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Title
Representation and Incorporation of Close Others' Responses

Permalink
https://escholarship.org/uc/item/17r1642v

Journal
Personality and Social Psychology Review, 20(4)

ISSN
1088-8683

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Publication Date
2016-11-01

DOI
10.1177/1088868315598256

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Personality and Social Psychology Review
2016, Vol. 20(4) 311–331
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DOI: 10.1177/1088868315598256
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Representation and Incorporation of Close Others' Responses: The RICOR Model of Social Influence

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Abstract

We propose a new model of social influence, which can occur spontaneously and in the absence of typically assumed motives. We assume that perceivers routinely construct representations of other people's experiences and responses (beliefs, attitudes, emotions, and behaviors), when observing others' responses or simulating the responses of unobserved others. Like representations made accessible by priming, these representations may then influence the process that generates perceivers' own responses, without intention or awareness, especially when there is a strong social connection to the other. We describe evidence for the basic properties and important moderators of this process, which distinguish it from other mechanisms such as informational, normative, or social identity influence. The model offers new perspectives on the role of others' values in producing cultural differences, the persistence and power of stereotypes, the adaptive reasons for being influenced by others' responses, and the impact of others' views about the self.

Keywords

social influence/power, person perception, automatic/implicit processes, culture/ethnicity

> Most people are other people. Their thoughts are someone else's opinions, their lives a mimicry, their passions a quotation.
>
> —Oscar Wilde (1973, p. 169)

What determines the judgments that people make, the emotions they experience, or the behaviors they perform? Both common sense and currently dominant psychological theories attribute causality mostly to the person's own beliefs, attitudes, or goals. For example, people's judgments are assumed to be based on their own beliefs and preferences. Emotions are assumed to be determined by people's own interpretations or appraisals of an event's positive or negative implication for themselves. Behaviors are assumed to be driven by people's own beliefs, attitudes, or emotions about a relevant object.

Of course, people's thoughts, feelings, and behaviors can be affected not just by the individual's own characteristics but through social influence, by what relevant other people think, feel, or do. Social influence can be driven by many motives (Deutsch & Gerard, 1955; Turner, 1982). These include the desire to hold correct opinions (and the assumption that what others think is likely correct and accurate, typically called informational influence); the desire to seek social rewards by agreeing with others (typically called normative influence); and the desire to maintain and express an important identity (typically called referent informational or social identity–based influence).

We propose a novel process that goes beyond both of these perspectives. We argue that in default, normal, everyday circumstances people without awareness or intent construct representations of other people's experiences and responses (i.e., perceptions, beliefs, attitudes, emotions, and behaviors), and that these representations then affect their *own* responses. This can occur when the others are explicitly observed, but people also routinely and spontaneously simulate the anticipated, expected, or probable experiences and responses of unobserved others. Others' responses are then likely to affect the perceiver's own, without awareness and even in the absence of the typical motives assumed to underlie social influence. In fact, we will see that such effects can occur even when the perceiver knows (a) that the other person's belief is incorrect and (b) that the perceiver will never interact with the other person in any way.

Crucially, though, we argue that this process does not occur with just any others, but is more likely for those with whom people experience a social connection, such as friends or ingroup members. Social connections increase attention to

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others and therefore the likelihood of representing their responses in the first place, as well as the likelihood of being influenced by those responses.

Thus, we argue for a model of social influence based on the Representation and Incorporation of Close Others' Responses—the RICOR model of social influence. Spontaneous representation of and influence by the observed or simulated responses of others provide a common mechanism underlying many instances of social influence such as attitudinal conformity, emotion contagion, and behavioral mimicry, which often occur without specific intentions to copy others. Thus, we argue that social influence is much more basic, spontaneous, and widespread than has been thought.

The structure of this article is as follows. The first section lays out the basic theoretical postulates. (We have sketched these in much briefer form in an article focused on the relation of our model to various types of priming effects; Smith & Mackie, 2014). The next major section reviews testable hypotheses and supporting empirical evidence. Finally, the article discusses novel contributions of our approach including directions for fruitful empirical work, and reinterpretations of existing phenomena.

Theoretical Argument

The RICOR model describes a novel two-stage process of pervasive, implicit social influence. First, we claim that without specific intention to do so, people spontaneously represent the experiences or responses of others, both when they actually observe or learn others' responses, and when they simulate unobserved others' anticipated or imagined responses. Second, we argue that those accessible representations of others' reactions readily influence the individual's own reactions. Thus, the representation of others' reactions to the world makes social influence implicit and pervasive. We further argue that both of these fundamental processes can be moderated by a unique set of variables that affect whose reactions are more or less likely to be represented and to influence one's own, and the conditions under which this is likely to happen.

Representing Others' Experiences and Responses

When social perceivers encounter others, it is adaptive—helpful in understanding and predicting the social world—for them to form mental representations of those others' perceptions, beliefs, attitudes, emotions, and behavior. We argue first that such representations are formed spontaneously, without intention, and often without awareness. Second, we argue that such representations form not just when the others' reactions to the world are made explicit and can be directly observed, but that people also routinely and spontaneously *simulate* other people's anticipated, expected, or probable experiences and responses even when they are not made explicit or are not observed. These claims are new, but evidence consistent with each of them has recently started to accumulate.

Recent evidence of simulation comes from studies in which participants watched a video showing a ball that rolls behind a screen so it can no longer be seen (Kovacs, Teglas, & Endress, 2010). Then the ball either stays behind the screen or rolls away, out of the scene. A cartoon drawing of an agent is also present in the video, watching the ball. Importantly, in some conditions, the agent leaves the scene before the ball reaches its final location, so participants could infer that the agent would have a false belief about the ball's location. Finally, the cartoon agent returns, the screen is slowly lowered, and participants press a key when they see the ball. When the ball was present, keypresses were faster when the participant expected it to be there than when it was expected to be absent (replicating many prior findings). The crucial finding for simulation was that the agent's inferred belief had the same effect: Keypresses were faster when the perceiver could infer that the agent would have expected the ball to be present (even if the perceiver knew differently), suggesting that they had simulated the agent's expectations. A further experiment used the same video presentations with 7-month-old infants, measuring surprise at the ball's appearance or non-appearance by the infant's looking time, and replicated the finding. This finding may be counterintuitive, in that 7 months is generally regarded as too young for full-blown theory of mind to emerge. However, Heyes (2014) described how more limited forms of mentalizing might allow infants to track others' perceptual perspectives, even before they are fully capable of reasoning about mental states.

Another study found similar evidence of simulation using a spatial rather than temporal manipulation of the agent's partial knowledge. In Samson, Apperly, Braithwaite, Andrews, and Bodley Scott (2010, Exp. 3), people viewed scenes in which a cartoon agent was depicted standing in the middle of a room, facing right or left. Various numbers of large dots appeared on the right and left walls of the room, so the figure could be inferred to see the dots in front of him or her but not behind. Participants viewed such a scene followed by a number, and indicated whether or not the number represented the total number of dots in the scene. Although the agent's perspective was irrelevant to the task, response times showed that participants simulated the agent's viewpoint. For example, "no" responses to an incorrect number were slower when the number matched what the agent could see, such as the number 1 for a scene with the agent facing left, with one dot on the left and two on the right. Both the Kovacs et al. (2010) and Samson et al. (2010) studies thus make clear that the perceiver automatically simulated the agent's perception of the situation.

These paradigms also provide evidence that such simulation occurs without specific intention, by eliminating the usual assumed motivational bases for influence (see also

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Heyes, 2011; Kim & Hommel, 2015). First, the agent's inferred belief is not informationally useful; in fact, it is obviously limited and incorrect, detracting from the perceiver's goal of answering quickly and correctly. Second, because the agent is a cartoon or image, normative pressures to conform to strengthen social relationships are also absent. Third, the agent does not represent or activate any meaningful group identity whose norms might suggest particular responses. Nevertheless, simulation of the other's view occurred even in the clear absence of the motives usually considered to drive influence, and even when doing so interfered with explicit goals to respond quickly and accurately, supporting the unintentional nature of the process. These studies provide evidence that people compute the agent's beliefs, with that representation then facilitating or inhibiting their own response.

We contend that this kind of spontaneous simulation and representation of others' responses extends to a wide range of others' experiences and responses (beliefs, attitudes, emotions, and behaviors). The simulation process may draw on a variety of cues: the physical presence and viewpoint or perspective of others (e.g., the cartoon agent in Samson et al., 2010), inferences from knowledge about specific individuals or stereotypes about social groups (e.g., my father would hate this movie), or general knowledge about social or nonsocial situations (e.g., a child will be happy at a birthday party). Of course, if little or no specific information about another person is available, perceivers will often engage in social projection, assuming that the other's experiences or responses will be similar to the perceiver's own. Further evidence for the representation and simulation of others' responses includes a wide range of research that we describe in later sections.

Influence of Others' Responses on One's Own

We have argued that perceivers construct representations of others' beliefs, attitudes, emotions, and behaviors, whether observed or simulated. In the second stage of the RICOR model, those representations affect the content and/or speed of the individual's own responses. We argue that this occurs because representations of others' reactions are similar in format to representations of one's own, and therefore potentially able to influence one's own responses.

