The Cognitive Underpinnings of Social Behavior

Selectivity in Social Cognition

Thomas Mussweiler, Andrew R. Todd, and Jan Crusius

Abstract

To navigate their social worlds successfully, humans must coordinate their own behavior with the behaviors of others. Because human behavior takes place in a complex social world, it imposes high demand on cognitive capacity. Yet the cognitive resources available to humans to meet this demand are relatively limited. Selectivity is a crucial element in social cognition. Only through informational selection are humans able to make decisions that are simultaneously adaptive and efficient. This chapter reviews evidence from social cognition research which demonstrates that humans are selective in the social information they attend to, the manner in which they process this information, and the behaviors they ultimately enact. This selectivity in social attention, social thinking, and social behavior is an adaptive tool that helps humans successfully maneuver through their complex social worlds.

Introduction

Humans are fundamentally social beings. From the cradle to the grave, their survival depends on how they interact with others. Without receiving direct support from others, humans are unable to survive infancy and reach reproductive age. Without interaction with others, humans cannot reproduce, and without interpersonal coordination, they cannot master most major life challenges. Humans are thus essentially interdependent: to survive and reproduce, they necessarily have to interact and coordinate with others. Social interaction and coordination, however, are dauntingly complex endeavors. To navigate successfully through their social worlds, people first have to make sense of their social counterparts; they have to interpret the behaviors of those around them.
anticipate what those others might do next, and decide on the most promising course for their own action. Is the young man who is staring at me friend or foe? Is he going to approach me or leave me alone? Should I stay or should I go? These are issues that people entertain on a daily (if not an hourly) basis. Despite the complexity of these social judgments and the ensuing social decision, humans are remarkably well versed at maneuvering their social worlds. They appear to be well adapted to the social complexity that surrounds them.

How do people make sense of and react to the behaviors of others? This is a simple question but it begs a rather complicated answer. For more than forty years, social cognition research has tried to answer this very question about the cognitive underpinnings of social behavior. Summarizing this research in a short chapter is more than a challenge; it is impossible. We can thus only highlight what we see as core principles of social information processing and refer readers to more comprehensive treatments of social cognition, along with its affective, motivational, and neuronal underpinnings, as well as its cross-cultural variations (Fiske and Taylor 2008).

Our chapter is guided by three basic premises: First, social behavior builds on social thinking. How people behave toward others depends largely on how they interpret others' behaviors. Clearly, whether you run away from or eagerly confront an approaching stranger depends on how you judge this stranger's behavior and what you infer about underlying motives. Even a rudimentary understanding of social behavior necessarily entails a basic comprehension of how people think about others and how they process social information more generally. Accordingly, in this chapter, we attempt to shed light on the cognitive underpinnings of social behavior. The cognitive mechanisms humans engage to process social information are partly similar and partly different from those used to process nonsocial information (for a detailed discussion, see Fiske and Taylor 2008).

Second, social information processing can be fruitfully differentiated into three conceptually distinct processing stages (though we readily admit that these processes might operate in parallel): Attention determines which novel social information enters our cognitive apparatus. This incoming information is then cognitively processed by relating it to stored social information. Finally, this processed information is transformed into a behavioral response. This chapter is structured around these three basic steps of social information processing.

Third, each of these three steps is characterized by selectivity in information processing. The amount and complexity of social information that people routinely encounter dramatically outnumbers their limited processing resources (Taylor 1981). Although many human cognitive capacities appear almost unrestricted in comparison to the capacities of other primates, these capacities—especially those that require some kind of parallel conscious processing—are far from limitless. For most people, for example, navigating a car through traffic while text-messaging with one's mother and attempting to resolve a conflict
with one's partner in the passenger seat will result in suboptimal performance on at least one of these tasks. In light of these processing constraints, people must necessarily be selective in the social information they attend to, the stored social information they activate, and the behavioral options they examine. This selectivity in social information processing represents a fundamental mechanism through which people make sense of their social worlds.

Social Attention: What Social Information Enters the Cognitive System?

