinction of different intentions underlying an action. For instance, Iacoboni et al. (2005) investigated mirror activities when participants saw a video clip of a hand grasping a mug. The authors found that neural activity differed depending on whether the context suggested that the underlying

intention was drinking (when the mug was filled with tea and other items on a table, such as cookies, were prepared for consumption) or cleaning up (when the mug was empty and other items, such as cookie crumbs, indicated finished consumption). They concluded that neural mirroring can even facilitate understanding the intentions of others' actions—that is, inner states as they relate to a referent object.

However, such mirroring phenomena can not be equated with shared reality as conceptualized in this article. Context-sensitive mirroring and neural simulation may facilitate understanding others' intentions, but it is important to note that understanding intentions is not the same as sharing intentions. The fact that neural responses allow an observer to better understand the intentions of an observed action regarding a target object (e.g., drinking or cleaning up with reference to the state of a mug) by no means requires that the observer has the same intention regarding the object. Understanding an intention is different from having intentions in common.

Although this analysis suggests critical differences between shared reality and embodied synchrony or mirroring, we think it is important to recognize possible ways in which these phenomena may be interrelated. As we have argued, there are preconditions for the creation of a shared reality. For instance, perceivers need to infer others' inner states in order to share reality with them. Embodied synchrony and mirroring are basic processes that may support such inferences: They may allow perceivers to obtain access to other's neural and mental states automatically—that is, with remarkable speed and without the need to allocate conscious effort. However, for a full-blown shared reality, perceivers also need to experience that they and the other person have a common inner state about a target referent.

Common Ground and Interactive Alignment

The creation of a commonality between communicators has figured prominently in research on common ground (H.H. Clark, 1996; H.H. Clark & Marshall, 1981) and interactive alignment in conversation (Garrod & Pickering, 2004). Common ground is the background information that participants in a conversation take for granted as being mutually understood. For instance, when a scientist mentions to a politician the critical role of "IRBs" in the progress of research, there will be common ground when the politician knows that the scientist refers to Institutional Review Boards (that supervise the observation of ethical standards in research conducted at universities) and not to something like Internet radio broadcasting or intermittent radioactive beams. To use another example, when a speaker asks an addressee to pick "the loafer" from an array of different objects, there is common ground when the addressee knows what object the speaker refers to (Brennan & Clark, 1996).

In what ways does shared reality, as defined in this article, differ from common ground? Common ground involves shared background knowledge, which permits or at least facilitates conversation. However, common ground, as it is typically used in the literature, does not require that the conversationalists hold the same inner states (views, beliefs, or feelings) about the topic of the conversation. In the above example, when both speaker and addressee know what "IRB" or "the loafer" refer to, they do not have to share the same view, belief, or feeling about the referent. For instance, the scientist may hold a skeptical attitude about the role of IRBs because of rigid formal supervision procedures enforced by some IRBs. In contrast, the politician may hold a positive attitude about IRBs because they can prevent unethical scientific investigations. Two people may agree on the topic of the conversation without having a common inner response to this topic (i.e., without achieving a shared reality as defined in this article).[4]

A similar argument can be made for the processes of interactive alignment, which are not assumed to require explicit or conscious negotiation (Garrod & Pickering, 2004). Alignment of linguistic representations and situation models allows successful conversation, but it need not result in conversationalists holding congruent attitudes or feelings about the topic of their conversation. Common ground and alignment denote a shared basis for exchanging information about inner states, but not a commonality of these inner states. Shared reality, thus, goes a step beyond common ground or interactive alignment in that it involves common inner states about the world—shared attitudes, beliefs, or feelings about some target referent.

Again, such differences do not preclude a meaningful interplay between these phenomena and shared reality. The establishment of common ground ensures that conversationalists refer to the same object or topic. Thus, common ground involves processes that allow perceivers to infer or verify the target of others' inner states. Because such an inference is a precondition for the achievement of aboutness, grounding in conversation is conceivably an important building block of a full-blown shared reality (see also Kashima, Klein, & Clark, 2007).

Socially Distributed Knowledge

Research on socially shared or distributed knowledge (e.g., Gaskell & Fraser, 1990; Sperber, 1996) represents another field that is sufficiently close to shared reality to warrant examination. Shared or distributed knowledge can be roughly understood as the body of beliefs and ideas that are spread across communities

[4]The difference between common ground and shared reality can also be captured by drawing on different notions of reference discussed in conversation theory (Bach, 1987). In one sense, *conversational reference* means that a speaker identifies an object, such as "IRB," to an addressee. Common ground ensures that reference in this first sense succeeds, allowing the addressee to identify the referent object. In another sense, *reference* means that a speaker expresses an attitude about an object to an addressee, such as expressing that IRBs may sometimes delay research progress by enforcing rigid formal supervision (Bach, 1987). Shared reality requires that speaker and addressee have a common reference in this second sense; common knowledge of the referent of a conversation (i.e., *reference* in the first sense) is not sufficient for shared reality as defined in this article.

or societies. This concept involves two of our conditions for shared reality, namely commonality of inner states (rather than just overt behaviors) and the principle of aboutness (in that they are about a target referent). However, these phenomena differ from shared reality in at least one central respect. For something to count as socially distributed knowledge, it must be, in fact, held in common between or among some set of individuals. This is not a necessary condition for shared reality. For shared reality, it is sufficient that an individual experience an inner state about something that is in common between him or her and some other person—even if, in fact, there is no such inner state in common (see Bar-Tal, 2000).

Moreover, the experience of there being a commonality is critical to whether there is a shared reality. In contrast, there can be socially distributed knowledge among a set of individuals without those individuals experiencing this commonality. Indeed, if anything, this experience of commonality is unlikely among members of larger collectives, such as societies and large-scale communities, which have been highlighted in theories of socially shared or distributed knowledge. It should also be noted that our theoretical analysis of shared reality places greater emphasis on the motivational underpinnings of sharing, especially the role of relational motives, than do approaches to distributed knowledge.

Shared Cognition in Groups

So far, we have discussed how our concept of shared reality relates to other concepts concerned with individuals. In the final section of this article, we extend our discussion to phenomena involving shared cognition at the group level of analysis.

Given the groundswell of theoretical and empirical work on shared cognition in groups (see, e.g., Hinsz et al., 1997; Levine & Higgins, 2001; Mohammed & Dumville, 2001; Salas & Fiore, 2004; Thompson & Fine, 1999; Tindale et al., 2001), it is useful to consider shared reality in the context of group processes. We focus on the extent to which this work satisfies the four proposed conditions for shared reality: (a) the commonality between individuals implied by a shared reality refers to their inner states, not their overt behaviors; (b) this commonality is about a target referent; (c) the commonality of inner states is appropriately motivated; and (d) shared reality depends on experiencing a successful connection to others' inner states.