Related ideas have been advanced before in various forms. Fazio and Olson (2003) argued that an attitude is mentally represented by an association between an object and a positive or negative evaluation. Such an association can form because the individual has evaluated the object, but can also be created by what these authors term "extrapersonal" information, such as information about how someone else evaluates the object. Such object–evaluation associations do not necessarily indicate whether they represent one's own or other people's evaluations and thus, can have equal influence on an object's overall evaluation. (Even if they are tagged in some way with their source, those tags are identifiable only by effortful and resource-intensive processing; Gawronski & Bodenhausen, 2006). To demonstrate such effects, Han, Olson, and Fazio (2006) gave people meaningful positive or negative information about novel attitude objects (Pokemon characters) and then allowed them to overhear an uninformed source (a child) give inconsistent evaluations of the objects. An implicit attitude measure showed that the child's uninformed comment nevertheless had an impact on evaluations of the objects. In a thoughtful explicit response, people might be able to discount the child's comment so that it would have little effect. But implicit measures are more likely to tap evaluative associations, and in this case, reflected an association of the object with the uninformed child's positive or negative comment, as well as the perceiver's own informed evaluation.

Externally supplied beliefs or attitudes can be confused even with one's own memories, producing memory illusions. After witnessing an event, if people are exposed to misleading information (e.g., in questioning about the event details), they may mistakenly import that information into their report of their memory of the event itself (Loftus, 2005). The source of the misleading information is not correctly recalled, so it is misattributed as a memory resulting from the original event (Johnson, Hashtroudi, & Lindsay, 1993). Such "illusions" should be even more likely for beliefs and attitudes than for memory reports, because "what do I believe about X?" and "how much do I like X?" are much more open-ended and less reality-constrained questions compared with memory queries such as "what did I see on occasion X?"

Systems in which one's own and others' responses are represented can be embodied as well as mental: There is strong evidence that in perceiving others' emotions and behaviors, people represent them using their own bodies. For example, perceiving emotional expressions (in photos of strangers) causes automatic mimicry of these expressions; this mimicry causes perceivers to experience similar emotions as those of the targets they observe (Lundquist & Dimberg, 1995; Niedenthal, 2007). In the case of motor behavior, mirror neuron systems have been argued to display similar activations based on the perception of others' actions or one's own performance of the same action. Such systems have been postulated to constitute a shared representational "manifold" (Gallese, Keysers, & Rizzolatti, 2004) that may play a key role in understanding and predicting others' behaviors. Importantly, such systems may also mediate automatic behavioral imitation (Heyes, 2011). In one paradigm, participants are instructed to close or open their hands as cued by a visual signal, while observing a video of a hand making a task-irrelevant opening or closing movement. Their responses are facilitated or inhibited when their movements match or mismatch the observed hand movement (e.g., Heyes, 2011; Stürmer, Aschersleben, & Prinz, 2000). Looser forms of unintentional motor mimicry are found outside such tightly controlled paradigms, for example, in social interactions where participants imitate the actions of

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an experimenter who touches her face or moves her foot (Chartrand & Bargh, 1999), or imitate task responses they see made by others, even when they are described as meaningless distractors (Kim & Hommel, 2015).

These findings make three points relevant to our argument. First, they demonstrate that a wide range of others' reactions—emotions and behaviors, as well as beliefs and attitudes—are spontaneously represented. Second, they demonstrate that our own and others' reactions across this broad spectrum are often represented in very similar, if not identical, ways. It is this fact that opens the door for others' reactions to influence one's own. Third, some findings demonstrate influence in the absence of conventional motives for conformity. Although behavioral mimicry in the studies of Chartrand and Bargh (1999) could be motivated by the desire for closeness with the other person, standard informational, normative, or referent informational motives for conformity are absent in several other paradigms (e.g., Heyes, 2011; Kim & Hommel, 2015).

Parallel constraint satisfaction (PCS) mechanism. Sometimes we adopt others' responses thoughtfully and intentionally, based on the epistemic, social, or other motives usually assumed to generate conformity. Our novel claim is that we can be influenced by others without any special motivation, but just by default, because accessible representations of others' reactions are in a similar form as representations of our own (e.g., evaluative associations can represent either our own or others' evaluations of an object).

For insights into this process, we turn to theoretical models of priming effects. In priming paradigms, information is activated by a prime stimulus, and then influences a judgment or behavioral response to a later-occurring target stimulus (Schroeder & Thagard, 2014). Primed mental content that is accessible when people are formulating their responses can affect response times (e.g., in evaluative priming paradigms, where responses are faster when the prime and target are evaluated similarly and slower when their evaluations are opposite). Accessible mental content can also influence the content of responses (e.g., in the Affective Misattribution Paradigm or AMP, where positive or negative images change evaluations of neutral stimuli presented immediately after; Loersch & Payne, 2011).

According to a recent integrative model (Schroeder & Thagard, 2014), priming effects can be explained by *parallel constraint satisfaction*, "the mechanism by which a decision or course of action arises from amalgamating all the different elements into a holistic, coherent *Gestalt*" (p. 154). PCS processes organize multiple representations (including the primed concept, information about the self, relevant social targets, and the situation) into a meaningful whole by increasing or decreasing each representation's levels of activation, while respecting as much as possible positive or negative constraints (relationships of consistency or inconsistency) among the representations.

The operation of the process can be illustrated by considering a localist connectionist network (Smith, 1996), in which nodes that can vary in activation levels represent specific mental representations (perceptions, emotions, behaviors, etc.). Pairs of nodes are connected with positively or negatively signed links, reflecting relations of consistency (coherence, positive constraint) or inconsistency (incoherence, negative constraint) between the nodes. A subset of nodes becomes active, driven, for example, by the perception of objects in the environment or by internal states of the person (e.g., a node representing an emotional state). Then activation flows in either direction along the links, activating or deactivating other nodes in a way that best fits with the constraints represented by the links. The entire system finally settles into an overall pattern of activation that corresponds to its emergent *Gestalt* interpretation of the entire situation, based on the inputs and constraints. At that point, the activation level of any node in the system can be regarded as the system's output—for example, the final state might include activation of an emotion node or a behavior node (corresponding to an emotional or behavioral response by the person).

As an example, consider a network of nodes representing appraisals and emotions, together with relevant constraints. If input information activates specific appraisals (e.g., a negative event is possible, but uncertain), the resulting activation flows will likely activate an emotion node corresponding to anxiety, which is connected with positive links to those appraisals. We would say that the specific appraisals led to an emotional reaction. But in a different situation where the person is feeling anxiety due to some other cause, activation can flow in the other direction across the same links to activate the appraisal nodes. We would say that an incidental emotional state alters people's judgments that are related to the appraisals (Lerner & Keltner, 2000). It would be possible to postulate two separate unidirectional systems to account for these observations, one that generates an emotion from a pattern of appraisals and a second that generates appraisals based on an emotional state. But such a model would require additional mechanisms to explain why the two systems are substantively consistent with each other; that is, if Appraisal A generates Emotion E, why does Emotion E generate exactly Appraisal A rather than some different appraisal? This question does not arise with the PCS model, in which a single system generates a configuration that includes coherent patterns of both emotions and appraisals, based on available input information.

This example illustrates that activation can flow bidirectionally along links representing constraints. An important implication is that the final state of the system can be the same although it was caused by different configurations of inputs. In a sense, the PCS process is indifferent to the specific inputs; it simply arrives at the most coherent or consistent overall pattern that fits those inputs. Any node in the system (in the example, either an appraisal or an emotion)

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can be interpreted as an "output" of the system; there is no one fixed output node. Loersch and Payne (2014) in discussing their "situated inference model" (p. 139), a closely related PCS model of priming, make the same point by describing how different outputs can be used depending on the "question afforded by the situation."

> The meaning of primed information for the person depends on the particular question(s) afforded by the situation . . . Notably, different situations afford different questions, and this can cause the same accessible content to produce very different effects. For example, although being asked to think about another person and their personality traits affords the question, "What type of person are they," being asked to think about yourself will instead afford the question, "What type of person am I?" To the extent that prime-related content is misattributed to the focal target, these two situations will produce two distinct priming effects, differentially producing changes in other versus self-perception. (p. 139)

This last statement parallels our example, which produced two distinct effects: either changes in emotion or changes in judgments on appraisal-related dimensions.

Schroeder and Thagard (2014) presented a simplified localist neural network PCS model similar to the one described above. They also presented a neurocomputational version that rests on properties of simulated biologically realistic, spiking neurons, and conducted simulations to show that the model can reproduce results of numerous priming experiments. PCS processes are clearly related to classic social-psychological balance or cognitive consistency theories, and modern, more formalized versions have been used to explain phenomena ranging from analogy-making (Holyoak & Thagard, 1989) to letter and word perception (McClelland & Rumelhart, 1981) to impression formation (Kunda & Thagard, 1996; Smith & DeCoster, 1998). Schroeder and Thagard (2014) argued that their perspective also integrates several previous models of priming, mostly from the social-psychological literature. These include the active-self model of Wheeler, DeMarree, and Petty (2007), which argued that primes shape the currently active "working self," thus influencing behavioral choices, as well as Loersch and Payne's (2011) situated inference model, noted above. Other models consistent with the PCS framework include the idea from Cesario, Plaks, and Higgins (2006) that a prime activates interaction goals that then shape behavior in a social encounter, and the proposal by Bargh (2006) that primes activate learned metaphorical structures, which then alter the way we interpret and construe the world.