As social perceivers, we are routinely inundated with information-rich stimuli in our immediate social environments. Indeed, the human visual system must contend with about one megabyte of raw data every second. Given the inherent capacity constraints of the human cognitive system, however, people are limited in how much information they can attend to at any given time. Thus, it is critical for people to be able to parse their surroundings quickly for the information that is most useful for confronting the challenges of day-to-day life, while simultaneously disregarding information that is not particularly relevant. That is, to navigate their social worlds effectively, perceivers must select from countless possibilities the information that will undergo additional processing. Here we examine what types of social information initially capture attention (for a more detailed treatment, see Bodenhausen and Hugenberg 2009), as this information profoundly shapes everything else that subsequently unfolds in the course of social interaction. We contend that social attention is guided by at least two basic principles:

- Which information people notice depends on a combination of bottom-up, stimulus-based and top-down, perceiver-based influences.
- People selectively attend to information that is perceptually salient (i.e., contextually distinct) and relevant to their immediate and long-term goals, values, attitudes, and expectancies.

Features of Environmental Stimuli: Capturing Attention from the Bottom Up

Which features of environmental stimuli make them particularly noticeable? At the most basic level, stimuli that are novel, unique, or otherwise contextually distinct are among the most likely candidates selected to receive preferential attention. The bright blinking light in a dark room, the lone guy wearing casual attire at a formal dinner party, and the scorching hot day in the dead of winter all tend to be particularly attention grabbing. Also receiving attentional priority are stimuli which require an immediate behavioral response: for instance, those that appear suddenly, without warning, or that are moving
toward oneself (Franconeri and Simons 2003). Along these same lines, the human perceptual system is adaptively tuned to notice selectively stimuli that have clear functional implications with respect to reproduction and survival. Although people selectively orient to extremely positive stimuli (e.g., attractive potential romantic partners) quite readily, being able to recognize quickly and avoid potentially dangerous or untrustworthy stimuli confers enormous survival advantages. Thus, it makes sound evolutionary sense for extremely negative stimuli—especially those signaling potential physical danger (e.g., snakes)—to be particularly attention grabbing (Öhman and Mineka 2001).

On the more social end of the spectrum, people selectively attend to functionally relevant signals conveyed by the human face. For instance, faces expressing anger automatically draw attention. In one study (Hansen and Hansen 1988), participants were presented with a 3 x 3 array of faces, one of which had an emotional expression that was discrepant from the surrounding faces (e.g., one angry face surrounded by eight neutral-expression faces); their task was to identify the discrepant face as quickly as possible. Results indicated that participants were faster in detecting the lone angry face in a happy or neutral-expression crowd than they were in detecting the lone happy or neutral-expression face in an angry crowd. Subsequent research has revealed that this anger superiority effect is especially pronounced when faces are displaying direct (rather than averted) eye gaze (Adams and Kleck 2003), thereby signaling that the expresser's anger has direct implications for oneself. Similarly, because out-group members are often thought to be more threatening and less trustworthy than in-group members, faces of the former tend to be more attention grabbing than faces of the latter, a tendency that, again, is most pronounced when targets display direct eye gaze (Trawalter et al. 2008). Interestingly, at later points in the attentional stream, when vigilance concerns have been relaxed, people often selectively attend to in-group targets more than out-group targets (Richeson and Trawalter 2008), perhaps because the former are more frequently encountered in daily life and thus are more likely to be directly relevant for people's ongoing activities and future cooperative endeavors.

Perceiver-Based Characteristics: Capturing Attention from the Top Down

Although it is evident that particular environmental stimuli can capture attention based on their features alone, the accessible mental contents that perceivers bring to bear in a given environment profoundly influence what they notice in that environment. We now turn to a brief discussion of several top-down influences on selective attention.