We begin by considering commonality about a target referent, because the shared cognition investigated in group studies generally satisfies our second condition. Examples include research on conformity (Asch, 1951) and norm formation (Levine et al., 2000; Sherif, 1935); collective choice, judgment, and problem solving (Stasser & Dietz-Uhler, 2001); shared task representations (Tindale, Smith, Thomas, Filkins, & Sheffey, 1996); group socialization (Levine & Moreland, 1991, 1999); social identity and self-categorization (Hogg & Abrams, 1988; Tajfel & Turner, 1979); collective efficacy (Gibson & Earley, 2007); negotiation (Swaab, Postmes, van Beest, & Spears, 2007; Thompson, 1991); transactive memory (Moreland, 1999; Wegner, 1986); and shared mental models (Klimoski & Mohammed, 1994; Mathieu, Goodwin, Heffner, Salas, & Canon-Bowers, 2000). In each case, group members achieve (more or less) commonality about a particular target referent that can vary on several dimensions (e.g., a characteristic of the group vs. the environment, a physically present object vs. a cognitively represented issue, an intellective vs. a judgmental question).

However, there are exceptions to this general rule. For example, group members' emotions can converge even though these emotions are not about the same target referent. Recent research indicates that students rating their emotions (e.g., anger, fear) while thinking of themselves as members of a particular group (e.g., Indiana University) converged toward the group's average emotion profile, particularly when they identified strongly with the group (Smith, Seger, & Mackie, 2007). In cases like these, there can be convergence of emotions without a shared reality.

Turning to the role of underlying motives (particularly epistemic and relational motives), we find that the shared cognition examined in group studies frequently satisfies this condition for shared reality. Many lines of group research assume, either implicitly or explicitly, that agreement (commonality) is motivated by the desire for understanding (e.g., Asch, 1951; Deutsch & Gerard, 1955; Festinger, 1950; Hogg, 2007; Kruglanski et al., 2006; Sherif, 1935) and/or the desire for inclusion, or belonging to a group (e.g., Abrams & Hogg, 1990; Deutsch & Gerard, 1955; Levine & Kerr, 2007; Levine & Moreland, 1999). It is worth noting, however, that group members are not always driven by epistemic or relational motives to achieve commonality of inner states about a target. In many cases, they are motivated to achieve commonality of overt behaviors instead. For example, in political environments, participants often simply desire that others publicly agree with their position, because such agreement yields tangible benefits (e.g., access to resources). In such cases, "winning hearts and minds" is quite beside the point (Levine & Kaarbo, 2001).

Finally, how well are the remaining two conditions for shared reality—commonality of inner states and an experience of successful connection to others' inner states— satisfied in group studies? Evidence relevant to commonality of shared inner states is available in studies that measure group members' personal attitudes, beliefs, or knowledge before and/or after interaction. This methodology, which is widely used in studies of such phenomena as group polarization and team mental models, indicates that group members do in fact often share inner states. In contrast, evidence relevant to the experience of shared inner states is rare. Although several analyses of shared cognition in groups acknowledge the potential importance of the experience of sharing (e.g., Bar-Tal, 1990, 2000; Hinsz, 2004; Klimoski & Mohammed, 1994; Rentsch & Woehr, 2004; Tindale & Kameda, 2000), little effort has been made to measure this construct.

Research on team mental models, for example, generally focuses on "objective" agreement between members' cognitive representations, rather than their perceptions of this agreement (Cooke, Salas, Kiekel, & Bell, 2004).

Although group members can directly observe others' overt behavior (e.g., their statement that a defendant is guilty of a crime), they must infer others' inner state (e.g., their true belief about the defendant's guilt) on the basis of this behavior. In many (perhaps most) cases, group members take others' statements at face value and hence interpret commonality of overt behavior as commonality of inner states. But in other cases, group members doubt others' sincerity or objectivity. When this happens, behavioral commonality will not produce shared reality as defined in this article. Systematic research is needed to identify the factors that group members use in judging the level of similarity between their own and others' inner states. These factors might include others' personal characteristics (e.g., race, gender, age, education, religion, political affiliation), as well as both content and noncontent (e.g., paralinguistic) features of their public statements about the target referent.

With the exception of the saying-is-believing work reported above, little is known about when and how group members experience a successful connection to others' internal states. Recently, however, van Ginkel and van Knippenberg (2008) examined the consequences of awareness of sharing for group decision making. Their findings indicated that, in comparison with group members who simply shared task representations emphasizing information elaboration, those who both shared representations and were aware of their sharing exhibited more information elaboration and higher performance. In addition, awareness of sharing increased members' feeling of psychological safety, which in turn partially mediated the impact of shared task representations on information elaboration and performance.

These findings should not be construed to mean, however, that shared cognition in general and shared reality in particular always has a positive impact on group performance. Although van Ginkel and van Knippenberg (2008) and others (e.g., Mathieu et al., 2000; Moreland, 1999) have found that shared cognition can enhance group effectiveness, other investigators have obtained evidence for the opposite effect. For example, research indicates that groups tend to focus on shared (rather than unshared) information, which often leads to incorrect decisions (e.g., Stasser, 1999; Stasser & Titus, 1985) and that they often fall victim to "groupthink," in which superficial and biased information processing produces a faulty consensus (e.g., R.S. Baron, 2005; Janis, 1982). Clearly, then, shared cognition can be a double-edged sword in regard to group performance.

CONCLUSION

We recognize that there are other concepts or phenomena that could be discussed with reference to our notion of shared reality. For instance, we have not addressed work on self–other overlap (e.g., Andersen & Chen, 2002; Aron et al., 2004), social representations (Moscovici, 1981), or oneness (Cialdini, Brown, Lewis, Luce, & Neuberg, 1997). Moreover, as noted above, although our own studies have focused on shared reality created by speakers communicating about a target (e.g., Echterhoff et al., 2005, 2008), there are other pathways to shared reality, such as receiving information about significant others' inner states and directly connecting to them (see Higgins et al., 2007). As one example, evidence indicates that perceivers' inner states about a target referent, such as an ethnic group, can be influenced by ingroup social consensus information without inducing perceivers to communicate about the entity (e.g., Sechrist & Stangor, 2001; Stangor, Sechrist, & Jost, 2001). It has been argued that such influence represents a case of social sharing (Sechrist & Stangor, 2001). Further work is needed to determine whether consensus information, as operationalized by Sechrist and Stangor, produces shared reality as defined in this article. We hope that our analysis of shared reality stimulates research on this and other questions.

