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Abstract

Agency theory is one of the most important foundational theories in management research, but it rests on tenuous cognitive assumptions. We combine classical agency theory with a realistic theory of the intrinsically imperfect human potential for interpersonal sensemaking. This allows us to systematically show how the principal's ability to *mentalize* with the agent influences value creation in principal-agent relations, and to link this to organizational sensemaking instruments.

INTRODUCTION

Agency theory (Gibbons, 2005; Grossman and Hart, 1983; Holmström, 1979; Jensen and Meckling, 1976; Laffont and Martimort, 2002; Prendergast, 1999) is one of the most important foundational theories in management research (see Eisenhardt, 1989; Hendry, 2002). Agency theory has found numerous applications in various streams of management research (Merchant, Van der Stede and Zheng, 2003), such as incentive management (Stroh, Brett, Baumann and Reilly, 1996), accounting (Antle and Demski, 1988; Lambert, 2001), organization theory (Abrahamson and Park, 1994; Zenger, 1994), and corporate governance and strategy (Amihud and Lev, 1999; Brush, Bromiley and Hendrickx, 2000; Coff, 1997). The theory provides fundamental insight into the roles of contracting, monitoring, organizational arrangements, and the incentives embodied therein.

Agency theory and its many applications are based on several simplifying assumptions (Lubatkin, Lane, Collin and Very, 2006). In this paper, we specifically focus on the assumptions regarding the knowledge that individuals have of each other and how they process that knowledge. In order to precisely identify and discuss these issues, we take our point of departure in the core, typically mathematical, statements of the theory (e.g., Holmström, 1979, 1982; Grossman and Hart, 1983; Laffont and Martimort, 2002) rather than in interpretations of agency theory found in the management literature (e.g., Eisenhardt, 1989).[1] The theory's formal core statements highlight the clear, albeit strong and contentious, nature of knowledge and rationality assumptions in agency theory. For example, in analyses of moral hazard, the principal is assumed to perfectly know the agent's taste for risk (Ross, 1973; Holmström, 1979). The source of such knowledge is the principal's ability to understand key characteristics of what is in the agent's mind. When principals engage in such understanding, they "mentalize" (Singer and Fehr, 2005).

To theoretically approach and build up the mentalizing construct, we draw on new, converging insights from evolutionary anthropology (Call and Tomasello, 2008), neuroscience (Gallagher and Frith, 2003), neuro-economics (Singer and Fehr, 2005), and research on perspective-taking in

[1] Eisenhardt (1989) makes a distinction between formal, mathematical agency theory ("principal-agent research") and a more applied, verbal version of the theory ("positivist agency theory"). However, formal agency theory is just as "positive" (in a theory of science sense) as "positivist agency theory" and both have normative implications. The distinction is not found in contemporary agency theory.

psychology (Galinsky, Maddux, Gilin and White, 2008). In line with this research, we define mentalizing as one individual's understanding of another individual's intentions, knowledge, and beliefs. The relevancy of the mentalizing concept has been evidenced in both theoretical and empirical research. Such research indicates that mentalizing is a meaningful construct that it is usually imperfect, that—absent specific neurological pathologies—it varies on a continuous scale that ranges from *inaccurate* to *(imperfectly) accurate*, and that it is asymmetrically distributed across individuals. It also suggests that mentalizing processes can be deliberate or non-deliberate (i.e., automatic), and that they can be influenced by context and experience. Our unique and specific contributions consist of the introduction of this construct (the general human capacity to mentalize) into the context of agency theory, and an exploration of the value-creating implications of doing so.

In agency theory, the principal's knowledge with respect to much (but not all) of what is "inside the head" of the agent is assumed to be *perfect*. Coupled with other assumptions (such as those regarding risk preferences and the timing of the game), this assumption allows for clean predictions regarding how incentives will drive the behavior of such actors as employees, managers, and suppliers (Prendergast, 1999). However, the assumption that a principal is capable of perfectly grasping, for example, an agent's motivations seems increasingly tenuous. High personnel turnover and the increasing use of fleeting project organization in many industries, as well as the increasing prevalence of cross-national and cross-cultural management teams and networks, make an assumption of imperfect mentalizing on the part of the principal a more adequate analytical starting point.

