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The social life of cognition

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ABSTRACT

We begin by illustrating that long before the cognitive revolution, social psychology focused on topics pertaining to what is now known as social cognition: people's subjective interpretations of social situations and the concepts and cognitive processes underlying these interpretations. We then examine two questions: whether social cognition entails characteristic concepts and cognitive processes, and how social processes might themselves shape and constrain cognition. We suggest that social cognition relies heavily on generic cognition but also on unique concepts (e.g., agent, intentionality) and unique processes (e.g., projection, imitation, joint attention). We further suggest that social processes play a prominent role in the development and unfolding of several generic cognitive processes, including learning, attention, and memory. Finally, we comment on the prospects of a recently developing approach to the study of social cognition (social neuroscience) and two potential future directions (computational social cognition and social–cognitive robotics).

1. Introduction

Human beings navigate the world by perceiving, attending to, and remembering incoming information within a framework of concepts such as "number" and "cause." While these general abilities form the bedrock of any theory of cognition, social life presents cognitive scientists with a unique set of questions. How is smooth interaction between individuals with diverse goals and interests even possible? What is the basis of the shared understanding that allows individuals in human societies to participate in social life, and how do they reach this understanding?

Sociology has sought answers to these and similar questions by exploring collective social structures; it has not, however, focused on how those structures take hold in individual minds (Rouse, 2007; Turner, 1994). In contrast, over nearly its entire history, social psychology has explored these and similar questions by focusing on cognitive phenomena, examining people's ability to perceive, attend to, and remember incoming *social* information. We briefly illustrate this history of social psychology and then examine its interplay with general cognition: whether *social* cognition entails unique concepts and processes that go beyond general cognition; and how social processes might themselves shape and constrain cognitive processes. Finally, we look toward the future, examining how social neuroscience, computational modeling, and cognitive robotics can further illuminate the social and cognitive nature of interactions between individual minds.

2. When and why cognition came to dominate social psychology

From its inception, social psychology resisted behaviorism (Jones, 1985; Ross & Nisbett, 1991). Some well-researched phenomena in the early 20th century, such as crowd behavior, social facilitation, and imitation were originally thought to involve rather minimal cognitive processes ("associationistic," as Berkowitz & Devine, 1995, call them), but, as early as 1908, McDougall (1908)

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accounted for these classic social phenomena by relying on judgments over and above instincts and emotions. Social psychologists rarely took the objectivist view of stimulus–response mechanisms but focused on what the stimulus *means to* the individual (Cantril, 1947; Heider, 1944) and how these subjective interpretations critically guide social behavior (Asch, 1952).

In the 1930s, the content matter of social psychology was at first largely focused on attitudes (Thurstone & Chave, 1929). Lewin (1936) then proposed a theory in which social perceivers represent themselves and their surroundings within a subjective psychological space. Lewin's thinking strongly influenced the next generation of social psychological research. Festinger (1954) proposed a *theory of social comparison* that described the cognitive processes by which people assess their own performance when physical reality does not offer enough information: people compare themselves to members of their group. With such comparison comes the possibility for tension and disagreement, which needs to be resolved either through changes within the individual, the group, or their relationship. This theory initiated work on group dynamics (e.g., how deviants are treated within a group) but, more influentially, set the stage for the most cognitive theory of its time: Festinger's (1957) *theory of cognitive dissonance*. Building on Heider's (1946) theorizing about cognitive inconsistency, Festinger examined the tension of disagreement and its possible resolution, but now this disagreement resided entirely inside the individual's mind. Clever experiments induced inconsistent cognitive states in research participants, and measurable changes in social behavior followed suit, explained by specific inconsistency-resolving cognitive processes. Other influential scholars revealed not just processes but the fundamental concepts and assumptions people bring to social interaction (Heider, 1958). Together, such analyses of processes and concepts defined social psychology as "cognitive" at least a decade before the cognitive revolution transformed other areas of psychology (for a nuanced review, see Hilton, 2012).

3. Finding the social in social cognition

But if social behavior fundamentally relies on *cognition*, what makes social cognition distinctively *social*? Fiske (1995), among others, proposed that the faculty of social cognition can be defined as "thinking about people." Rather than targeting math problems, paintings, or moving billiard balls, social cognition takes *persons* as its object. On this reading, social cognition is a subfield of cognitive psychology characterized mainly by the different contents of representations over which general cognitive processes operate.

But persons are more distinctive objects of cognition than the above account suggests. Several unique properties emerge when persons interact with each other in dyads and groups—properties that a social perceiver must fully take into account.

First, the social perceiver must recognize that what guides another person's behavior is a complex interplay of facts about the world and unobservable mental states that subjectively represent those facts (e.g., perceptions, beliefs, intentions); and the social perceiver must infer and track such mental states. Second, because these mental states dynamically change as the world changes, the social perceiver must constantly update her inferences about another's mental states and adjust her own behaviors accordingly. Third, social interaction between two or more such mutually perceiving people is deeply reflexive: The social perceiver must infer not only the other's mental states but also the other's inferences about the perceiver's own mental states (Hastorf, Schneider, & Polefka, 1970). And each time the perceiver adjusts her own behavior in light of these inferences about the other person's mental states, the other's behavior and mental states change in turn. This constant and reflexive updating of mental states presents a significant computational challenge, and people's ability to conduct such rich and dynamic social interactions is one of the greatest achievements of human cognition.

How do humans meet this challenge? For one thing, they are keenly sensitive to a vast and fast-moving stream of information—including the interaction partner's facial expressions, gestures, contact with objects, tone of voice, choice of words, and so on (Malle, 2005). For another, they organize this information into a set of concepts that are distinctly social in nature (often called *theory of mind*; Premack & Woodruff, 1978; Wellman, 1990). A prime function of these concepts is to bundle and classify certain incoming stimuli into basic categories that then guide further processing (Harnad, 2005).

For example, from the first year of life, humans classify self-propelled objects into the category *agent* (Premack, 1990); they see certain coordinated movements as goal-directed (Woodward, 1998); they track eye and head movements to predict the aimed-at goal (Phillips, Baron-Cohen, & Rutter, 1998); and they learn to distinguish intentional from unintentional behaviors (Carpenter, Akhtar, & Tomasello, 1998). Intentional actions, in turn, guide the search for characteristic mental states that underlie those actions, such as beliefs, desires, and intentions (Malle, 1999; Perner, 1991).

Thus, the concepts of a *theory of mind* provide a unique causal-explanatory framework for the interpretation of observable behavior in terms of mental states. Within this framework, numerous processes provide characteristic input information (e.g., face recognition, gaze following, goal detection) and additional processes allow the perceiver to reason over this information (e.g., inference of specific emotions, prediction of next action). Some of these processes may be domain-specific (with a "dedicated" sensitivity to particular social information) but fundamentally they are still perception, categorization, and inference; likewise, the reasoning processes that operate on those inputs arguably fall into familiar classes of cognition, with only their contents being distinct.

However, some social–cognitive processes are candidates for uniqueness in that they are not merely generic cognitive operations with selective content; rather, they process and transform information about persons and only persons. For example, humans "project" onto others their own ongoing states, perceptions, preferences, and even attitudes and beliefs. Whereas some authors have shown