We also wish to note that the creation of shared reality from communication highlights a potentially important everyday mechanism underlying the construction of culturally shared memories and evaluations of the world—a basic mechanism for constructing social, cultural, and political beliefs (see Hausmann et al., 2008; Jost et al., 2007; Lau et al., 2001). Imagine community members who epistemically trust one another and/or want to maintain relationships with one another. When one member is or becomes aware of the inner states of another member regarding some topic (e.g., his or her beliefs or attitudes about something), audience tuning during interpersonal communication is likely to occur. This will shape the communicator's own later memories and evaluations of the topic in the direction of their audience. Rather than remembering or evaluating the topic information as originally given, the communicator will remember or evaluate this information as represented after taking the viewpoint of the audience into account. Such social tuning toward audiences, which is ubiquitous in everyday life, can create a shared but biased perspective on the world within a community. Moreover, under certain conditions, this shared perspective on the world can be produced even by people simply preparing to communicate to a group, and perhaps just imagining such communication. Finally, this process occurs not only for individuals as targets but also for groups as targets (see Hausmann et al., 2008; Klein, Tindale, & Brauer, 2008; Lyons & Kashima, 2003), which could be a factor in the development of community-shared stereotypic beliefs about other groups.

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REFERENCES

Abrams, D., & Hogg, M.A. (1990). Social identification, self-categorization and social influence. In W. Stroebe & M. Hewstone (Eds.), *European review of social psychology* (Vol. 1, pp. 195–228). Chichester, United Kingdom: Wiley.

Adaval, R., & Wyer, R.S. Jr. (2004). Communicating about a social interaction: Effects on memory for protagonists' statements and nonverbal behaviors. *Journal of Experimental Social Psychology*, *40*, 450–465.

Andersen, S.M., & Chen, S. (2002). The relational self: An interpersonal social-cognitive theory. *Psychological Review*, *109*, 619–645.

Aron, A., McLaughlin-Volpe, T., Mashek, D., Lewandowski, G., Wright, S.C., & Aron, E.N. (2004). Including the others in the self. In W. Stroebe & M. Hewstone (Eds.), *European review of social psychology* (pp. 101–132). Chichester, United Kingdom: Wiley.

Asch, S.E. (1951). Effects of group pressure upon the modification and distortion of judgments. In H.S. Guetzkow (Ed.), *Groups, leadership and men* (pp. 177–190). Pittsburgh, PA: Carnegie Press.

Asch, S.E. (1952). *Social psychology*. Englewood Cliffs, NJ: Prentice Hall.

Bach, K. (1987). *Thought and reference*. Oxford, United Kingdom: Oxford University Press.

Bargh, J.A., Bond, R.N., Lombardi, W.J., & Tota, M.E. (1986). The additive nature of chronic and temporary sources of construct accessibility. *Journal of Personality and Social Psychology*, *50*, 869–878.

Baron, R.M., & Kenny, D.A. (1986). The moderator-mediator variable distinction in social psychological research: Conceptual, strategic, and statistical considerations. *Journal of Personality and Social Psychology*, *51*, 1173–1182.

Baron, R.S. (2005). So right it's wrong: Groupthink and the ubiquitous nature of polarized group decision-making. In M.P. Zanna (Ed.), *Advances in experimental social psychology* (Vol. 37, pp. 219–253). San Diego, CA: Academic Press.

Baron-Cohen, S. (1995). *Mindblindness: As essay on autism and theory of mind*. Cambridge, MA: MIT Press.

Barsalou, L.W., Niedenthal, P.M., Barbey, A., & Ruppert, J. (2003). Social embodiment. In B. Ross (Ed.), *The psychology of learning and motivation* (Vol. 43, pp. 43–92). San Diego, CA: Academic Press.

Bar-Tal, D. (1990). *Group beliefs: A conception for analyzing group structure, processes, and behavior*. New York: Springer-Verlag.

Bar-Tal, D. (2000). *Shared beliefs in a society: Social psychological analysis*. Thousand Oaks, CA: Sage.

Bartlett, F.C. (1932). *Remembering: A study in experimental and social psychology*. Cambridge, United Kingdom: Cambridge University Press.

Batson, C.D. (1994). Prosocial motivation: Why do we help others? In A. Tesser (Ed.), *Advanced social psychology* (pp. 338–381). Boston: McGraw-Hill.

Baumeister, R.F., & Leary, M.R. (1995). The need to belong: Desire for interpersonal attachments as a fundamental human motivation. *Psychological Bulletin*, *117*, 497–529.

Bayen, U.J., Murnane, K., & Erdfelder, E. (1996). Source discrimination, item detection, and multinomial models of source monitoring. *Journal of Experimental Psychology: Learning, Memory, and Cognition*, *22*, 197–215.

Bem, D.J. (1967). Self perception: An alternative interpretation of cognitive dissonance phenomena. *Psychological Review*, *74*, 183–200.

Berlyne, D.E. (1962). Uncertainty and epistemic curiosity. *British Journal of Psychology*, *53*, 27–34.

Bohman, J.F., & Rehg, W. (Eds.). (1997). *Deliberative democracy*. Cambridge, MA: MIT Press.

Bowlby, J. (1969). *Attachment and loss: Vol. 1. Attachment*. New York: Basic Books.

Brennan, S.E., & Clark, H.H. (1996). Conceptual pacts and lexical choice in conversation. *Journal of Experimental Psychology: Learning, Memory, and Cognition*, *22*, 1482–1493.

Brentano, F. (1974). *Psychology from an empirical standpoint* (A. Rancurrello, D. Terrell, & L. McAlister, Trans.). London: Routledge and Kegan. (Original work published 1874)

Brickman, P. (1978). Is it real? In J.H. Harvey, W. Ickes, & R.F. Kidd (Eds.), *New directions in attribution research* (Vol. 2, pp. 5–34). Hillsdale, NJ: Erlbaum.

Byrd, R.E. (1938). *Alone*. New York: Putnam.

Byrne, D., & Clore, G.L. (1967). Effectance arousal and attraction. *Journal of Personality and Social Psychology*, *6*, 1–18.

Call, J. (2005). The self and other: A missing link in comparative social cognition. In H.S. Terrace & J. Metcalfe (Eds.), *The missing link in cognition: Origins of self-reflective consciousness* (pp. 321–341). Oxford, United Kingdom: Oxford University Press.

Calvo-Merino, B., Glaser, D.E., Grèzes, J., Passingham, R.E., & Haggard, P. (2005). Action observation and acquired motor skills: An fMRI study with expert dancers. *Cerebral Cortex*, *15*, 1243–1249.

Cannon-Bowers, J.A., & Salas, E. (2001). Reflections on shared cognition. *Journal of Organizational Behavior*, *22*, 195–202.

Caporael, L.R. (2007). Evolutionary theory for social and cultural psychology. In A.W. Kruglanski & E.T. Higgins (Eds.), *Social psychology: Handbook of basic principles* (2nd ed., pp. 3–18). New York: Guilford.

Carr, L., Iacoboni, M., Dubeau, M.-C., Mazziotta, J.C., & Lenzi, G.L. (2003). Neural mechanisms of empathy in humans: A relay from neural systems for imitation to limbic areas. *Proceedings of the National Academy of Sciences, USA*, *100*, 5497–5502.

Chiu, C.Y., Krauss, R.M., & Lau, I.Y.-M. (1998). Some cognitive consequences of communication. In S.R. Fussell & R. Kreuz (Eds.), *Social and cognitive approaches to interpersonal communication* (pp. 259–278). Hillsdale, NJ: Erlbaum.