All these models show how accessible information—even if the accessibility stems from an irrelevant source—becomes incorporated into and shapes the individual's responses (Schwarz & Bohner, 2001). They share the theme that such influence is difficult to prevent or control, even when people are trying to do so. For example, in the AMP, evaluations of target stimuli are affected by primes even when people are strongly warned not to allow any such influence (Loersch & Payne, 2011). The idea that influence from accessible mental content is difficult to avoid or control echoes Wilson and Brekke's (1994) warning about "mental contamination," and Wegner's (2009) findings of ironic increases in the very thoughts we are trying to avoid.

Thus, PCS is the specific process by which pervasive, implicit social influence comes about. Spontaneously constructed representations of others' reactions as well as the person's own reactions enter into the PCS process, and both influence the person's subsequent reaction. People are typically unaware of these processes and often unable to prevent or control them.

Relation of RICOR Model to Social Projection

The RICOR model, although it assumes that people's own responses are often affected by others' responses, is compatible with the plentiful evidence that people socially project, assuming that others share their own beliefs, attitudes, or behaviors (e.g., Robbins & Krueger, 2005). PCS can operate in any direction; a change in any of the related representations may potentially change any others that are connected by links of mutual constraint. Whether projection to others or influence from others will be observed depends primarily on the "question afforded by the situation" (Loersch & Payne, 2014). By making another person salient (causing a representation of his or her response to be constructed) and then asking for the perceiver's own response, social influence will likely be observed. By having people think about their own response and then asking about others, social projection will more likely result. Thus, evidence for social projection does not call into question the process we describe here.

To consider the relation between the RICOR model and social projection in more detail, consider four different situations. First, assume that little or nothing is known about the relevant other person, or that the other is known to be similar to the self (in ways that matter for the current situation or judgment). (1a) If the other becomes salient so simulation of the other's response or experience is triggered, and then one's own response or behavior is elicited (by a researcher's question or by the simple need to act in the situation), then the simulation of the other's response is likely to be similar to one's own (i.e., social projection). Via the PCS process, its effect will generally be to amplify one's own response or make it more extreme (e.g., Shteynberg et al., 2014). This effect can be viewed as a type of implicit social validation of one's response by a simulated other. (1b) In contrast, if one generates one's own response to a stimulus or situation and then thinks about an unknown or similar other (e.g., because predicting the other's response becomes relevant), explicit social projection is likely: The active representation of one's own response will cause the other's inferred response to be similar (again through a PCS process).

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Second, consider the opposite situation, where the other is believed to differ from the self in relevant ways. (2a) If the other becomes salient, the other's response will be simulated as being different from one's own response. If one's own response is then elicited, the effect of the other's simulated response, via PCS, will be to moderate one's own response, making it less extreme. (2b) However, if one generates one's own response in the situation and then thinks about the other, the guess or construction of the other's response will also be moderated—influenced by one's own salient response, which enters into the PCS process.

In all four of these situations (1ab, 2ab), influence occurs—whichever response (own or other's) is salient influences the response that is constructed due to situational demands (either one's own cognitive, affective, or behavioral response to the situation, or an inference about the other person's likely response). So influence is universal. Influence is a *process* question. But social projection is a *content* question, having to do with whether the other's and one's own responses are constructed as similar. Social projection can be empirically observed only sometimes: specifically, in Situation 1b, where one's own response is salient and then one explicitly predicts the other. Social projection also occurs, though, "under the covers" in Situation 1a, in which the other's simulated response is not explicitly reported (because that question is not asked or afforded by the situation), but it nevertheless makes one's own response stronger. In this sense, projection often enters the process of simulating others' responses that is part of the RICOR model. However, we argue that simulation (which may reflect projection as in Situation 1b, or not as in 2b) has downstream effects on one's own responses that are not ordinarily considered in discussions of social projection.

Relation of RICOR Model to Priming

The process described in the RICOR is not merely another example of priming. Although we see PCS as the mechanism that allows incorporation of others' responses into our own, the RICOR differs in important ways from processes typically labeled "priming." First, the process we describe affects not only overt behavior (the focus of Schroeder and Thagard's priming model), but also beliefs, attitudes, and emotions. For example, perceiving another's emotion causes imitation of the emotional expression (representation of the other's response in an embodied system) and leads the perceiver to experience the same emotion (Niedenthal & Brauer, 2012), just as perceiving another's behavior causes automatic imitation (Heyes, 2011). Second, we do not assume, as in typical models of priming, that activation simply spreads along existing associative pathways (e.g., from the primed word *doctor* to the related item *nurse*). Instead, we argue that people construct new representations of other people's responses (whether observed or simulated), which then affect the PCS process. Third, this construction process will often draw on knowledge about the other (e.g., that person's perspective and preferences) as well as on properties of the salient stimulus. For example, while viewing a silly cat video, one may simulate someone else viewing it simultaneously as experiencing enjoyment—unless that person is someone you know hates Internet pet videos, which might lead to a simulation of annoyance instead. Fourth, this process is interpersonal (rather than intrapersonal) in a meaningful sense. As just illustrated, the construction relies on others' assumed knowledge and preferences even if they differ from one's own (e.g., Kovacs et al., 2010; Samson et al., 2010), and as we will see below, the effects of the constructed representation will be moderated by one's relationship with the other person (e.g., friendship or shared ingroup membership).

Moderators of Representing and Being Influenced by Others' Responses

We have described two stages, representation of others' response, followed by incorporation into the perceiver's own response. Several moderators are predicted to influence whether and how each stage proceeds.

Moderators of representing others' responses. With regard to the first stage, we argue that it is adaptive for people to be attuned to the potential responses of others in social situations. Clearly, people typically construct representations of the overt responses of others they observe or interact with (e.g., others' overtly expressed beliefs or attitudes, expressed emotions, observed behaviors). If others' responses are not directly observed or communicated, when will people simulate them? We believe that this will occur without specific intention for *salient others* who are assumed to *have relevant responses*, meaning that they are responding to the same stimulus information, or have responses or reactions that concern the focal object or topic.

When another is visually salient, research shows that even humanoid cartoon figures elicit simulation of their perceptual viewpoints (e.g., Kovacs et al., 2010). Other research has identified additional cues besides human-like appearance that lead us to identify an object as having a mind and therefore "having relevant responses." Zwickel (2009) showed participants a video of triangular shapes moving around and interacting. Occasionally, a dot appeared in the scene and the participant had to report whether the dot was to the right or left of a particular triangle. If the triangle was pointed or "facing" downward on the screen, a dot on the right (from the participant's perspective) would be on the left (from the triangle's), so response time would be slowed if participants computed the triangle's visual perspective. Studies showed that this occurred when the participants had previously viewed a video showing the triangles engaged in behaviors that require goal orientation and theory of mind (such as dancing together or teasing). Thus, cues that suggest an

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inanimate shape has aspects of mind can lead people to treat the shape as an agent and simulate its perspective.

We may also simulate the responses of others who are salient not visually, but because they have special relevance to the topic at hand. For example, when buying a car, the simulated reaction of my brother-in-law (the car buff) to this vehicle may pop into my mind. We may simulate the responses of others who we know are seeing the same stimulus information we are, such as when watching a political speech on TV while knowing a relative (who might have different political leanings) is also watching it (see Shteynberg et al., 2014).

Whether the other is visually salient or not, forming representations of his or her responses will be moderated by the focus of a perceiver's attention; the potential responses of those to whom no attention is paid are not represented (Bach, Peatfield, & Tipper, 2007). For example, the extent of automatic emotional contagion or behavioral imitation is influenced by "input modulation," or the amount of attention to the emotions or behaviors of others (Heyes, 2011). Besides salience, other factors influencing attention include the perceiver's degree of social connection to the others such as the other's ingroup/outgroup membership (which makes them more or less focal), goal manipulations that direct attention toward others, and individual difference factors (such as heightened orientation to or empathy for others).

Moderators of influence from others' responses. As to the second stage of incorporation of others' responses into one's own, multiple literatures converge to suggest that avoiding or limiting such influence depends on the ability to identify the source of influence as separate from the self. To the extent that an external source of or reason for activation can be ascertained, its impact might be limited (a process termed *output modulation*, Heyes, 2011). Both source identification and restriction of activation's impact are, however, effortful and deliberative. This idea implies that several factors will increase the likelihood of incorporating others' observed or simulated responses into one's own.

1. Implicit or speeded rather than explicit, deliberative responses.

The priming literature shows that people are more prone to influence from primes when making time-pressured or implicit responses. When time is allowed for deliberation, people may have the resources needed to infer the true source of accessibility of the activated information, and thus be able to limit its effects on their responses (e.g., Gawronski & Bodenhausen, 2006; Loersch & Payne, 2011).