First, it appears that highly personally relevant stimuli are especially likely to attract attention. A classic example of this is the "cocktail party phenomenon," whereby the sound of one's own name uttered from the opposite side of a crowded room seems to rise above the commotion and capture one's attention.
Similarly, insofar as people possess or attach personal meaning to a particular personality trait, their attention is more likely to be drawn to behavior episodes that exemplify that trait (Bargh 1982). For instance, the behaviors of a dishonest politician will undoubtedly be attention grabbing for a person who values trustworthiness. Another source of personal relevance stems from people’s attitudes. Just as maintaining a low threshold for detecting biologically threatening stimuli in the environment is clearly functional, it also makes sense that perceivers would automatically orient to other hedonically relevant stimuli: stimuli that they personally (but not necessarily other people) find appealing or unappealing (Roskos-Ewoldsen and Fazio 1992).

A related top-down influence on selective attention involves whether stimuli are relevant to perceivers’ ongoing goals. Insofar as a particular stimulus is goal relevant, it is significantly more likely to be selected for additional processing by the cognitive system. Indeed, perceivers attend more closely to behaviors performed by people on whom the perceivers’ outcomes depend (e.g., significant others, professional colleagues) than to behaviors performed by people who are irrelevant to perceivers’ current goals. Even temporary motivational states can substantially alter which stimuli attract attention. For example, after experiencing an instance of social exclusion, people are highly motivated to seek reconnection with others; to facilitate this affiliative goal, people selectively attend to signs of social acceptance (e.g., smiling faces: DeWall et al. 2009).

A final class of top-down influences on selective attention derives from perceivers’ expectancies. Numerous studies have shown that information and behaviors that are inconsistent with one’s expectancies are granted preferential attention (Roese and Sherman 2007). For instance, if everything you know and have heard about a colleague leads you to expect him to be an honest and noble person, any evidence suggesting that he may actually have questionable integrity will likely capture your attention and prompt attempts to reconcile this behavior with your initial expectancy. The functionality of noticing extremely negative stimuli notwithstanding, another reason why such stimuli capture attention is that they are normatively rare, unexpected, and thus attention grabbing.

In combination, these mechanisms of top-down and bottom-up selectivity allow social perceivers to master the abundance and complexity of social information they routinely encounter. It is only with the help of this selectivity that perceivers can focus their limited processing resources on the information that is most relevant to them.

Social Thinking: How Is Incoming Social Information Processed?

Once social information has entered people’s cognitive system through these attentional mechanisms, it is subjected to additional processing vis-à-vis the
stored information representing people's knowledge about the social world. What are the central mechanisms that operate at this stage of information processing?

1. **Comparative thinking** allows people to relate knowledge about different stimuli or options to one another.

2. **Categorical thinking** allows people to apply their stored social knowledge to novel social stimuli.

3. **Accessibility** influences which cognitive content primarily influences social judgment and behavior.

Notably, the selectivity that influences which information people attend to and which information thus enters their cognitive apparatus is also apparent in these mechanisms of social information processing. Selectivity shapes how incoming information is processed.

**Comparative Thinking: Relating Stimuli to One Another**

When processing social information, when trying to make sense of others' behaviors, or when trying to decide on a sensible course for one's own actions, people invariably engage in comparative thinking. Social judgment typically involves a comparison of the target person with one or more other people. With whom do people compare? How do such comparisons influence social judgment and behavior? And, what are the downstream advantages of the ubiquitous tendency to engage in comparative thinking?