Cialdini, R.B., Brown, S.L., Lewis, B.P., Luce, C., & Neuberg, S.L. (1997). Reinterpreting the empathy–altruism relationship: When one into one equals oneness. *Journal of Personality and Social Psychology*, *73*, 481–494.

Clark, A.E., & Kashima, Y. (2007). Stereotypes help people connect with others in the community: A situated functional analysis of the stereotype consistency bias in communication. *Journal of Personality and Social Psychology*, *93*, 1028–1093.

Clark, H.H. (1996). *Using language*. New York: Cambridge University Press.

Clark, H.H. (2003). Pointing and placing. In S. Kita (Ed.), *Pointing: Where language, culture, and cognition meet* (pp. 243–268). Hillsdale, NJ: Erlbaum.

Clark, H.H., & Marshall, C.E. (1981). Definite reference and mutual knowledge. In A.K. Joshi, B. Webber, & I. Sag (Eds.), *Elements of discourse understanding* (pp. 10–63). Cambridge, United Kingdom: Cambridge University Press.

Cooke, N.J., Salas, E., Kiekel, P.A., & Bell, B. (2004). Advances in measuring team cognition. In E. Salas & S.M. Fiore (Eds.), *Team cognition: Understanding the factors that drive process and performance* (pp. 83–106). Washington, DC: American Psychological Association.

Cooley, C.H. (1964). *Human nature and the social order*. New York: Schocken Books. (Original work published 1902)

Crocker, J. (2007, October 8). What are the fundamental human needs? Summary of responses. Message posted to spsp-discuss@stolaf.edu.

Cross, E.S., Hamilton, A.F., & Grafton, S.T. (2006). Building a motor simulation de novo: Observation of dance by dancers. *NeuroImage*, *31*, 1257–1267.

de Vignemont, F., & Singer, T. (2006). The empathic brain: How, when, and why? *Trends in Cognitive Sciences*, *10*, 435–441.

de Waal, F. (2008). Putting the altruism back into altruism: The evolution of empathy. *Annual Review of Psychology*, *59*, 279–300.

Deutsch, M., & Gerard, H.B. (1955). A study of normative and informational social influences upon individual judgment. *Journal of Abnormal and Social Psychology*, *51*, 629–636.

Diener, E., & Seligman, M.E.P. (2002). Very happy people. *Psychological Science*, *13*, 81–84.

Dovidio, J.F., Gaertner, S.L., Kawakami, K., & Hodson, G. (2002). Why can't we just get along? Interpersonal biases and interracial distrust. *Cultural Diversity and Ethnic Minority Psychology*, *8*, 88–102.

Dunbar, R.I.M., & Shultz, S. (2007). Evolution in the social brain. *Science*, *317*, 1344–1347.

Echterhoff, G., Higgins, E.T., & Groll, S. (2005). Audience-tuning effects on memory: The role of shared reality. *Journal of Personality and Social Psychology*, *89*, 257–276.

Echterhoff, G., Higgins, E.T., Kopietz, R., & Groll, S. (2008). How communication goals determine when audience tuning biases memory. *Journal of Experimental Psychology: General*, *137*, 3–21.

Echterhoff, G., Lang, S., Krämer, N., & Higgins, E.T. (2009). Audience-tuning effects on memory: The role of audience status in sharing reality. *Social Psychology*, *40*, 150–163.

Epley, N., Caruso, E.M., & Bazerman, M.H. (2006). When perspective-taking increases taking: Reactive egoism in social interaction. *Journal of Personality and Social Psychology*, *91*, 872–889.

Festinger, L. (1950). Informal social communication. *Psychological Review*, *57*, 271–282.

Festinger, L. (1954). A theory of social comparison processes. *Human Relations*, *7*, 117–140.

Festinger, L. (1957). *A theory of cognitive dissonance*. Stanford, CA: Stanford University Press.

Festinger, L., & Carlsmith, J.M. (1959). Cognitive consequences of forced compliance. *Journal of Abnormal and Social Psychology*, *58*, 203–211.

Fiske, S.T. (2007). Core social motivations, a historical perspective: Views from the couch, consciousness, classroom, computers, and collectives. In W. Gardner & J.Y. Shah (Eds.), *Handbook of motivation science* (pp. 3–22). New York: Guilford.

Frey, D., & Schulz-Hardt, S. (2001). Confirmation bias in group information seeking and its implications for decision making in administration, business, and politics. In F. Butera & G. Mugny (Eds.), *Social influence in social reality: Promoting individual and social change* (pp. 53–73). Seattle, WA: Hogrefe & Huber.

Fu, J.H.-Y., Morris, M.W., Lee, S.-L., Chao, M., Chiu, C.-Y., & Hong, Y.-Y. (2007). Epistemic motives and cultural conformity: Need for closure, culture, and context as determinant of conflict judgments. *Journal of Personality and Social Psychology*, *92*, 191–207.

Gallese, V., Keysers, C., & Rizzolatti, G. (2004). A unifying view of the basis of social cognition. *Trends in Cognitive Sciences*, *8*, 396–403.

Garfinkel, H. (1967). *Studies in ethnomethodology*. Englewood Cliffs, NJ: Prentice-Hall.

Garrod, S., & Pickering, M. (2004). Why is conversation so easy? *Trends in Cognitive Sciences*, *8*, 8–11.

Gaskell, G., & Fraser, C. (1990). The social psychological study of widespread beliefs. In C. Fraser & G. Gaskell (Eds.), *The social psychological study of widespread beliefs* (pp. 3–24). Oxford, United Kingdom: Clarendon Press.

Gibson, C.B., & Earley, P.C. (2007). Collective cognition in action: Accumulation, interaction, examination, and accommodation in the development and operation of group efficacy beliefs in the workplace. *Academy of Management Review*, *32*, 438–458.

Gross, S.R., Holtz, R., & Miller, N. (1995). Attitude certainty. In R.E. Petty & J.A. Krosnick (Eds.), *Attitude strength: Antecedents and consequences* (pp. 215–245). Mahwah, NJ: Erlbaum.

Hardin, C.D., & Conley, T.D. (2001). A relational approach to cognition: Shared experience and relationship affirmation in social cognition. In G.B. Moskowitz (Ed.), *Cognitive social psychology: The Princeton Symposium on the legacy and future of social cognition* (pp. 3–17). Mahwah, NJ: Erlbaum.

Hardin, C.D., & Higgins, E.T. (1996). Shared reality: How social verification makes the subjective objective. In R.M. Sorrentino & E.T. Higgins (Eds.), *Handbook of motivation and cognition: The interpersonal context* (Vol. 3, pp. 28–84). New York: Guilford.

Hatfield, E., Cacioppo, J.T., & Rapson, R.L. (1994). *Emotion contagion*. Cambridge, United Kingdom: Cambridge University Press.