We examine the consequences of introducing more realistic assumptions about mentalizing for agency theory and its management applications. On the one hand, we posit that mentalizing is imperfect and that, as a result, real-world principals cannot perfectly mentalize in the manner assumed by agency theory. On the other hand, we assert that mentalizing provides access to "soft psychological information" that is not considered in agency theory. This information provides cues to the agent's type or effort. We show that novel insights into the design and management of rewards follow from this information. Specifically, we argue that mentalizing is a fundamental and cost-efficient instrument for reducing information asymmetry and raising value creation in the principal-agent setting.

The evidence suggests that incentives are often far from perfectly matched with the agents whose behavior they are meant to regulate, sometimes with detrimental consequences (Baker, Gibbons and Murphy, 1994; O'Connor, Priem, Coombs and Gilley, 2006; Zahra, Priem and Rasheed, 2005). One example was Dun and Bradstreet's practice of only paying bonuses to salespersons when customers bought a larger subscription to the firm's credit report services than they had purchased in the preceding year. This practice led to huge lawsuits based on claims that Dun and Bradstreet salespersons had fraudulently misrepresented the usage of subscriptions to lure customers into buying larger subscriptions (Roberts, 1989). One possible cause may have been imperfect mentalizing: principals may not have envisioned that their agents would react in creative, yet clearly dysfunctional, ways to the incentives. In other words, they did not grasp the intentions that the distortionary incentives might give rise to. As the example suggests, the principal's mentalizing matters because it influences the incentives he offers to the agent, and how he monitors the agent and otherwise manages the relationship. In turn, such "incentive management" (Holmström, 1979, 1999) influences the value that principal and agent jointly create.

In order to understand this issue, we must raise and answer the following research questions: How do the design and management of incentives depend on the principal's mentalizing? How does this relation differ from the predictions of agency theory? We seek to answer these questions by developing the construct of mentalizing in the context of the agency relation. We thus contribute to the understanding of the cognitive micro-foundations of value creation (see Gavetti and Levinthal, 2001).

Most extant critical discussions of agency theory in economics, and in management and organization research have centered on the motivational assumptions of the theory (Fehr and Falk, 2002; Ferraro, Pfeffer and Sutton, 2005; Ghoshal and Moran, 1996; Lubatkin et al., 2006; Osterloh and Frey, 2000; Perrow, 1986). However, very few papers have explicitly dealt with *knowledge* and *rationality* assumptions. Papers written by Hendry (2002, 2005) are closest to this paper in terms of concerns regarding the assumptions of agency theory. Hendry's papers significantly extend standard agency theory by demonstrating that most of the theory's predictions rely on the structural properties of principal-agent relationships rather than classical assumptions about opportunistic self-seeking

behavior and total competence. However, our focus differs. Hendry relaxes key assumptions of agency theory and then shows that, with only one exception, the predictions produced by the standard theory remain the same. Although we also relax assumptions, we generate new predictions about principal-agent relations by placing principal-agent relations with imperfectly mentalizing principals in a broader organizational setting.

The remainder of this article is organized as follows. First, we clarify the implicit theory of mind in agency theory, namely that the principal possesses a perfect mentalizing capability in certain key respects, but in other, equally key, respects, the principal possesses little or no mentalizing capability. Second, we develop a more realistic conception of mentalizing capability. Third, we use this conception to develop propositions about how mentalizing capability can increase value creation. Fourth, we contextualize our reasoning in an organizational setting and discuss how the value-creation consequences of mentalizing are influenced by governance mechanisms. We close with a discussion of the implications and limitations of our analysis, and we draw up an agenda for future research on these themes.

KNOWLEDGE ASSUMPTIONS IN PRINCIPAL-AGENT THEORY

The Principal-Agent Setting and the Principal's Problem

Agency theory is based on a combination of assumptions regarding what individuals know, how they cognitively process what they know, and how they are motivated in the context of agency settings—that is, when one of (for simplicity) two individuals assumes the role of principal and delegates a task to the other individual, the agent. Specifically, agency models are mathematical representations of the situation in which an informed individual (typically the agent) trades with an uninformed individual (typically the principal) (Laffont and Martimort, 2002). The issue that the individuals are informed/uninformed about concerns what the agent does ("hidden actions," motivating models of "moral hazard") or what "type" he is ("hidden characteristics," motivating models of "adverse selection").