2. Relation between self and other(s).

The ability to identify the source of activation as a person other than oneself (and thus to limit influence) also depends on the relationship of the self to the other. Both interpersonal closeness and shared group membership have been regarded as involving self–other overlap (Aron, Aron, Tudor, & Nelson, 1991), a conceptualization that suggests the weakening or erasure of self–other boundaries. For example, when reporting their own attributes (such as personality traits), people are slower and make more errors on traits that they do not see themselves as sharing with a close other or an ingroup, compared with traits seen as shared (Aron et al., 1991; Smith & Henry, 1996). Factors that increase self–other overlap (such as ingroup vs. outgroup membership, discovering an incidental similarity, and perspective-taking) as well as individual or cultural difference factors (such as self-construal as independent or interdependent; Singelis, 1994) determine how easy or difficult it will be to distinguish one's own from others' reactions. Thus, we argue that these types of social connection affect how difficult it is to avoid influence from another's responses. Our claim is again supported by findings regarding automatic emotion contagion and behavioral imitation, which occur more for ingroup than for outgroup members and more for liked than for disliked others (Miles, Griffiths, Richardson, & Macrae, 2010; Weisbuch & Ambady, 2008). Even a trivial connection with another person, such as having the same birthday, can lead to adoption of the other's attitudes (Cheung, Noel, & Hardin, 2011). These findings come from paradigms in which the other's responses are explicitly observed and not simulated, demonstrating that self–other overlap affects influence rather than the likelihood of simulation.

Importantly, the private versus public nature of the perceiver's response—a response that is known to nobody or only to an experimenter versus one that can be monitored by relevant others—is not predicted to be a moderator of these effects. Imitative responses driven by the desire for increased closeness with others will be displayed only when others can see them, but not in private. But because the influence process we describe here is relatively unintended and difficult to control, and because it is not motivated by concerns about relationships to others, it should occur equally in private and in public.

Moderation of spontaneously occurring effects. We have emphasized that no specific intention is required for another's observed or simulated response to affect the perceiver's own responses through the mechanism outlined here. However, this process is hypothesized to be moderated by factors such as the amount of attention paid to the other, and the perceiver's degree of effort and ability to distinguish the activated representation of the other's response from his or her own response. These factors (attention, effort to distinguish self from other) are controllable by the perceiver, at least to some extent. Thus, influence of the sort described here will not occur always and unconditionally. The same is true empirically of related phenomena such as automatic behavioral imitation (Heyes, 2011) and emotion contagion

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(Weisbuch & Ambady, 2008), which are found to occur more strongly with liked or ingroup others. Another parallel is the effects of stereotyping and prejudice, which are considered to be activated automatically and to influence perceptions of outgroup members. Yet the literature shows that people who are aware of stereotypes and prejudice as possible sources of influence on their own responding can partially control the effects of such automatically activated material. In the "shooter" paradigm, for example, automatic activation of stereotypes facilitates seeing an ambiguous object carried by a White target as a tool, whereas the same object carried by a Black target is seen as a gun (Correll, Park, Judd, & Wittenbrink, 2002). However, people seeking to overcome the effects of the automatic activation can exert some control over their own responses (Conrey, Sherman, Gawronski, Hugenberg, & Groom, 2005; Correll et al., 2007). Our point is not that the process we outline occurs unconditionally, but that when it does occur, it does not require the types of motives typically assumed to underlie social influence—the desire to adopt others' responses because they are assumed to be correct and useful, to strengthen relationships with the others, or to adopt responses that are normative for a meaningful ingroup.

Summary of Theoretical Argument

In summary, the RICOR model portrays a novel two-stage process of social influence. First, without specific intention to do so, people automatically represent the experiences or responses of others who have relevant perspectives, when those others receive attention. They do this when they actually observe or learn of the others' responses, but also may simulate others' unobserved but anticipated or imagined responses. Second, once others' responses have been represented, they are likely to influence the individual's own responses, through incorporation into the PCS process that generates responses. This will occur more often for implicit or time-pressured responses, and for others who are more socially connected or have higher self–other overlap, but should occur equally whether the response is made privately or in public. Under these circumstances, people will tend by default to draw on what is mentally accessible (the thoughts, feelings, and behavior of salient and similar others who are observed or imagined), and hence to display similar cognitive, emotional, or behavioral responses themselves.

The next section lays out hypotheses that follow from our theoretical model and reviews existing evidence supporting these claims.

Hypotheses and Review of Representative Evidence

The RICOR perspective leads to a number of testable hypotheses. We list them here in summary form, and then review existing evidence supporting each. As will become clear, there is at least some evidence supporting each hypothesis, although it is often limited to a subset of the types of responses we consider (i.e., beliefs, attitudes, emotions, or behaviors). In addition, existing studies, although demonstrating effects consistent with these hypotheses, usually are not designed to furnish direct evidence for the specific mediating processes that we assume (representing, and then being unintentionally influenced by, others' responses).

Hypothesis 1: Perceivers will be influenced by observed or simulated responses of others, even in the absence of the conventionally assumed accuracy, social reward, and identity motives for social influence or conformity.
Hypothesis 2: Such influence will be moderated by self–other overlap, operationalized as friendship, shared ingroup membership, or other types of social connection.
Hypothesis 3: Such influence will be moderated by the salience of the other.
Hypothesis 4: Such influence will be moderated by the speeded or implicit versus deliberative and thoughtful nature of the perceiver's response, with more influence on less deliberative responses.

Hypothesis 1: *Perceivers Will Be Influenced by Observed or Simulated Responses of Others, Even in the Absence of the Conventionally Assumed Motives for Social Influence or Conformity*

We discuss the extensive existing evidence for this hypothesis under the categories of effects on beliefs and attitudes, emotions, and behaviors.

Beliefs and attitudes. Many studies now demonstrate that others' attitudes and beliefs are simulated and have influence, even in circumstances in which traditionally assumed accuracy and social motives for social influence are not relevant (such as private responding, irrelevance of the other's input, absence of social interaction).

Studies described earlier by Kovacs et al. (2010) and Samson et al. (2010) demonstrated that people unintentionally simulate another's perceptual viewpoint, even when that other is a cartoon figure whose viewpoint is obviously limited and incorrect. Other evidence also suggests that people spontaneously represent others' beliefs in the absence of conventional motives. For example, eye-tracking and response-time studies show that without instructions or task demands to do so, listeners represent a speaker's perspective that differs from their own. For example, when the listener knows that the speaker's view of an object's movements has been blocked, the listener's eye movements show a bias toward looking where the speaker would (falsely) expect to see the object, even when that information has no obvious bearing

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on the listener's task (Ferguson & Breheny, 2012). Studies by A. S. Cohen and German (2009, 2010) found that when perceivers watch videos under instructions to track the movements of an object, they respond just as fast to questions about the false belief of an agent who is also depicted in the video, as to questions about the actual location of the object. This suggests that they also spontaneously tracked the agent's belief about the object. These authors suggest that the results demonstrate domain-specific cognitive mechanisms dedicated to simulating and reasoning about others' mental states.

Once simulated, representations of others' beliefs and attitudes change the perceivers' own beliefs and attitudes. In a study by Cheung et al. (2011, Exp. 1), participants from a public university played a brief computer game over the Internet with other students supposedly located in different parts of the city (so no actual interaction was expected). The other players were identified as students at exclusive private universities where most families were economically well-off, or students at other public colleges where most families were less well-off. This brief interaction with these other students influenced participants' implicit attitudes toward labor versus management (measured by a version of the Implicit Association Test, with well-off interaction partners producing more pro-management implicit attitudes and less well-off partners producing pro-labor attitudes. Participants did not learn the actual attitudes of the supposed interaction partners; hence, they must have simulated their likely attitudes based on their assumed socio-economic status, and then were influenced by them.

A similar process appears to have occurred when Jost, Ledgerwood, and Hardin (2008) recruited participants whose parents held differing political viewpoints. Following experimental instructions, participants first thought about a positive or negative past interaction with either their mother or father, and then in an apparently unrelated task, reported their own political ideology. Participants' reported attitudes shifted toward the attitudes of the momentarily salient parent, regardless of whether they had recalled a positive or negative interaction, apparently as a result of simulating that parent's view.

Many of the studies reviewed here show effects of others' responses on participants' private, unobserved responses, casting doubt on the idea that this kind of influence is driven by typical motives. One study by Huh, Visgerau, and Morewedge (2014) directly compared private with public responses. They had participants observe a confederate (portraying another participant) choose one of two ambiguous products (brands of tea labeled only in Korean). Then the participant chose one for him or herself, either while the confederate observed or after the confederate left the room (i.e., in private). Effects of the confederate's choice were stronger on private choices, and in fact in the public condition, participants tended to choose a different item from the one the confederate selected. These findings make clear that the motive for the influence found in private is not the desire to win social rewards from the other person by conforming to his or her behavioral choice.

Emotions. People tend to spontaneously mimic facial expressions (Dimberg, Thunberg, & Elmehed, 2000) and emotions (Lundquist & Dimberg, 1995) that they observe. All these processes occur without explicit conscious intentions or awareness on the part of the mimicker. In some studies, exposure to the stimulus faces was actually subliminal (e.g., Dimberg et al., 2000), providing strong evidence for the automatic nature of the process. These mimicry effects are not simply epiphenomenal, but are an intrinsic part of the process of recognizing others' emotions, as shown by studies in which emotion recognition is slowed or rendered less accurate by manipulations such as injections of Botox, which prevents mimicking the observed muscle movements (Neal & Chartrand, 2011).