Hausmann, L.R.M., Levine, J.M., & Higgins, E.T. (2008). Communication and group perception: Extending the "saying is believing" effect. *Group Processes and Intergroup Relations*, *11*, 539–554.

Heider, F. (1958). *The psychology of interpersonal relations*. New York: Wiley.

Hellmann, J.H. (2007). *How event retellings shape eyewitnesses' memory: A saying-is-believing effect for complex visual material*. Unpublished master's thesis, Bielefeld University, Bielefeld, Germany.

Higgins, E.T. (1981). Role-taking and social judgment: Alternative developmental perspectives and processes. In J.H. Flavell & L. Ross (Eds.), *Social cognitive development: Frontiers and possible futures* (pp. 119–153). New York: Cambridge University Press.

Higgins, E.T. (1992). Achieving "shared reality" in the communication game: A social action that creates meaning. *Journal of Language and Social Psychology*, *11*, 107–131.

Higgins, E.T. (1996). Knowledge activation: Accessibility, applicability, and salience. In E.T. Higgins & A.W. Kruglanski (Eds.), *Social psychology: Handbook of basic principles* (pp. 133–168). New York: Guilford.

Higgins, E.T. (1998). The aboutness principle: A pervasive influence on human inference. *Social Cognition*, *16*, 173–198.

Higgins, E.T. (1999). "Saying is believing" effects: When sharing reality about something biases knowledge and evaluations. In L.L. Thompson, J.M. Levine, & D.M. Messick (Eds.), *Shared cognition in organizations: The management of knowledge* (pp. 33–49). Mahwah, NJ: Erlbaum.

Higgins, E.T. (2005). Humans as applied motivation scientists: Self-consciousness from "shared reality" and "becoming." In H.S. Terrace & J. Metcalfe (Eds.), *The missing link in cognition: Origins of self-reflective consciousness* (pp. 157–173). Oxford, United Kingdom: Oxford University Press.

Higgins, E.T. (2006). Value from hedonic experience and engagement. *Psychological Review*, *113*, 439–460.

Higgins, E.T. (2008). *Beyond pleasure and pain: The new science of motivation*. Manuscript in preparation, Columbia University.

Higgins, E.T. (in press). Sharing inner states: A defining feature of human motivation. In G.R. Semin & G. Echterhoff (Eds.), *Grounding sociality: Neurons, minds, and culture*. New York: Psychology Press.

Higgins, E.T., Echterhoff, G., Crespillo, R., & Kopietz, R. (2007). Effects of communication on social knowledge: Sharing reality with individual versus group audiences. *Japanese Psychological Research*, *49*, 89–99.

Higgins, E.T., McCann, C.D., & Fondacaro, R. (1982). The "communication game": Goal directed encoding and cognitive consequences. *Social Cognition*, *1*, 21–37.

Higgins, E.T., & Pittman, T.S. (2008). Motives of the human animal: Comprehending, managing, and sharing inner states. *Annual Review of Psychology*, *59*, 361–385.

Higgins, E.T., & Rholes, W.S. (1978). "Saying is believing": Effects of message modification on memory and liking for the person described. *Journal of Experimental Social Psychology*, *14*, 363–378.

Higgins, E.T., Rholes, W.S., & Jones, C.R. (1977). Category accessibility and impression formation. *Journal of Experimental Social Psychology*, *13*, 141–154.

Hinsz, V.B. (2004). Metacognition and mental models in groups: An illustration with metamemory of group recognition memory. In E. Salas & S.M. Fiore (Eds.), *Team cognition: Understanding the factors that drive process and performance* (pp. 33–58). Washington, DC: American Psychological Association.

Hinsz, V.B., Tindale, R.S., & Vollrath, D.A. (1997). The emerging conceptualization of groups as information processors. *Psychological Bulletin*, *121*, 43–64.

Hirst, W., & Manier, D. (2002). The diverse forms of collective memory. In G. Echterhoff & M. Saar (Eds.), *Kontexte und Kulturen des Erinnerns [Contexts and cultures of remembering]* (pp. 37–58). Constance, Germany: Universitätsverlag Konstanz GmbH.

Hogg, M.A. (2001). Self-categorization and subjective uncertainty resolution: Cognitive and motivational facets of social identity and group membership. In J.P. Forgas, K.D. Williams, & L. Wheeler (Eds.), *The social mind: Cognitive and motivational aspects of interpersonal behavior* (pp. 323–349). Cambridge, United Kingdom: Cambridge University Press.

Hogg, M.A. (2007). Uncertainty-identity theory. In M.P. Zanna (Ed.), *Advances in experimental social psychology* (Vol. 39, pp. 69–126). San Diego, CA: Academic Press.

Hogg, M.A., & Abrams, D. (1988). *Social identifications: A social psychology of intergroup relations and group processes*. London: Routledge.

Husserl, E. (1931). *Ideas: General introduction to pure phenomenology* (W.R.B. Gibson, Trans.). London: George Allen & Unwin. (Original work published 1913)

Iacoboni, M. (2008). *Mirroring people: The new science of how we connect with others*. New York: Farrar, Straus, and Giroux.

Iacoboni, M., Molnar-Szakacs, I., Gallese, V., Buccino, G., Mazziotta, J.C., & Rizzolatti, G. (2005). Grasping the intentions of others with one's own mirror neuron system. *Public Library of Science: Biology*, *3*, 529–535.

Idson, L.C., & Mischel, W. (2001). The personality of familiar and significant people: The lay perceiver as a social-cognitive theorist. *Journal of Personality and Social Psychology*, *80*, 585–596.

Janis, I.L. (1982). *Groupthink* (2nd ed.). Boston: Houghton Mifflin.

Johnson, M.K., Hashtroudi, S., & Lindsay, D.S. (1993). Source monitoring. *Psychological Bulletin*, *114*, 3–28.

Jones, E.E. (1964). *Ingratiation: A social psychological analysis*. New York: Appleton-Century-Crofts.

Jones, E.E., & Thibaut, J.W. (1958). Interaction goals as bases of inference in interpersonal perception. In R. Tagiuri & L. Petrullo (Eds.), *Person perception and interpersonal behavior* (pp. 151–178). Stanford, CA: Stanford University Press.

Jost, J.T., Ledgerwood, A., & Hardin, C.D. (2007). Shared reality, system verification, and the relational basis of ideological beliefs. *Social and Personality Psychology Compass*, *2*, 171–186.

Kashima, Y., Klein, O., & Clark, A.E. (2007). Grounding: Sharing information in social interaction. In K. Fiedler (Ed.), *Social communication* (pp. 30–77). New York: Psychology Press.

Keysar, B., & Barr, D.J. (2002). Self anchoring in conversation: Why language users do not do what they "should." In T. Gilovich, D.W. Griffin, & D. Kahneman (Eds.), *Heuristics and biases: The psychology of intuitive judgment* (pp. 150–166). Cambridge, United Kingdom: Cambridge University Press.