When deliberately trying to find the most diagnostic standard for comparison possible, people typically seek those standards that are similar to the target person on dimensions related to the critical characteristic (Festinger 1954). When trying to evaluate the trustworthiness of a colleague, for example, you would likely seek comparison standards that are similar to the target in terms of profession, age, gender, and other characteristics. Assuming your colleague is a generally trustworthy person, a comparison with a convicted swindler is not likely to yield an optimal amount of diagnostic information. Clearly, locating a standard that is perfectly matched on multiple related attributes is a rather arduous task. Consequently, people often rely on a less deliberate standard selection process. Oftentimes, people utilize those standards that they routinely use for comparison (Mussweiler and Rüter 2003). Alternatively, they may simply rely on standards that just happen to come to mind. In social judgment, the self constitutes a particularly prominent routine standard; consequently, judgments about others are often egocentric in nature. When trying to evaluate the trustworthiness of another person, for instance, people routinely use their perceptions of their own trustworthiness as a comparison standard. Notably, such egocentric comparisons also contribute to perspective-taking (Todd et al. 2011a) and may thus play a critical role whenever we attempt to coordinate our actions with the experienced or anticipated actions of others.
How do comparisons with these various standards influence judgment and behavior? Recent research has established that the consequences of comparison critically depend on whether judges focus on similarities or differences between a target and a standard (Mussweiler 2003). When comparing your own trustworthiness to that of your colleague, for example, you could either focus on ways in which the two of you are similar (e.g., you work in the same office, you have the same friends) or on ways in which you are different (e.g., you are at different stages of your career). Whether you focus on similarities or differences critically shapes the consequences of the comparison. Similarity-focused comparisons yield assimilative effects, whereas difference-focused comparisons yield contrast. Whether judgments about the trustworthiness of another person are assimilated toward or contrasted away from the self as a result of egocentric comparison depends, therefore, on whether similarities or differences between the self and this person stand in the foreground. Furthermore, whether comparisons are primarily similarity-focused or difference-focused depends on a variety of contextual, intrapersonal, socio-structural, and even physical factors.

Comparison is a versatile mechanism that is ubiquitous in both social and nonsocial information processing. What are the advantages of using this all-purpose tool? Recent research demonstrates that, based on mechanisms of information focus and information transfer, comparison yields two invaluable benefits for the social thinker: It increases the efficiency of information processing and simultaneously reduces judgmental uncertainty. First, comparisons allow judges to focus selectively on a subset of potentially judgment-relevant information and to ignore information that does not bear on the comparison itself. This selectivity in what information is considered allows social thinkers to make judgments more quickly and efficiently (Mussweiler and Epstein 2009). Judges who are induced via an initial priming task to process information in a more comparative manner, for example, are subsequently able to solve complex decision problems more quickly without becoming less accurate (Mussweiler and Epstein 2009). Second, comparisons allow judges to use easily accessible information about well-known standards to compensate for missing information about unknown targets. This information transfer reduces judgmental uncertainty (Mussweiler and Posten 2012).

Categorical Thinking: Using Group-Based Information to Judge Individuals

As is the case with comparison, categorical thinking is a ubiquitous element of social cognition (Macrae and Bodenhausen 2000). When interpreting the behavior of others and forming impressions of them, people are guided by their stored knowledge about the targets' social categories. Gender, race, and age are among the most frequently used social categories (Macrae and Bodenhausen 2000). The act of flagging down a car on a dark street, for example, can be
interpreted quite differently depending on whether it is carried out by an elderly woman or a young man. The use of categorical knowledge allows social thinkers to render judgments of individuals they have not previously encountered and about whom they have very little stored information. Categorical thinking allows judges to form expectations about others’ behaviors and thus makes the world appear more meaningful and orderly (Macrae and Bodenhausen 2000).

Categorical thinking simplifies social judgment in multiple ways. First, it allows judges to forgo the arduous search for individuating information about a target person by simply using categorical knowledge (i.e., stereotypes) instead. Stereotype use has efficiency-enhancing properties that make it a particularly helpful heuristic tool for social thinkers, especially when cognitive resources are in short supply. People whose circadian rhythms limit their ability to process complex information early in the day (i.e., “night owls”), for example, rely more heavily on stereotypes in the morning than at night, whereas “morning birds” exhibit a reverse pattern (Bodenhausen 1990). Second, categorical thinking typically encourages judges to focus on the most relevant of the multiple category memberships applicable to a given person and thus involves selectivity in information activation. The one category that is particularly salient, accessible, and relevant to the perceiver’s current goals becomes dominant and is thus called upon to guide social information processing, whereas alternative category memberships are inhibited (Bodenhausen and Macrae 1998).