Once simulated, others' emotions influence the perceiver's own reactions. In one study, for example, participants anticipated interacting with someone whom they expected to be in a positive or negative mood (Huntsinger, Lun, Sinclair, & Clore, 2009). Participants showed signs of experiencing what they believed to be their partner's mood, even before the expected interaction occurred. Participants apparently simulated the emotion of their partner, and in doing so, experienced the mood themselves, as was shown not only by self-report mood measures but also by effects of mood on information processing, indicating that the mood was actually experienced.

Shteynberg et al. (2014) had people view emotionally evocative images or videos in online experiments. The participants, who believed that similar or dissimilar others were viewing the same (or different) material, then rated their own emotional responses to the stimuli. Across several studies, ratings of emotions including fear, sadness, and happiness were higher in conditions where similar others viewed the same material, compared with a control condition in which another viewer was not mentioned. These findings suggest that awareness of others' viewing leads to simulation of their emotions and consequent amplification of participants' own emotions.

Other types of internal states, beyond emotions specifically, can also be experienced based on observing or simulating others' experiences. For example, seeing someone else being ostracized leads observers to feel loneliness (Wesselmann, Bagg, & Williams, 2009). Inconsistency in others' attitudes and behaviors leads observers to experience vicarious cognitive dissonance (Norton, Monin, Cooper, & Hogg, 2003). Observing others' accomplishment of their goals causes observers to experience satiation (McCulloch, Fitzsimons, Chua, & Albarracín, 2011).

Behaviors. It is well established that people imitate others' observed motor behaviors (Chartrand & Van Baaren, 2009;

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Heyes, 2011). Consistent with our model, Sebanz, Knoblich, and Prinz (2003) proposed that one's own motor responses and a co-acting person's are both represented. They tested this idea by having people perform a simple task together. In a baseline single-person condition, participants responded to the color of computer-presented stimuli by pressing one of two buttons (right button for red, left for green). Importantly, the stimuli also carried spatial information (finger pointing left or right), which was to be ignored. As is well known, this task produces a spatial compatibility effect, with responses faster when the irrelevant spatial cue matched the button that should be pressed based on the color cue. In another condition, two participants were assigned the same task, each having a button and responding in go/no-go fashion (e.g., the left participant pressing the button for each green stimulus). The same spatial compatibility effect emerged, indicating that participants represented the other person's actions as well as their own, with resulting effects on participants' response speed. Further studies (e.g., Sebanz, Knoblich, & Prinz, 2005) produced similar results. In fact, stimuli calling for a response from the co-actor elicited event-related potential (ERP) responses similar to those associated with the individual's own response (Sebanz, Knoblich, Prinz, & Wascher, 2006). The authors conclude that "the other's action is represented in a functionally equivalent way as one's own, so that observing or anticipating somebody else's action also activates one's own action representation" (Sebanz et al., 2005).

Also supporting this idea, Kang, Hirsh, and Chasteen (2010) had observers watch someone else perform a Stroop task, while the observer's EEG (electroencephalography) was recorded. The EEG was processed to examine feedback-related negativity, a response evoked by feedback indicating that an error has been made. Observers showed responses to the performer's errors on the Stroop task, suggesting that people respond cognitively to others' behavioral errors in similar ways as they do to their own errors and indirectly suggesting that they had represented the other's behavior.

In a different paradigm, Lindner, Echterhoff, Davidson, and Brand (2010) had participants read instructions for simple actions (e.g., read "shake the bottle"), perform such actions themselves, or observe a video of another person performing such actions. On a memory test 2 weeks later, participants were likely to misremember having personally performed actions that they actually saw another person perform. Reading the instruction did not produce this illusion. Presumably, participants represented the other person's action performance, in mental or embodied systems, and because they could later retrieve those representations, were led astray in the memory test.

Studies have also provided evidence for the impact of others' motor responses when those responses were not observed and thus must have been simulated or inferred. For example, studies in the two-person response–compatibility paradigm described earlier (Sebanz et al., 2005) have been done under conditions where participants sat side by side, but wore earplugs and headphones so they could not hear each other, and had their hands inside boxes, so they could not see each other's button-press responses. Nevertheless, because participants were aware of each other's task (i.e., to press the button in response to particular stimuli appearing on the screen), they showed the same results as in similar studies where they could see the other's responses, presumably because they simulated the other's unobserved responses. Other studies confirm that these effects occur when people simply know about a co-actor's actions, but cannot observe them (Sebanz et al., 2003; Tsai, Kuo, Hung, & Tzeng, 2008; Vlainic, Liepelt, Colzato, Prinz, & Hommel, 2010).

A clever study by Pfister, Dignath, Hommel, and Kunde (2013) also showed both simulation of another's behavior and its influence on the simulator's own behavior. Two participants sat across a table from each other, with one instructed either to imitate the other's action or to perform a different action (in separate blocks of trials). Of course, the imitator was faster to perform the task in the imitation condition than in the counterimitation condition, replicating many findings of behavioral facilitation from observation of similar behaviors (Heyes, 2011). But the participant who acted first was also faster in blocks of trials where the second participant was instructed to imitate. This indicates that the first participant mentally simulated the (expected) imitative behavior of the second participant, speeding the first participant's own response.

Finally, exposure to others' behaviors that suggest a goal can cause perceivers to display behavior in pursuit of the same goal (Aarts, Gollwitzer, & Hassin, 2004). More definitively, Shteynberg and Galinsky (2011) had participants work in individual cubicles while believing that other participants had the same or a different goal. Merely believing that similar others were pursuing the same goal intensified goal-related behavior, compared with conditions in which similar others had a different goal, or dissimilar others shared the same goal. Thus, believing that goals were shared with similar others strengthened behaviors relevant to goal pursuit.

Hypothesis 2: *Moderation by Self–Other Overlap*

As the "C" in the RICOR acronym highlights, a primary moderator of both the likelihood of simulating others' responses and of being influenced by them is closeness, conceptualized as self–other overlap (Aron et al., 1991), produced either by an interpersonal relationship or shared ingroup membership. In more limited form, even fairly minimal types of social connection can also produce self–other overlap, and hence facilitate influence.

Interpersonal connections. In a number of paradigms, imitation of others' beliefs, emotions, or behaviors has been demonstrated to be enhanced by affiliative connections to the

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other and reduced by lack of such connections. For example, adopting another person's attitudes is enhanced by intended affiliation with the other (Sinclair, Huntsinger, Skorinko, & Hardin, 2005); interpersonal mimicry is increased by liking for the other (Stel et al., 2009); and representing others' task-related actions in the paradigm used by Sebanz et al. (2005) is greater for a cooperative other than for a competitive other (Hommel, Colzato, & van den Wildenberg, 2009). In the EEG study by Kang et al. (2010) described earlier, the other person who was observed by participants was either a stranger or a friend. Observers showed larger responses to errors made on the Stroop task by friends than those made by strangers, a difference that was explained by differences in self–other overlap for friends versus strangers.

Numerous studies have demonstrated that processes that are activated by group membership or coalitional cues can often be "fooled" into operation by even trivial connections that appear to create self–other overlap. Not surprisingly then, such trivial connections are also sufficient to allow the kind of influence we have been describing. For example, Cwir, Carr, Walton, and Spencer (2011) conducted two experiments in which some participants were led to believe that a confederate (posing as another participant) happened to share some of the participant's preferences such as favorite actor, movie, or musician. In one experiment, the confederate then had to prepare for a stressful task. Participants' ratings of their stress-related emotions were higher when they believed the confederate was similar to themselves than when they did not. In a second study, the confederate ran in place for 3 min. Participants' heart rate and blood pressure (signs of physiological arousal) were higher when the confederate was supposedly similar than when this was not the case. These studies show that even subtle cues of social connectedness can cause people to share the emotional and even physiological responses of others that they observe. The data were consistent with mediation of the effect by ratings of "feelings of oneness" or self–other overlap with the confederate.

Relatively brief incidental interaction can also trigger simulation and influence. Lun, Sinclair, Whitchurch, and Glenn (2007) had participants casually interact with an experimental assistant who wore a t-shirt indicating an anti-racism attitude, or a plain t-shirt. Implicit measures of prejudice showed that participants "tuned" to or adopted the assistant's apparent attitude. Walton, Cohen, Cwir, and Spencer (2012, Exp. 2) obtained parallel findings in studies showing representation of and influence by others' behavioral goals. For example, sharing a birthdate with a stranger who wrote about accomplishments and positive experiences in math increased the participant's own persistence and self-reported motivation in math.

Ingroup membership. Recent studies by Kaufman and Libby (2012) demonstrated what they termed *identity-taking*: coming to experience the thoughts, emotions, or traits of a fictional character as if they were the reader's own. For example, reading about a character who is extraverted (or introverted) led the reader to change his or her own self-ratings accordingly. Readers were more likely to adopt the characteristics—including the behaviors—of a fictional character who shared an ingroup membership with them, compared with an outgroup character. Cited above was work by Weisbuch and Ambady (2008), who found that people adopt the same affect as they see or believe ingroup members experience (i.e., emotion contagion) but adopt states that contrast with emotions expressed by or inferred about outgroup members. And several studies, including brain-imaging studies, have shown that observers respond less to the pain of outgroup members compared with ingroup members. For example, White and Asian participants show more activation in brain areas related to pain while viewing a same-race (compared with a different-race) face poked with a needle (Xu, Zuo, Wang, & Han, 2009). A similar study showed more brain activation in Black and White participants watching a same-race rather than an other-race hand being pricked by a needle, with this tendency magnified in individuals higher in implicit racial prejudice (Avenanti, Sirigu, & Aglioti, 2010).