Keysar, B., Barr, D.J., Balin, J.A., & Brauner, J.S. (2000). Taking perspective in conversation: The role of mutual knowledge in comprehension. *Psychological Science*, *11*, 32–38.

Keysers, C., & Gazzola, V. (2007). Integrating simulation and theory of mind: From self to social cognition. *Trends in Cognitive Sciences*, *11*, 194–196.

Klein, O., Tindale, S., & Brauer, M. (2008). The consensualization of stereotypes in small groups. In Y. Kashima, K. Fiedler, & P. Freytag (Eds.), *Stereotype dynamics: Language-based approaches to the formation, maintenance, and transformation of stereotypes* (pp. 263–292). New York: Erlbaum.

Klimoski, R., & Mohammed, R. (1994). Team mental model: Construct or metaphor? *Journal of Management*, *20*, 403–437.

Kopietz, R., Echterhoff, G., Niemeier, S., Hellmann, J.H., & Memon, A. (2009). Audience-congruent biases in eyewitness memory and judgment: Influences of a co-witness' liking for a suspect. *Social Psychology*, *40*, 138–149.

Kopietz, R., Hellmann, J.H., Higgins, E.T., & Echterhoff, G. (in press). Shared-reality effects on memory: Communicating to fulfill epistemic needs. *Social Cognition*.

Krauss, R.M., & Fussell, S.R. (1991). Perspective-taking in communication: Representations of others' knowledge in reference. *Social Cognition*, *9*, 2–24.

Kruglanski, A.W. (2004). *The psychology of closed mindedness*. New York: Psychology Press.

Kruglanski, A.W., Pierro, A., Mannetti, L., & De Grada, E. (2006). Groups as epistemic providers: Need for closure and the unfolding of group-centrism. *Psychological Review*, *113*, 84–100.

Kruglanski, A.W., Webster, D.M., & Klem, A. (1993). Motivated resistance and openness to persuasion in the presence or absence of prior information. *Journal of Personality and Social Psychology*, *65*, 861–876.

Lau, I.Y.M., Chiu, C.Y., & Lee, S.I. (2001). Communication and shared reality: Implications for the psychological foundations of culture. *Social Cognition*, *19*, 350–371.

Leslie, A.M. (1987). Pretense and representation: The origins of "theory of mind." *Psychological Review*, *94*, 412–426.

Leslie, A.M., Friedman, O., & German, T.P. (2004). Core mechanisms in "theory of mind." *Trends in Cognitive Sciences*, *8*, 528–533.

Levine, J.M., & Higgins, E.T. (2001). Shared reality and social influence in groups and organizations. In F. Butera & G. Mugny (Eds.), *Social influence in social reality: Promoting individual and social change* (pp. 33–52). Seattle, WA: Hogrefe & Huber.

Levine, J.M., Higgins, E.T., & Choi, H.-S. (2000). Development of strategic norms in groups. *Organizational Behavior and Human Decision Processes*, *82*, 88–101.

Levine, J.M., & Kaarbo, J. (2001). Minority influence in political decision-making groups. In C.K.W. De Dreu & N.K. De Vries (Eds.), *Group consensus and minority influence: Implications for innovation* (pp. 229–257). Malden, MA: Blackwell.

Levine, J.M., & Kerr, N.L. (2007). Inclusion and exclusion: Implications for group processes. In A.E. Kruglanski & E.T. Higgins (Eds.), *Social psychology: Handbook of basic principles* (2nd ed., pp. 759–784). New York: Guilford.

Levine, J.M., & Moreland, R.L. (1991). Culture and socialization in work groups. In L. Resnick, J.M. Levine, & S. Teasley (Eds.), *Perspectives on socially shared cognition* (pp. 257–279). Washington, DC: American Psychological Association.

Levine, J.M., & Moreland, R.L. (1999). Knowledge transmission in work groups: Helping newcomers to succeed. In L.L. Thompson, J.M. Levine, & D.M. Messick (Eds.), *Shared cognition in organizations: The management of knowledge* (pp. 267–296). Mahwah, NJ: Erlbaum.

Levine, J.M., & Moreland, R.L. (2004). Collaboration: The social context of theory development. *Personality and Social Psychology Review*, *8*, 164–172.

Levine, J.M., Resnick, L.B., & Higgins, E.T. (1993). Social foundations of cognition. *Annual Review of Psychology*, *44*, 585–612.

Lewin, K. (1947). Group decision and social change. In T.M. Newcomb & E.L. Hartley (Eds.), *Readings in social psychology* (pp. 330–344). New York: Holt.

Lun, J., Sinclair, S., Whitchurch, E.R., & Glenn, C. (2007). (Why) do I think what you think? Epistemic social tuning and implicit prejudice. *Journal of Personality and Social Psychology*, *93*, 957–972.

Lyons, A., & Kashima, Y. (2003). How are stereotypes maintained through communication? The influence of stereotype sharedness. *Journal of Personality and Social Psychology*, *85*, 989–1005.

Mackie, D.M., & Skelly, J.J. (1994). The social cognition analysis of social influence: Contributions to the understanding of persuasion and conformity. In P. Devine, D. Hamilton, & T. Ostrom (Eds.), *Social cognition: Impact on social psychology* (pp. 259–289). New York: Academic Press.

Malle, B.F. (1999). How people explain behavior: A new theoretical framework. *Personality and Social Psychology Review*, *3*, 21–43.

Malle, B.F., & Hodges, S.D. (Eds.) (2005). *Other minds: How humans bridge the divide between self and other*. New York: Guilford.

Marsh, E.J. (2007). Retelling is not the same as recalling: Implications for memory. *Current Directions in Psychological Science*, *16*, 16–20.

Mathieu, J.E., Goodwin, G.F., Heffner, T.S., Salas, E., & Cannon-Bowers, J.A. (2000). The influence of shared mental models on team process and performance. *Journal of Applied Psychology*, *85*, 273–283.

McCann, C.D., & Higgins, E.T. (1992). Personal and contextual factors in communication: A review of the "communication game." In G.R. Semin & K. Fiedler (Eds.), *Language, interaction and social cognition* (pp. 144–171). London: Sage.

McCann, C.D., Higgins, E.T., & Fondacaro, R. (1991). Primacy and recency in communication and self-persuasion: How successive audiences and multiple encodings influence subsequent evaluative judgments. *Social Cognition*, *9*, 47–66.

Mead, G.H. (1934). *Mind, self, and society*. Chicago: University of Chicago Press.

Meltzoff, A.N., & Decety, J. (2003). What imitation tells us about social cognition: A rapprochement between developmental psychology and cognitive neuroscience. *Philosophical Transactions of the Royal Society London, Series B*, *358*, 491–500.

Merton, R.K., & Kitt, A. (1950). Contributions to the theory of reference group behavior. In R.K. Merton & P.F. Lazarsfeld (Eds.), *Continuities in social research: Studies in the scope and method of "The American Soldier"* (pp. 40–105). Glencoe, IL: Free Press.