The principal's problem stems from a conflict between insurance and incentives (Ross, 1973; Holmström, 1979). Agency theory generally assumes that principals are risk neutral, while agents are risk averse. In this context, the risk-neutral principal should bear all of the risk. However, incentive

issues complicate the situation. If the agent's action cannot be observed and there is uncertainty, incentives must be considered. Absent uncertainty, the principal could infer from observing the result which action the agent had chosen and reward him accordingly. However, the result is assumed to be influenced by a stochastic variable. While both principal and agent know how this variable is distributed (and know that the other knows), the principal cannot observe the actual realization of the variable. He merely observes a "noisy signal" of the agent's effort. To motivate the agent, the contract will specify a reward schedule: the agent's payment from the principal is a function of the observable consequences. In general, such a contract will only be second best, as it will not realize the maximum or first-best value creation. The latter is defined as the value creation that would have arisen if the principal had been fully informed and could direct the agent to take the best action. The reason for the second-best nature of most contracts is that they give the agent incentives; this, in turn, exposes the agent to *risk*. A risk-averse agent will suffer a loss of perceived well-being ("utility") as a consequence and will demand a risk premium. Agency loss can thus be measured by the risk premium. Reducing the agency loss is the same as reducing the risk premium. In turn, one way of increasing the value created in an agency relation is to reduce the risk premium. This can, for example, be achieved by obtaining better signals about the agent's performance (Holmström, 1979). This reduces the incentives that the agent needs and, thus, the agent's perceived risk. Agency theory basically predicts that value creation cannot be lifted to the first-best level. However, efficient incentive design and management can approximate that level.

Normally, the principal's problem can be addressed in two ways: by monitoring the agent's actions (observing inputs) or by using outcome-based compensation (incentive pay). By introducing additional information systems (such as accounting) or by extracting extra information about the agent's actions in other ways, it is often possible to improve on agency relations, even though the additional information may be imperfect (Holmström, 1979). Applications of agency theory have typically considered such indicators as accounting returns, stock performance, sales growth, market share, and comparative performance, whereas psychological information, such as facial expressions and other aspects of bodily language, have not been considered. When the principal has better information about the actions of the agent, he no longer needs to expose the agent to such strong

incentives to make him chose the best action. Thus, the agent needs to shoulder less risk and will demand a smaller risk premium. As a result, value creation in the relation increases (i.e., the agency loss is reduced). However, to maximize value creation, the principal also needs to decide *which* signals related to the agent's performance should be included in performance assessment. For example, is the performance of other agents a relevant signal? Can post-effort conversations with the agent offer additional information?

After deciding which measures to apply, the principal needs to decide which measures and incentives should be linked. For example, a decision needs to be made regarding how strong incentives should be. Certain tasks or agents may not be well aligned with strong incentives because the agent's tolerance for incentives depends on his risk aversion, or (going beyond agency theory) because such incentives can be detrimental to either the agent's intrinsic motivation (Deci and Ryan, 1985) or the special motivation that the agent may associate with working in well-functioning teams (Lindenberg and Foss, 2011). The principal also needs to make decisions on the intensity of monitoring agents. Typically, the stronger the incentives, the stronger monitoring should be. Finally, the principal needs to assess the extent to which multi-tasking occurs. The more the agent needs to multitask, the less likely it is that strong incentives will be used, as "in essence, complex jobs will typically not be evaluated through explicit contracts" (Prendergast, 1999: 9). (Later, we argue that this implies that "complex jobs" will be evaluated through mentalizing.)

Much of agency theory is about such incentive management issues, especially: 1) strategic behavior on the part of agents—agents may influence the principal by offering favors or developing friendship ties (Tirole, 1986) or they may manipulate the signals related to their performance (Holmström, 1982); 2) the "rewarding A while hoping for B" (Kerr, 1975) problems that multi-tasking may give rise to (Holmström and Milgrom, 1991); and 3) problems of subjective performance measurement (Bakeret al., 1994; Levin, 2003)—for example, managers may shy away from critically distinguishing among employees, or they may not wish to give poor ratings to subordinates whose pay is determined by such ratings (Murphy and Cleveland, 1991).

Knowledge Assumptions in Agency Theory

Given agency theory's enormous influence and its contentious assumptions, a significant amount of literature deals critically with the theory, addressing its motivational assumptions (Donaldson and Davis, 1991; Osterloh and Frey, 2000) and its performative consequences (Ferraro et al., 2005; Ghoshal and Moran, 1996). However, although the cognitive and epistemic assumptions of the theory are arguably as contentious as the motivational assumptions, they have been subject to much less discussion, perhaps because they are less visible. These assumptions concern how individuals process knowledge (cognitive) and what knowledge they have (epistemic) (Goldman, 1978).