Perspective-taking manipulations. Perspective-taking has been found to create a connection even with an outgroup other, enabling influence from the outgroup member. One study (Müller, Kühn, et al., 2011) found that in the joint task procedure used by Sebanz et al. (2003), White participants were influenced by the actions of an animated representation of a hand that appeared to share their own racial group membership (indicated by white skin tone), but not when it appeared to be of a different race (black skin tone). However, representation of an outgroup member's action was increased if participants first read a story about an outgroup member and took the character's perspective. Müller, Brass, et al. (2011) obtained similar effects, showing that viewing a wooden hand, like an outgroup hand, had little effect—unless participants had recently watched a video clip of the wooden puppet Pinocchio who turned into a live boy.

Thus, although people are in general more likely to be influenced by the responses of ingroup (as opposed to outgroup) members, perspective-taking manipulations can change this pattern. To avoid confusion, let us be clear that in studies such as these, a manipulation of intentional (instructed) perspective-taking occurs first and is found to increase automatic (unintended, uninstructed) influence by the other's responses in a subsequent task. This effect is presumably mediated by increased self–other overlap caused by perspective-taking.

Synchronization and mimicry manipulations. Like perspective-taking, synchronizing movements with another person, as well as mimicking or being mimicked, increase self–other overlap. Synchronized movements by members of a group

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increase intragroup attachment and cooperation (Wiltermuth & Heath, 2009), and synchronous multisensory stimulation (having one's cheek brushed while seeing a stranger's cheek being brushed in synchrony) increases self–other overlap with the stranger (Paladino, Mazzurega, Pavani, & Schubert, 2010). It follows that synchrony or mimicry manipulations should make people more likely to represent and be influenced by the reactions of the other person. Several studies in different domains obtain such effects. Mimicking an outgroup member reduces prejudice against that outgroup (i.e., making one's group-related attitudes more similar to the other person's attitudes; Inzlicht, Gutsell, & Legault, 2012). Miles, Nind, Henderson, and Macrae (2010) even found that making synchronous movements with a stranger eliminated the normal memory advantage of words that one has spoken oneself over words spoken by a stranger, indicating that synchrony increases the tendency to confuse the other's responses with one's own.

Priming of social connections. Leighton, Bird, Orsini, and Heyes (2010) used an automatic imitation procedure (Heyes, 2011), in which participants were instructed to either open or close their hands when a hand portrayed on screen moved. On half the trials, the stimulus hand opened, and on half, it closed; thus, the participant's instructed movement was either compatible or incompatible with the stimulus. Prior to the imitation procedure, participants were primed with either social connection words (friend, cooperate, etc.) or anti-social words (single, selfish, etc.) in a scrambled sentence task. As in previous work using more naturalistic and less controlled mimicry paradigms (see Chartrand & Van Baaren, 2009), the results showed that priming social connections increased the tendency to automatically imitate the stimulus hand movement, whereas priming anti-social concepts reduced it. Notably, this study shows that increased mimicry under pro-social conditions is not due to increased attention to the other person (an interpretation that is left open in more naturalistic studies), because the instructions in this task require attention to the stimulus hand.

Hypothesis 3: Moderation by Salience of Other

There is limited existing evidence on this hypothesized moderator. But as described earlier, Shteynberg et al. (2014) found evidence suggesting that people viewing evocative stimuli simulated similar others' emotional reactions (resulting in amplifying their own reported levels of emotion). They did this when the others were believed to view the stimuli simultaneously, but not when the others were believed to view the same material 1 min earlier or later than the participants. Thus, believing that others are simultaneously experiencing the same stimulus appears to make the others more salient, increasing the probability of simulating their responses. In Samson et al.'s (2010) experiment, the agent appeared very obviously in the middle of the room whose dots participants were tasked to count; the prominent visual salience of the agent may have contributed to the impact that the agent's perspective had on participants' judgments.

Hypothesis 4: Moderation by Amount of Self-Regulatory Effort or Ability

Theoretical considerations suggest that effects of others' responses (like effects of priming, Loersch & Payne, 2011) should be greater on responses that are less conscious, more implicit, and less effortfully regulated. Jacobson, Mortensen, and Cialdini (2011) exposed student participants to information that other students (prior participants) either believed that the participants *should* perform a target behavior (completing additional research questionnaires) or that the other students *had performed* that behavior. The participants' self-regulatory resources were also varied (by manipulation in one experiment, naturalistically in another). A lack of such resources impaired conformity to the injunctive ("should") norm, but actually increased behaviors that matched the behaviors of similar others. In other words, what others had done acted as the default response, with people performing the same behavior as those others unless they actively self-regulated to avoid such influence. Supporting the same point is evidence from Huh et al.'s (2014) already described demonstration that others' choices between ambiguous products influenced participants' own choices. The effect was much stronger when participants deliberated less about their choice, which occurred when the decision was of low relevance, had to be made rapidly, or was made during a simultaneous demanding task. Similarly, information about descriptive norms has more impact when people are under cognitive load, whereas injunctive norms are more powerful when people can cognitively elaborate them (Kredentser, Fabrigar, Smith, & Fulton, 2012). These and other types of evidence led Morris, Hong, Chiu, and Liu (2015) to characterize people's tendency to follow descriptive norms (what others think, feel, or do) as like an "autopilot" that "automatically guides immediate responses in a socially safe direction" (p. 7).

Novel Contributions of the RICOR Model of Social Influence

We argue that in default, normal circumstances people without awareness or intent construct representations of other people's experiences or responses, which then affect their *own* experiences and responses. This not only constitutes a novel model of influence but also provides the basis for reconceptualization of several significant topics that suggest new avenues for theoretical and empirical development.

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Reconceptualized Model of Social Influence

The RICOR model is a radical departure from traditional models of influence. First, we argue that influence from others is not necessarily motivated, but can occur by default, without specific intention. This point implies that social influence is much more pervasive and general than may be commonly assumed, occurring even when typically considered motives to conform are absent. In fact, motivation and resources are required to avoid being influenced (Jacobson et al., 2011). This is the opposite of traditional views that privilege an individual's unique beliefs, feelings, and attitudes as underlying judgments and behaviors, and that portray adopting others' responses (persuasion, conformity) as having to be motivated and likely effortful. Second, because of the interpersonal nature of this process, which involves representing *another person's or group's* experience or responses, new classes of moderators of influence come into focus. Self–other overlap and relational closeness as well as several types of minimal social connections are examples. Third, the RICOR model is more broadly integrative than existing models. Although most models focus on a particular type of response (e.g., emotion contagion effects or automatic imitation effects), our model incorporates beliefs, attitudes, emotions, and behavior, proposing a common mechanism for all. It includes influence from mental or embodied representations of the beliefs, emotions, or behaviors of physically absent others who are remembered or simulated, as well as from observed others. It brings in the principle of embodiment: It is just as much about behavioral mimicry and emotion contagion as about conformity in abstract, non-embodied judgments or attitudes. The model also integrates theoretical mechanisms underlying priming effects (Loersch & Payne, 2011; Schroeder & Thagard, 2014).

Our assumptions about the default nature of social influence are particularly far-reaching. Existing models of social influence generally assume that conformity is specifically motivated and strategic. The motivation can be the desire to hold a correct opinion or perform an adaptive behavior (informational influence); the desire to form connections to and obtain rewards from liked or similar others (normative influence); or the desire to perform behaviors that are normative for an important ingroup (referent informational or social identity influence). Without denying that those motives exist and have effects, this article argues that influence can also occur through a more spontaneous, default process of representing and being influenced by others' responses, without requiring specific or conscious motivation.

Empirically, many of the findings reviewed above are not plausibly explained by informational or normative influence. For example, in the automatic imitation paradigm (Heyes, 2011), the movements of the on-screen hand have no informational value (being explicitly described as task-irrelevant), and there is no prospect of a social relationship with the owner of the disembodied hand. In the study by Samson et al. (2010), the visual perspective of the cartoon figure has no informational value (participants can clearly see that the figure's perspective is incomplete), and again, no social relationship with the other is at stake. We argue that because representing others' opinions or perspectives is so often adaptive in everyday life (e.g., to ease communication or social coordination), people come to do so spontaneously based on minimal cues such as symbolic representations of a person (e.g., Kovacs et al., 2010; Zwickel, 2009).