Mohammed, S., & Dumville, B. (2001). Team mental models in a team knowledge framework: Expanding theory and measurement across disciplinary boundaries. *Journal of Organizational Behavior*, *22*, 89–106.

Moreland, R.L. (1999). Transactive memory: Learning who knows what in work groups and organizations. In L.L. Thompson, J.M. Levine, & D.M. Messick (Eds.), *Shared cognition in organizations: The management of knowledge* (pp. 1–31). Mahwah, NJ: Erlbaum.

Moscovici, S. (1981). On social representations. In J.P. Forgas (Ed.), *Social cognition: Perspectives on everyday understanding* (pp. 181–209). London: Academic Press.

Murray, H.A. (1943). *Thematic apperception test*. Cambridge, MA: Harvard University Press.

Mussweiler, T. (2003). Comparison processes in social judgment: Mechanisms and consequences. *Psychological Review*, *110*, 472–489.

Nelson, K. (2005). Emerging levels of consciousness in early human development. In H.S. Terrace & J. Metcalfe (Eds.), *The missing link in cognition: Origins of self-reflective consciousness* (pp. 116–141). Oxford, United Kingdom: Oxford University Press.

Neumann, R., & Strack, F. (2000). "Mood contagion": The automatic transfer of mood between persons. *Journal of Personality and Social Psychology*, *79*, 211–223.

Newcomb, T.M. (1959). Individual systems of orientation. In S. Koch (Ed.), *Psychology: A study of a science: Formulations of the person and the social context* (Vol. 3, pp. 384–422). New York: McGraw-Hill.

Nickerson, R.S. (2001). The projective way of knowing: A useful heuristic that sometimes misleads. *Current Directions in Psychological Science*, *10*, 168–172.

Oberman, L.M., Pineda, J.A., & Ramachandran, V.S. (2007). The human mirror neuron system: A link between action observation and social skills. *Social Cognitive and Affective Neuroscience*, *2*, 62–66.

Ostrom, T.M. (1984). The sovereignty of social cognition. In R.S. Wyer Jr. & T.K. Srull (Eds.), *Handbook of social cognition* (Vol. 1, pp. 1–38). Hillsdale, NJ: Erlbaum.

Pasupathi, M., Stallworth, L.M., & Murdoch, K. (1998). How what we tell becomes what we know: Listener effects on speaker's long-term memory for events. *Discourse Processes*, *26*, 1–25.

Piaget, J., & Inhelder, B. (1956). *The child's conception of space*. New York: Norton.

Pickering, M.J., & Garrod, S. (2004). Toward a mechanistic psychology of dialogue. *Behavioral and Brain Sciences*, *27*, 169–225.

Pinel, E.C., Long, A.E., Landau, M.J., Alexander, K., & Pyszczynski, T. (2006). Seeing I to I: A pathway to interpersonal connectedness. *Journal of Personality and Social Psychology*, *90*, 243–257.

Postmes, T., Haslam, S.A., & Swaab, R.I. (2005). Social influence in small groups: An interactive model of social identity formation. *European Review of Social Psychology*, *16*, 1–42.

Premack, D., & Woodruff, G. (1978). Does the chimpanzee have a theory of mind? *Behavioral and Brain Sciences*, *4*, 515–526.

Quine, W.V. (1961). *From a logical point of view*. Cambridge, MA: Harvard University Press.

Rentsch, J.R., & Woehr, D.J. (2004). Quantifying congruence in cognition: Social relations modeling and team member schema similarity. In E. Salas & S.M. Fiore (Eds.), *Team cognition: Understanding the factors that drive process and performance* (pp. 11–31). Washington, DC: American Psychological Association.

Resnick, L.B., Levine, J.M., & Teasley, S.D. (Eds.). (1991). *Perspectives on socially shared cognition*. Washington, DC: American Psychological Association.

Richeson, J.A., & Trawalter, S. (2005). Why do interracial interactions impair executive function? A resource depletion account. *Journal of Personality and Social Psychology*, *88*, 934–947.

Rommetveit, R. (1974). *On message structure: A framework for the study of language and communication*. New York: Wiley.

Ross, L., Greene, D., & House, P. (1977). The false consensus effect: An egocentric bias in social perception and attribution processes. *Journal of Experimental Social Psychology*, *13*, 279–301.

Ruscher, J.B. (1998). Prejudice and stereotyping in everyday communication. In M.P. Zanna (Ed.), *Advances in experimental social psychology* (Vol. 30, pp. 241–307). San Diego, CA: Academic Press.

Salas, E., & Fiore, S.M. (Eds.). (2004). *Team cognition: Understanding the factors that drive process and performance*. Washington, DC: American Psychological Association.

Schachter, S. (1959). *The psychology of affiliation: Experimental studies of the sources of gregariousness*. Stanford, CA: Stanford University Press.

Schooler, J.W., & Engstler-Schooler, T.Y. (1990). Verbal overshadowing of visual memories: Some things are better left unsaid. *Cognitive Psychology*, *17*, 36–71.

Schramm, W., & Danielson, W. (1958). Anticipated audiences as determinants of recall. *Journal of Abnormal and Social Psychology*, *56*, 282–283.

Schulte-Rüther, M., Markowitsch, H.J., Fink, G.R., & Piefke, M. (2007). Mirror neuron and theory of mind mechanisms involved in face-to-face interactions: A functional magnetic resonance imaging approach to empathy. *Journal of Cognitive Neuroscience*, *19*, 1354–1372.

Schütz, A. (1967). *The phenomenology of the social world*. Evanston, IL: Northwestern University Press. (Original work published 1932)

Sechrist, G.B., & Stangor, C. (2001). Perceived consensus influences intergroup behavior and stereotype accessibility. *Journal of Personality and Social Psychology*, *80*, 645–654.

Sedikides, C. (1990). Efforts of fortuitously activated constructs versus activated communication goals on person impressions. *Journal of Personality and Social Psychology*, *58*, 397–408.

Semin, G.R. (2007). Grounding communication: Synchrony. In A.W. Kruglanski & E.T. Higgins (Eds.), *Social psychology: Handbook of basic principles* (2nd ed., pp. 630–649). New York: Guilford.

Semin, G.R., & Cacioppo, J.T. (2008). Grounding social cognition: Synchronization, coordination, and co-regulation. In G.R. Semin & E.R. Smith (Eds.), *Embodied grounding: Social, cognitive, affective, and neuroscientific approaches* (pp. 119–147). New York: Cambridge University Press.

Sherif, M. (1935). A study of some social factors in perception. *Archives of Psychology*, *27*(Whole No. 187).

Sherif, M. (1936). *The psychology of social norms*. New York: Harper & Brothers.

Silver, R.C., & Wortman, C.B. (1980). Coping with undesirable life events. In J. Garber & M.E.P. Seligman (Eds.), *Human helplessness* (pp. 279–340). New York: Academic Press.