Accessibility: Using What Comes to Mind First

How activated stereotypes guide information gathering and processing is one example of the more general tendency for accessible knowledge to dominate social thinking (Higgins 1996). For many of the social judgments people make, they actually have too much information available that is potentially useful. For example, when trying to determine whether your colleague is a trustworthy person, you could, in principle, consult an endless amount of potentially relevant information. Integrating all of this information into a coherent impression is far too complex and time consuming if one intends on reaching a judgment in a timely manner. To maximize the speed with which this judgment is reached, people are typically selective in their information search and thus rely primarily on what is most accessible in their minds. If the first things that come to mind about your colleague are several episodes in which he behaved dishonestly, you are likely to judge him accordingly. Accessibility fosters selectivity in social thinking in that it focuses attention on attributes that are associated with the accessible concept, enhances memory for such aspects, and inhibits the activation of competing concepts (Förster and Liberman 2007). Social judgments and behaviors tend to be consistent with accessible concepts, so that activating the concept of aggressiveness, for example, leads people to judge another’s behavior as more aggressive and to behave more aggressively themselves.
Social Behavior: Which Action to Choose?

After environmental information has been attended to and processed, the ultimate task of the cognitive system is to prepare and to enact behavior. What are the central guidelines that determine which actions people take? We contend that the way in which environmental input is transformed into behavioral output is characterized by the following three principles.

1. Reflective behavior is guided by intentions that are shaped through accessible information about the desirability and feasibility of behavioral outcomes.
2. Impulsive, nonintentional behavior selection is shaped by associative links.
3. Impulsive and reflective factors interact to produce behavior.

Just as the cognitive system is selective in what information it focuses on and how this information is processed, selectivity is also a central attribute at the behavioral output stage. In principle, every action is preceded by a selection of one of several behavioral alternatives, even if this selection involves only the decision to act or not to act.

Reflective Behavior Selection: Thinking About What to Do

One way to determine which action to take is to reflect consciously about the advantages and disadvantages of each behavioral alternative and form a behavioral intention (e.g., Ajzen 1991). Importantly, because of the selectivity of cognitive processing, this process is not exhaustive. It will not entail all potentially relevant information. Rather, it will be shaped by the limited subset of information that has been attended to and the way this information has been construed and made readily accessible.

What kind of information is used for behavior selection? A key issue concerns whether the behavior will yield desirable consequences. The attitude toward a particular behavior is determined by the sum of the expectancy that an action will lead to certain outcomes weighted by subjective values of those outcomes. Naturally, this calculation will comprise the intended consequences as well as the unintended repercussions of an action. Furthermore, actions that are carried out collectively or that may affect other people involve the mentally complex task of predicting how these coactors will act and react. In deciding how to treat a colleague, one should be predisposed toward the behavior that is associated with the most positive attitude—the one with the maximum utility. However, action is also influenced by the subjective norm—beliefs about the social pressure to act in a certain way and the motivation to comply with this pressure. In other words, another part of the equation includes a person's beliefs about whether socially relevant others would approve or condemn an action, weighted by the subjective motivation to comply with the referents in
question, even if these referents are not physically present or if the action does not have direct consequences for them. One might abstain from cooperating with a convicted swindler, for instance, because his behavior is met with disapproval by important referent persons or groups, such as friends or colleagues. Finally, enacting a behavior also rests on beliefs about whether one has the requisite resources and ample opportunity—such as relevant skills, time, or the cooperation of others—to complete it. The perceived behavioral control over an action is determined by factors that could likely facilitate or impede it, weighted by their subjective importance. In sum, if the attitude toward an action is positive, if it is perceived to be normative, and if one assumes that one will be able to carry it out, an intention to perform the action should be formed. Then, if an opportunity presents itself, the action will likely be taken. These causal factors can account for much variance in behavior (Armitage and Conner 2001).

**Impulsive Behavior Selection: Just Doing It**

Not all behavior is intentional and shaped by conscious reasoning (for a review, see Strack and Deutsch 2004). Often, it is neither possible nor functional to engage in a relatively slow and effortful reasoning process. In many situations, it is sufficient to act on the first association that comes to mind about a particular target. In other situations, quick, impulsive action may even be necessary for survival. Imagine a sudden encounter with a seemingly dangerous stranger in a dark alley. Should you carefully weigh your options, or should you act on your gut feeling?