Similarly, referent informational influence (Turner, Hogg, Oakes, Reicher, & Wetherell, 1987) is not plausibly relevant to most of the findings reviewed above. Such influence occurs through the processes of self-categorization and depersonalization, through which people cease to think of themselves as unique individuals and instead think of themselves as interchangeable exemplars of a specific membership group. In this process, they adopt beliefs, attitudes, and behaviors that are typical of the group, that is, group norms. Differing from these assumptions, our model involves effects that occur whenever the reactions of even a single specific individual other are available and accessible, whereas referent informational influence is by definition influence from groups. Some of the findings we have described might have occurred because the other person somehow represented or symbolized an important group membership for the participant. However, many studies reviewed here showed influence from people who are simply co-actors on an experimental task (e.g., Sebanz et al., 2003), linked by a trivial social connection (e.g., Cwir et al., 2011), or even represented just as a cartoon person or a video of a disembodied hand (Heyes, 2011; Kovacs et al., 2010). In such cases, it does not seem plausible that the "other" represents or cues a specific important group membership. Social connectedness (as reflected in self–other overlap) is highlighted by our model as an important moderator of social influence, but it appears that the simulation of and influence by others' reactions occur more automatically and more broadly beyond the specific motivational spheres in which informational, normative, or referent informational influence are thought to operate.

Our approach also goes beyond theories of influence that have more limited applicability. For example, some forms of social facilitation (Zajonc, 1965)—behavioral facilitation caused by the presence of co-acting others—can be explained by the RICOR model (although other mechanisms probably contribute to facilitation by the mere presence of others who are not co-actors). But our model is broader, incorporating influence from simulated others who are not physically present, as well as influence on beliefs, attitudes, and emotions (not just behaviors). As another example, Higgins and colleagues (Echterhoff, Higgins, & Levine, 2009) have developed a theory focused on the motive to "share reality" with others. Their conceptualization, however, is much narrower than our model. It applies only to beliefs, attitudes, or emotions that are *about* some object or topic, thereby excluding more general moods (which lack aboutness) as well as

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behaviors. Shared reality is defined as involving the individual's awareness of sharing, in contrast to our model, which generally operates without conscious awareness. Their model involves sharing only with currently present others, whereas this article's model also incorporates effects of currently absent others whose responses are remembered or simulated (relationship partners, ingroups, fellow members of a culture, etc.). Finally, shared reality theory does not deal with the specifics of cognitive process, leaving unclear whether reality sharing is considered to involve PCS processes influencing perceivers' own responses, as the RICOR model explicitly assumes.

Novel Interpretation of Cultural Differences

Recently, a number of cultural psychologists have advanced the idea that cross-cultural differences in judgment or behavior, especially those related to individualism versus collectivism, are driven less by an individual member of the culture's *own* personally endorsed values, and more by the individual's perception of the values endorsed by *other* members of the culture. For example, Shteynberg, Gelfand, and Kim (2009) compared measures of personal collectivism (e.g., "I will sacrifice my self-interest for the benefit of the group I am in") with perceptions of the general level of collectivism in the culture (e.g., "Most Americans will sacrifice . . . "). Studies comparing Korean with American samples found, first, that personal collectivism did not differentiate Koreans from Americans in the predicted direction as would be expected from the straightforward assumption that people internalize their culture's values. Second, perceptions of others' collectivism but not personal collectivism had expected effects on judgments related to perceptions of harm and blame attribution. The authors conclude "knowledge of their groups' shared realities helps individuals ascertain correct and useful courses of action . . . " (p. 48).

In a similar vein, Zou et al. (2009) studied American, Chinese, and Polish samples, again with a focus on personal collectivism and perceptions of consensual collectivism within the cultural group. Consensual collectivism differed as predicted between the United States and Poland, whereas personal collectivism did not. Across several studies, consensual (but not personal) collectivism consistently mediated the effect of culture on several types of outcomes such as causal attribution and counterfactual thinking.

Summarizing these and similar findings, Chiu, Gelfand, Yamagishi, Shteynberg, and Wan (2010) noted that

> rather than acting on their personal beliefs and values, *people sometimes act on the beliefs and values they perceive to be widespread in their culture*. That is, what individuals see inside themselves (internalized cultural beliefs and values) does not always channel psychological processes; what the individuals see when looking outward at their social environments can also direct behaviors. (pp. 482-483, emphasis added)

In fact, "individuals may act on behalf of the intersubjective reality even more than they act on their personal values and beliefs" (p. 483).

We suggest that these findings are manifestations on the cultural level of the process of representing and incorporating others' responses. First, members of a culture (like members of any social environment) see the world not only through their own eyes but also "through the eyes of others," constructing representations of the apparent values of others whether via observation or inference. These representations will generally be related to the individual's own personal beliefs; for example, Krueger (1996) found that people's reports of their personal stereotypes and of consensually held stereotypes were correlated (even after controlling for group averages). This correlation presumably reflects some mixture of projecting one's personal beliefs onto others, and internalizing generally shared beliefs. The point is that we should not expect every member of a culture to have exactly the same picture of culturally shared beliefs or values, whether those variations are due to differences in personal experiences or to projection of idiosyncratic personal beliefs or values.

Second, those perceived views of others, what Zou and colleagues refer to as "intersubjective reality," affect one's own responses, with the result that behavior often reflects an individual's view of what others in his or her culture think, more than what the individual personally thinks. Consistent with our approach, Zou and colleagues argue that "*we think and act on ideas perceived to be consensual with little reservation*. This is a means by which prevailing cultural patterns reproduce themselves in our thoughts and actions" (2009, pp. 579-580, emphasis added). Note also that in these studies, the dependent variables are questionnaire measures that are completed in private and shared only with the researchers. Thus, influence by values that are perceived to be widely shared cannot be attributed to mere public conformity. In addition, these findings are not limited to individuals from collectivist cultures, or to those whose personal values are collectivist. Rather, both individualist and collectivist values appear to affect people's judgments and behavior via representations of what most members of the culture value, consistent with our notion of this type of influence as broad and pervasive.

Thus, we see this recent research in cultural psychology as converging on our view that others' beliefs, attitudes, or values, rather than our own, can have a privileged role in directing judgment and behavior. The consistency of this basic theme in research from cultural psychology, with its differing substantive focus (values rather than attitudes or emotions) and methodological traditions (studies comparing different cultural samples), is especially compelling evidence of the generality and pervasiveness of the processes we argue for here.

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Novel Perspective on the Adaptiveness of Being Influenced by Others' Thoughts, Feelings, and Behaviors

Perhaps the most obvious question posed by our perspective is how people could benefit from drawing on others' beliefs, attitudes, or behaviors rather than those that they personally favor or know to be correct. This question is posed with special force in studies (e.g., Kovacs et al., 2010) where the other's belief is clearly and obviously incorrect from the perceiver's own perspective. Yet a compelling argument can be made that it is generally adaptive to draw on others' viewpoints, for three reasons (Chiu et al., 2010).

The first reason is the superior outcomes likely to be obtained from the opinions or behaviors favored by the group, even if one's own personal experience would support a different response. As the concept of the "wisdom of the crowd" suggests (Galton, 1907; Larrick, Mannes, & Soll, 2011), consensual opinions or behaviors have been used and tested by many individuals, not just one, so they should carry a presumption of being efficient and valid (Heylighen, 1997; Smith & Collins, 2009). A recent investigation by Rendell et al. (2010) considered a population of agents that must choose among a number of behaviors, with differing and possibly changing probabilities of success (imagine a population of farmers deciding which of a number of crops to plant, without knowing *a priori* the likelihood that each will flourish and produce a profit). Each agent can try a number of behaviors on its own, seeking through its own experience to find one that is relatively successful. Or an agent can imitate the behaviors it observes others performing. Rendell et al. simulated agents with varying mixes of individual exploration and imitation of others in such a complex and changing problem environment, and found that the best strategy used almost all imitation. This is because agents often use (and therefore demonstrate for others) the most successful behavior they know, thereby filtering information in a way that benefits imitators. The general principle is that information about the relative success of different beliefs or behaviors that is filtered and transmitted through a collective in this way is often more reliable than information developed by an individual on the basis of limited personal experience.

Second, adopting the same beliefs and behaviors as others facilitates coordination and interaction, independent of the objective benefits of the behavior itself. Behaviors that are widespread in a group become conventionalized solutions to recurrent coordination problems, such as the convention of driving on the right side of the street (Kashima, 1999). People who learn and adopt group conventions benefit from the ability to anticipate that others will do the same, smoothing coordination and cooperation. In fact, even if some other shared behavior would be more beneficial for some reason (e.g., driving on the left), the current cultural convention often represents a Nash equilibrium in which anyone deviating from the convention receives negative rather than positive outcomes (D. Cohen, 2001). Thus, as people enact the conventional behaviors, they reinforce them, preserving and maintaining the cultural norm over time (Vandello, Cohen, & Ransom, 2008). Several theorists reinforce the idea that drawing on shared cultural representations is adaptive. Herbert Simon (1990) argued that what evolved in humans to permit the emergence of culture is not specific attributes or behaviors (cooperativeness, aggressiveness, etc.) but what he called "docility," or the tendency to follow group norms. Kovacs et al. (2010, p. 1834) argued,

> The finding that others' beliefs can be similarly accessible as our own beliefs might seem problematic for an individual, because it may make one's behavior susceptible to others' beliefs that do not reliably reflect the current state of affairs. However, the rapid availability of others' beliefs might allow for efficient interactions in complex social groups. These powerful mechanisms for computing others' beliefs might, therefore, be part of a core human-specific "social sense," and one of the cognitive preconditions for the evolution of the uniquely elaborate social structure in humans.

Similarly, Sebanz et al. (2005) argued that representing others' motor actions is adaptive when individuals seek to coordinate their actions to attain common goals. Thus, there are numerous converging arguments that thinking, feeling, and acting in the same ways as similar others are generally adaptive in permitting collective action and the construction of shared culture.