Sinclair, S., Huntsinger, J., Skorinko, J., & Hardin, C.D. (2005). Social tuning of the self: Consequences for the self-evaluations of stereotype targets. *Journal of Personality and Social Psychology*, *89*, 160–175.

Sinclair, S., Lowery, B.S., Hardin, C.D., & Colangelo, A. (2005). Social tuning of automatic racial attitudes: The role of affiliative motivation. *Journal of Personality and Social Psychology*, *89*, 583–592.

Smith, E.R., Seger, C.R., & Mackie, D.M. (2007). Can emotions be truly group level? Evidence regarding four conceptual criteria. *Journal of Personality and Social Psychology*, *93*, 431–446.

Smith, E.R., & Semin, G.R. (2004). Socially situated cognition: Cognition in its social context. In M.P. Zanna (Ed.), *Advances in experimental social psychology* (Vol. 36, pp. 53–115). San Diego, CA: Academic Press.

Sperber, D. (1996). *Explaining culture*. Oxford, United Kingdom: Blackwell.

Srull, T.K., & Wyer, R.S. Jr. (1979). The role of category accessibility in the interpretation of information about persons: Some determinants and implications. *Journal of Personality and Social Psychology*, *37*, 1660–1672.

Stangor, C., Sechrist, G.B., & Jost, J.T. (2001). Changing racial beliefs by providing consensus information. *Personality and Social Psychology Bulletin*, *27*, 486–496.

Stasser, G. (1999). The uncertain role of unshared information in collective choice. In L.L. Thompson, J.M. Levine, & D.M. Messick (Eds.), *Shared cognition in organizations: The management of knowledge* (pp. 49–69). Mahwah, NJ: Erlbaum.

Stasser, G., & Dietz-Uhler, B. (2001). Collective choice, judgment, and problem solving. In M.A. Hogg & R.S. Tindale (Eds.), *Blackwell handbook of social psychology: Group processes* (pp. 31–55). Malden, MA: Blackwell.

Stasser, G., & Titus, W. (1985). Pooling unshared information in group decision making: Biased information sampling during discussion. *Journal of Personality and Social Psychology*, *48*, 1467–1478.

Strack, F., & Hannover, B. (1996). Awareness of influence as a precondition for implementing correctional goals. In P.M. Gollwitzer & J.A. Bargh (Eds.), *The psychology of action: Linking motivation and cognition to behavior* (pp. 579–596). New York: Guilford.

Suls, J., Martin, R., & Wheeler, L. (2002). Social comparison: Why, with whom, and with what effect. *Current Directions in Psychological Science*, *11*, 159–163.

Swaab, R., Postmes, T., van Beest, I., & Spears, R. (2007). Shared cognition as a product of, and precursor to, shared identity in negotiations. *Personality and Social Psychology Bulletin*, *33*, 187–199.

Tajfel, H., & Turner, J. (1979). An integrative theory of intergroup conflict. In W.G. Austin & S. Worchel (Eds.), *The social psychology of intergroup relations* (pp. 33–47). Monterey, CA: Brooks Cole.

Terrace, H.S. (2005). Metacognition and the evolution of language. In H.S. Terrace & J. Metcalfe (Eds.), *The missing link in cognition: Origins of self-reflective consciousness* (pp. 84–115). Oxford, United Kingdom: Oxford University Press.

Thagard, P. (1997). Collaborative knowledge. *Nous*, *31*, 242–261.

Thompson, L. (1991). Information exchange in negotiations. *Journal of Experimental Social Psychology*, *27*, 161–179.

Thompson, L., & Fine, G.A. (1999). Socially shared cognition, affect, and behavior: A review and integration. *Personality and Social Psychology Review*, *3*, 278–302.

Tindale, R.S., & Kameda, T. (2000). 'Social sharedness' as a unifying theme for information processing in groups. *Group Processes & Intergroup Relations*, *3*, 123–140.

Tindale, R.S., Meisenhelder, H.M., Dykema-Engblade, A.A., & Hogg, M.A. (2001). Shared cognition in small groups. In M.A. Hogg & R.S. Tindale (Eds.), *Blackwell handbook of social psychology: Group processes* (pp. 1–30). Malden, MA: Blackwell.

Tindale, R.S., Smith, C.M., Thomas, L.S., Filkins, J., & Sheffey, S. (1996). Shared representations and asymmetric social influence processes in groups. In E. Witte & J.H. Davis (Eds.), *Understanding group behavior: Consensual action by small groups* (Vol. 1, pp. 81–103). Cambridge, United Kingdom: Cambridge University Press.

Todorov, A. (2002). Communication effects on memory and judgment. *European Journal of Social Psychology*, *32*, 531–546.

Tomasello, M., Carpenter, M., Call, J., Behne, T., & Moll, H. (2005). Understanding and sharing intentions: The origins of cultural cognition. *Behavioral and Brain Sciences*, *28*, 675–691.

Turner, J.C., & Oakes, P.J. (1997). The socially structured mind. In C. McGarty & S.A. Haslam (Eds.), *The message of social psychology: Perspectives on mind in society* (pp. 355–373). Cambridge, MA: Blackwell.

Turner, J.H. (1987). Toward a sociological theory of motivation. *Annual Sociological Review*, *52*, 15–27.

Tversky, B., & Marsh, E.J. (2000). Biased retellings of events yield biased memories. *Cognitive Psychology*, *40*, 1–38.

van Ginkel, W.P., & van Knippenberg, D. (2008). Group information elaboration and group decision making: The role of shared task representations. *Organizational Behavior and Human Decision Processes*, *105*, 82–97.

Wegner, D.M. (1986). Transactive memory: A contemporary analysis of the group mind. In B. Mullen & G.R. Goethals (Eds.), *Theories of group behavior* (pp. 185–208). New York: Springer.

Weldon, M.S. (2001). Remembering as a social process. In D.L. Medin (Ed.), *The psychology of learning and motivation: Advances in research and theory* (Vol. 40, pp. 67–120). San Diego, CA: Academic Press.

Wicker, B., Keysers, C., Plailly, J., Royet, J.P., Gallese, V., & Rizzolatti, G. (2003). Both of us disgusted in my insula: The common neural basis of seeing and feeling disgust. *Neuron*, *40*, 655–664.

Wyer, R.S. Jr. (2004). *Social comprehension and judgment: The role of situation models, narratives, and implicit theories*. Mahwah, NJ: Erlbaum.

Yzerbyt, V.Y., Castano, E., Leyens, J.-P., & Paladino, P. (2000). The primacy of the ingroup: The interplay of entitativity and identification. In W. Stroebe & M. Hewstone (Eds.), *European review of social psychology* (Vol. 11, pp. 257–295). Chichester, United Kingdom: Wiley.

Zimmerman, C., & Bauer, R.A. (1956). The effect of an audience on what is remembered. *Public Opinion Quarterly*, *20*, 238–248.