Evidence suggests that in addition to a reflective pathway, there is also an impulsive pathway that directly connects environmental input and behavioral output. This impulsive pathway relies on spreading activation in the memory network, which contains evaluative and semantic associations and preformed response patterns (habits), and elicits basic motivational orientations of approach versus avoidance. It can operate quickly and effortlessly, and its influence on behavior may occur outside of conscious awareness (Strack and Deutsch 2004). If, as a consequence of categorical thinking, one associates a particular social category with distrust, an impulsive avoidance reaction may result upon encountering an individual member of the social category.

Abundant research investigating the workings of impulsive precursors of human behavior has relied on sophisticated methods that assess behavioral inclinations indirectly, without the need for introspective self-report (Petty et al. 2008). For example, Correll et al. (2002) had U.S. participants play a videogame in which they were instructed to “shoot” only at targets carrying a gun. Participants’ responses revealed a strong racial bias: They were quicker to shoot an armed black target than an armed white target, and they were more likely to shoot erroneously an unarmed black target than an unarmed white target. Because race was not diagnostic in the task, and because participants had
to react extremely quickly, it is reasonable to assume that this bias is largely caused by impulsive influences on behavior.

**Interaction of Impulsive and Reflective Precursors of Behavior**

In most situations, reflective and impulsive precursors of behavior do not operate independently; instead, they interact in complex ways (Strack and Deutsch 2004). For example, propositions entertained by the reflective system can increase the importance attached to certain associations by making them selectively accessible. Similarly, associations activated in the impulsive system can influence propositional reasoning in the reflective system. Thus, impulsive and reflective precursors may hold overlapping behavioral implications; however, these behavioral inclinations may also be incompatible. For example, an encounter with a member of a particular ethnic group may prompt a distrustful impulsive response because of culturally shaped stereotypical associations. Many people are motivated not to act on this impulse because they consciously endorse the goal of responding without prejudice. The reflective system can enforce this conscious goal by implementing behavioral decisions that override the unwanted impulse. Because the operation of the reflective system depends on the availability of cognitive resources, a self-control dilemma ensues. Impulsive precursors will govern behavior when these resources are constrained (e.g., Crusius and Mussweiler 2011; for a review, see Hofmann et al. 2009).

Thus, selectivity characterizes the behavioral output stage both in terms of the informational content and in terms of the mental processes that shape behavioral decisions. The cognitive system is selective in deciding which information it uses and in determining how this information will form the basis of reflective behavioral choice and impulsive responding. Furthermore, provided that the cognitive system is endowed with ample cognitive resources, perceivers can be selective in deciding whether impulsive or reflective processes dominate behavior.

**Conclusion**

Humans may well be the most complex stimuli that humans encounter. Because social behavior is—by its very nature—directed toward and coordinated with complex others, it is necessarily complex itself. To cope with this complexity and to maneuver through their social worlds successfully, humans have to be selective in what social information they attend to, in how they process this information, and in which behaviors they engage. The foremost advantage of this selectivity in social cognition is that it reduces social complexity, thus allowing social thinkers to make efficient use of their limited cognitive processing capacity. At the same time, selectivity produces reasonably adaptive outputs.
In fact, each of the facets of selectivity that we have described typically allows social thinkers to focus on the information that is likely to be most relevant. Selectivity thus ensures that less is more in social thinking. By focusing on the most relevant aspects of their social contexts, humans are able to make reasonably good decisions and to produce reasonably adaptive behaviors in an efficient manner.

Here, we have highlighted a number of central cognitive mechanisms that allow humans to be selective in how they process information. These mechanisms are ubiquitous elements of human information processing that contribute to every decision people make. Social cognition research has identified the basic cognitive building blocks of decision making. To date, however, decision theories in other disciplines have not sufficiently taken these building blocks into account. To fully understand how humans make decisions, their basic cognitive architecture—the fundamental cognitive mechanisms upon which they rely when making sense of the world—must be considered. After all, it is this subjective understanding of the world that forms the basis for every decision: from the most trivial to the most consequential.
REFERENCES