Cognitive assumptions. Agency theory is sometimes interpreted as resting on foundations of bounded rationality (e.g., Eisenhardt, 1989). In fact, however, agency theory does not assume bounded rationality. Rather, it assumes the "full" or "maximizing" rationality characteristic found in mainstream economics, where the principal and the agent can both be modeled as maximizing expected utility (Laffont and Martimort, 2002; see Hendry, 2002). However, work in behavioral and experimental economics, and in psychology suggests that individuals generally do not possess the cognitive apparatus needed to maximize expected utility (unless decision situations are very simple) (Camerer, 1998; Kahneman and Tversky, 2000; Simon, 1978).

Epistemic assumptions. Agency theory makes several far-reaching assumptions regarding the knowledge held by the principal and agent. The theory imports the knowledge assumptions of game theory. One such assumption is that differences in beliefs among individuals can be completely explained by differences in information (Halpern, 2002). Another key knowledge assumption is that individuals are not only (fully) rational in the sense of being capable of maximizing expected utility, but that they also ascribe such rationality to others (Holler, 2001). In fact, the ascription of rationality takes a specific form. Player A knows that Player B is rational. Conversely, Player B knows that Player A is rational. Furthermore, the mutual knowledge goes on *ad infinitum* ("A knows that B knows that A knows that B knows … that X is the case"). This is the assumption of "common knowledge" (Lewis, 1969; Aumann, 1976), an assumption that underlies most modern game theory, including game-theoretical agency theory.

In agency theory, a number of the basic ingredients are assumed to be common knowledge in this sense. In the case of a moral hazard situation, such mutual knowledge includes knowledge of those who are involved in the relation, the actions that are available to them, the risk preferences of the agent, the assumption that both the principal and agent are rational, the agent's opportunity cost, what the task that the principal delegates to the agent entails, and so on. Of course, the knowledge of the principal is not totally congruent with the agent's, as there would not be an agency problem in such a case. Thus, the principal usually cannot observe the actions the agent chooses and the specific manifestations of uncertainty. Alternatively, he may not know the agent's characteristics (his "type"). However, in all other respects the principal knows perfectly what the agent knows (and *vice versa*).

Problematic Aspects of the Knowledge Assumptions in Agency Theory

A strong implication of the above is that a principal can perfectly read the agent's mind with respect to a number of key conditions that influence the principal-agent relation (the agent can also perfectly read the principal's mind with respect to these conditions, but here we focus mainly on the principal; see Hendry, 2002). Undoubtedly, designing and managing incentives often requires considerable agent-specific knowledge. Agency theory routinely assumes that the principal perfectly knows and understands the agent's degree of risk aversion and his opportunity costs. Simultaneously, the principal cannot observe the agent's effort. Therefore, with respect to the agent's effort, the principal's understanding is extremely imperfect. In real managerial practice, the principal can develop knowledge of the agent that will allow him to interpret the various behavioral clues that signal that agent's effort (e.g., is the agent's staring out of the window a signal of moral hazard or intense, productive thinking?). Thus, agency theory assumes—in a manner that does not seem empirically warranted—that the principal has a perfect theory of some parts of the agent's mind and, at the same time, a highly imperfect understanding of other parts. To address this issue, in the following we turn towards a more realistic treatment of the principal's knowledge by introducing the concept of mentalizing and linking it to agency theory.

MENTALIZING AND RELATED CONSTRUCTS

Putting Oneself in Others' Shoes

The ability to put oneself in another person's shoes has long been recognized as a crucial aspect of social interaction. In particular, this ability serves as a key mechanism for coordinating beliefs and actions. The importance of this ability is evident across the social sciences, including sociology (Schutz, 1932; Weber, 1979), and economics and game theory (Aumann and Brandenburger, 1995; Fudenberg and Tirole, 1991). Furthermore, social psychologists and marketing scholars stress that perspective taking plays a significant role in negotiations (Galinsky et al., 2008) and adaptive selling (Dietvorst, Verbeke, Bagozzi, Yoon, Smits and Van Der Lugt, 2009).