A third reason for following others' responses is the superior communicability of information that is shared rather than idiosyncratic. People generally prefer to communicate shared rather than unique information (Lau, Chiu, & Hong, 2001; Kashima, 2000) and rely on shared information more heavily in group decisions (Stasser & Stewart, 1992). The preference and ease of communication about widely shared ideas again maintain and reinforce the tendency to share others' ideas (Fast, Heath, & Wu, 2009).

Thus, there are several arguments for the adaptiveness of being influenced by shared opinions and behavior even if the perceiver's own experience suggests different responses: the likely correctness of beliefs and behaviors that are consensually supported, the increased ability to coordinate and engage in collective action, and the superior ease of communication when information is shared rather than idiosyncratic.

Reconceptualized View of Socially Desirable Responding

People often offer opinions or perform behaviors that will be positively evaluated by others, regardless of their private beliefs or predilections. It is certainly likely that socially desirable responses in some cases reflect a conscious strategy to misrepresent oneself to obtain social rewards. However, the RICOR model offers an alternative perspective. A socially desirable response is almost by definition a popular or

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consensual response. So giving such a response may result from people using others' thoughts, feelings, or behavior to guide their own—the exact process described throughout this article. Conceptualizing "socially desirable" responding in this way offers new insights, such as new testable hypotheses about when it will be more or less likely to occur (e.g., the moderators described above). For example, the process described here would be more likely to occur on implicit or relatively uncontrolled responses, whereas in contrast, strategic socially desirable responding for self-presentational reasons would be more likely on explicit, controllable responses. And the process described here would affect even private responses, whereas strategic versions of socially desirable responding would occur only on responses that could be observed by others.

Novel Interpretation of Resilience of Stereotypes, Prejudice, and System-Justifying Ideology

The findings on effects of consensually held cultural values, described previously, may have implications for stereotypes, prejudice, and system-justifying ideologies, central concerns of social psychology. The power of stereotypes and prejudiced attitudes, and the difficulty of changing them, has been a major theme in social psychology over the past few decades (at least since G. W. Allport, 1954). For example, people use stereotypes in judging others even when individuating information is readily available, unless they are specifically motivated to do otherwise (Kunda & Thagard, 1996). Theorists have advanced several plausible reasons for their pervasive effects. First, it has been postulated that we rely on stereotypes because they are easily applied general knowledge (compared with individuating information, which is more specific and detailed), and we are "cognitive misers" (Taylor, 1980) who prefer such easily applicable information. Second, it can be argued that stereotypes and prejudice are learned early in life, and resist change by beliefs or attitudes that are learned only much later (as in the "dual attitudes" model of Wilson, Lindsey, & Schooler, 2000). Either of these factors, of course, might plausibly contribute to the observed power of stereotypes and prejudice.

But our analysis highlights a third potential reason: Stereotypes and prejudice are widely shared in society and thus likely to be represented whenever individuals spontaneously observe or simulate others' views. The perceived sharedness of stereotypes and prejudiced views may be even greater than their actual sharedness. This is because, as Zou et al. (2009) have argued, perceptions of cultural consensus are often biased in the direction of perceiving others to hold more traditional, conservative views. For example, in the United States in the 1960s, actual racial attitudes among Whites liberalized faster than Whites' perceptions of the consensus within their group (O'Gorman, 1975). In other words, people often mistakenly think that others' views are more traditional or conservative—and specifically, more stereotypic and prejudiced—than they actually are, in a form of pluralistic ignorance (F. H. Allport, 1924). This bias is reinforced as people communicate within the ingroup, drawing on "the shared familiarity with a cultural tradition and, . . . perpetuat[ing] the perception of consensual traditionality" (Zou et al., 2009, p. 581). Once represented, such views readily influence one's own views.

Stereotypes and prejudice are instances of a more general category, system-justifying beliefs (Jost & Banaji, 1994), to which a similar analysis is applicable. People tend to hold system-justifying beliefs (e.g., that economic inequality is benign and that the rich and poor deserve their respective outcomes) even if objectively speaking, their life experiences and circumstances give them little reason to endorse such beliefs. The RICOR model suggests that people hold these beliefs in part because they perceive others as holding them, and once represented, such views infiltrate the individual's own beliefs. As with stereotypes and prejudice, perceptions of the consensuality of such traditional and conservative beliefs probably exceed their true public endorsement (Zou et al., 2009). Once again, our reconceptualization of the resilience of stereotypes, prejudice, and system justification as due to the pervasive and unmotivated inclusion of our (perhaps biased) representations of others' view into our own opinion opens up new research avenues, leading to novel hypotheses about the conditions under which stereotypes, prejudice, and system-justifying beliefs will be most commonly held (e.g., based on moderators described in this article).

Novel Perspective on the Privileged Position of Self-Knowledge

There is one topic on which most people place special importance: the self. The perspective advanced here indicates that others' beliefs, emotions, and behaviors toward the self will have a major impact, often translating into similar responses of the perceiver's own. Such effects are found, for example, in the phenomenon of "stereotype threat" (Steele & Aronson, 1995). When others hold a stereotypic belief that one is likely to perform poorly in a specific domain (e.g., because "women are bad at math"), people subject to the stereotype are likely to actually perform poorly. This can occur although their own personal beliefs may be quite different (e.g., a woman who knows that she is quite good at math). Put in terms of the RICOR model, once others' beliefs are represented, their effects may outweigh one's own personal beliefs. Similarly, another person's stereotypic views of the self influence self-judgment and behavior, and the effects are amplified by motives to affiliate with the other (Sinclair et al., 2005). Such effects could presumably be found based on others' views about one as an individual (i.e., one's reputation; Smith & Collins, 2009) as well as those based on a group stereotype.

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In another domain in social psychology, a prominent theory of self-esteem is the "sociometer" model (Leary & Baumeister, 2000). This holds that self-esteem is an indicator of how the individual is doing in terms of social relationships with others and important groups; that is, self-esteem tracks the extent of others' respect, positive affect, and behavioral inclusion. In terms of the RICOR model, self-esteem is based on others' esteem for the individual.

In a study somewhat parallel to that of Samson et al. (2010), in which the cartoon agent has a partial and limited view of the scene, researchers have examined the effect on the self-concept of having others view only a subset of one's behavior. Participants were asked to present themselves as introverted and extraverted (respectively) in two videotaped segments that they believed would be viewed by others (Kelly & Rodriguez, 2006). They were then informed that only one of the tapes was needed and watched while the other tape was erased. Those whose introversion tape was erased, and thus believed that only their extroversion tape would be seen by others, subsequently displayed more extroverted behavior, compared with those whose extroversion tape was erased. Thus, when others are expected to selectively view one's behavior—even others whom one never expects to meet—their simulated beliefs about the self can skew self-perceptions and even overt behavior.

Indeed, there is evidence that social metaperceptions (what I think most others think of me) are highly correlated with self-perception (Kenny & DePaulo, 1993). In part, this may be because people project their self-perceptions onto others; for example, knowing that I am honest and conscientious, I believe that others accurately perceive me that way. But the data are equally consistent with the idea that self-perceptions reflect our perceptions of others' opinions of us: the "looking-glass self" proposed by Cooley (1902).

In terms of this article's model, the self is little different from any other object or concept, in that others' observed or imagined beliefs about, or emotional reactions to, the self may end up influencing our own personal self-concept.

Conclusion

The RICOR model of social influence is based on the radical proposal that the causes of individual beliefs, attitudes, emotions, and behavior often lie not within the person's own mind, but derive at least in part from responses of others who have been observed or imagined. Thus, cognition, emotion, and behavior that appears to be individual-level is often the product of socially distributed processes. This novel conceptualization is supported by existing evidence of many types, including laboratory experiments, correlational studies of real populations, and cross-cultural comparisons. The model leads to reinterpretations of several phenomena, such as the persistence and power of stereotypes, the adaptive reasons behind people's tendency to be influenced by others' responses, the processes underlying socially desirable responding, and the impact of others' views about the self.

The broad socially situated cognition perspective (Smith & Semin, 2004) argues that cognition and behavior are usually best understood not by focusing on purely individual mental representations, but on the situational context—perhaps most importantly, the social situation constituted by a person's social networks and ingroup memberships as well as others who are immediately present. Previous work has argued for the benefit of contextualizing social influence processes by considering how they operate within social networks rather than focusing just on the individual mental processes of the target of influence (Mason, Conrey, & Smith, 2007), and for contextualizing person perception by considering the role of reputational information that flows as gossip through a social network (Smith & Collins, 2009). The RICOR model advanced in this article, by arguing that people's responses are often driven by others they observe or simulate, constitutes another aspect of the same general principle. Despite its support by much existing evidence, many novel hypotheses remain untested, and the ideas advanced here are intended to spark interest in these, driven by the core insight that our own responses are often shaped by representations of what other people think, feel, or do.

Declaration of Conflicting Interests

The author(s) declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

Funding

The author(s) disclosed receipt of the following financial support for the research, authorship, and/or publication of this article: Preparation of this article was facilitated by National Science Foundation (NSF) Grants BCS-094911 and BCS-0719876.

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