Given bounded rationality (Simon, 1955), individuals perceive, understand, and make sense of the world in terms of cognitive frames that they "impose on an information environment to give it form and meaning" (Walsh, 1995: 281; see Gavetti and Rivkin, 2007; Hodgkinson and Healey, 2008; Johnson-Laird, 1983; Weick, Sutcliffe and Obstfeld, 2005). The development of these cognitive frames is linked to specific socio-cultural and environmental contingencies. Thus, although individuals share many cognitive frames or "typifications" as a result of socialization (Berger and Luckman, 1967; Weick, 1995), those frames have important idiosyncratic and person-specific features (see Schütz, 1932), which produce "cognitive distance"—a difference between distinct cognitive schemes (Nooteboom, 2000; Nooteboom, Van Haverbeke, Duysters, Gilsing and Van Den Oord, 2007; Wuyts, Colombo, Shantanu, and Nooteboom, 2005). In contrast, in the world of agency theory there can be no cognitive distance, as its existence is ruled out by the assumptions of common priors and common knowledge (Aumann, 1976). For real-world principals, however, cognitive distance is a crucially important factor.

Defining Mentalizing

Recent developments in evolutionary anthropology (Call and Tomasello, 2008), cognitive neuroscience (Gallagher and Frith, 2003), neuro-economics (Singer and Fehr, 2005), and social psychology (Galinsky et al., 2008) highlight the importance of one individual's understanding of another individual's intentions, knowledge, and beliefs. When an individual makes inferences about such mental states, he "mentalizes" (Singer and Fehr, 2005)—he forms conjectures about mental states that are not directly observable but are useful because they can make sense of and predict the

behaviors of others. This process is particularly important for individuals' interactions with others (Premack and Woodruff, 1978).

Intentions, knowledge, and beliefs are three distinct ingredients of human psychological—and, in turn, behavioral—functioning. However, a precise representation of this functioning rests on a simultaneous understanding of these three complementary constituents of mentalizing (Call and Tomasello, 2008). An understanding of intentions—plans of action that are chosen in pursuit of a goal (Bratman, 1989; Dennett, 1987)—represents the foundation of mentalizing. In fact, an understanding of intentions provides the first "interpretive matrix for deciding precisely what it is that someone is doing in the first place" (Tomasello, Carpenter, Call, Behne and Moll 2005: 675).

For example, suppose that a principal knows that an agent is working several extra hours, and he wants the agent to maintain this extra effort. However, the action of working extra hours may have widely different intentional connotations. An agent may be working extra because he is intrinsically motivated to deliver good performance or because he is externally motivated by the potential for a monetary bonus. While giving a monetary reward to the extrinsically motivated agent would be a proper way of encouraging that agent to keep working, giving the same reward to an intrinsically motivated agent would crowd out the motivation and diminish the agent's effort (Frey and Jegen, 2001). An understanding of the agent's intentions is, therefore, important for the principal.

This conclusion is strengthened by a consideration of the effects of incentives on extrinsic and intrinsic motivation beyond the principal-agent dyad. In a situation with multiple agents, perceptions of injustice may arise if an agent sees other agents getting a reward that he does not receive because the principal infers that he is mainly intrinsically motivated. Thus, the principal's mentalizing must also include how the agent compares himself socially and how he reacts to such comparisons.

An individual's intentions are influenced by her knowledge. The contextualization of an individual's intentions relative to an understanding of her knowledge is the second constituent of mentalizing. Contextualizing significantly refines the understanding of an individual's intentions. In terms of the above example, if the principal knows that the agent knows that the organization has, for instance, just implemented a reward system, the principal may expect the agent to work harder in order to get a bonus (rather than because the agent has an innate interest in the task).

As beliefs are, by definition, mental, the possibility of understanding someone's beliefs represents "the pinnacle of mind reading" (Tomasello et al., 2005: 675; see Kaminski, Call and Tomasello, 2008). Moreover, the ability to explain the behavior of an actor based on what that actor believes to be the case remains crucial when the actor's beliefs are wrong. In terms of the example, the principal believes that the agent is working extra hours because he knows about the recently implemented reward system. Suppose, however, that the principal also knows that the agent is ignorant about the output-based (as opposed to input-based) nature of the reward criterion—in other words, the principal knows that the agent is wrong in thinking that his extra work will automatically result in an increase in his compensation. The principal may or may not decide to let the agent know about the error in his belief.

In sum, the principal's ability to simultaneously discern what an agent wants to do (i.e., his intentions), how he regards the environment in which he operates (i.e., his knowledge), and what he deems probable (i.e., his beliefs and false beliefs about what will happen based on his information) are important parts of mentalizing. Mentalizing has been shown to form the basis for understanding how others make sense of their world and, in turn, for cooperative, deceptive, and empathetic behavior (Galinky et al., 2008; Tomasello et al., 2005).

The Mechanisms of Mentalizing

Mentalizing is a cognitive mechanism that involves the activation of deliberate and non-deliberate (i.e., automatic) processes. Neuroscience research demonstrates that humans have an innate brain system that is dedicated to mentalizing. Specific brain regions are unconsciously and effortlessly activated when people engage in non-deliberate mentalizing (i.e., "implicit mentalizing," Frith and Frith, 2003). However, mentalizing is not an exclusively automatic process. Other brain regions are activated when people deliberately engage in mentalizing processes (i.e., "explicit mentalizing," Frith and Frith, 2003; see Frith and Frith, 1999; Gallagher and Frith, 2003). Given the mainly intentional and rational stance of classical agency theory, we take the non-deliberate and innate side of mentalizing as a given. In other words, we assume that principals effortlessly and automatically mentalize with agents to a certain extent, and we focus on the intentional and non-automatic side of mentalizing.

Since culture is the "webs of significance" (Geertz, 1973: 5) that give sense to the human experiencing of phenomena, mentalizing is intimately related to context and, more generally, to the cognitive distance that separates the mentalizer from the mentalizee. Clearly, the higher the cognitive distance, the harder mentalizing will be. For example, complex collaborative activities involving shared goals and socially coordinated intentions require a high degree of mutual understanding, which can be furthered by culturally contextualized processes (Tomasello et al., 2005), such as rituals (Chwe, 2001; Dacin, Munir and Tracey, 2010). Rituals are mechanisms that assist in the construction of shared meaning (Kunda, 1992; Meyer and Scott, 1983) by influencing how people think and make sense of situations (Van Maanen and Kunda, 1989). Rituals thus support mentalizing.

Mentalizing may result in simplistic (even wrong) conjectures or in an accurate representation of the contents of someone else's mind. Neuroscience research clearly indicates an individual's placement between the two extreme positions of being able versus being incapable of mentalizing depends on whether one possesses specific, innate neural prerequisites. Consistent with this, the absence of mentalizing has been shown to be typical of developmental or acquired disorders such as autism (Baron-Choen, Leslie and Frith, 1985; Frith and Frith, 1999). However, variations along the accuracy dimension (i.e., the continuous scale that ranges from having an inaccurate theory to an accurate theory of the other's mind) are linked to the sophistication of the aforementioned cultural and experiential mechanisms, and to the cognitive distance between mentalizer and mentalizee.

Moreover, mentalizing is not immune to problems of cognitive distortion (Kahneman and Tversky, 1979). Thus, imperfect mentalizing reflects an inability to accurately mentalize, as well as overconfidence on the part of the principal, who may believe he knows things about the agent's mind that he actually does not (see Flynn and Wiltermuth, 2010). To avoid overly complicating the argument, we abstract from the specific ways in which mentalizing may be imperfect. In addition, mentalizing greatly supports and combines with distinct psychological processes, such as information processing and memory processes. While we focus on mentalizing, we also assume that it naturally antecedes and concurs with other psychological processes in triggering the emergence of theories about others' minds.

Mentalizing may be understood as a skilled behavior. In general, a skill is a "capability for a smooth sequence of coordinated behavior that is ordinarily effective relative to its objectives given the context in which it normally occurs" (Nelson and Winter, 1982: 73). Thus, mentalizing has skill-like qualities in that it is program-like (i.e., mentalizing consists of an ordered sequence of cognitive steps); it is built upon a mixture of tacit and explicit knowledge (in fact, rarely is the mentalizer completely aware of the mechanisms that engender his having a theory of the other's mind); and it requires the making of a certain number of choices, which vary in terms of the degree of intentionality (e.g., although the decision to mentalize may be intentional, the choice of how to proceed in order to mentalize may be unintentional). Like a skill, and consistent with its context-driven components, mentalizing can also be altered by environmental cues.

Finally, it is important to note that all of the aforementioned factors (deliberate and non-deliberate components of mentalizing, the importance of context and culture, potential variations in accuracy, and the skill-like nature of the construct) do not imply that accurate mentalizing is a remote possibility. On the contrary, convergent research clearly indicates that mentalizing is a fundamental driver of human interaction, which suggests that relatively precise degrees of mentalizing are, in fact, found in real-world scenarios.

Related Constructs

Mentalizing overlaps with two constructs that are familiar from the management research literature: transactive memory and perspective taking. However, mentalizing is not fully congruent with these concepts. Transactive memory is the shared division of cognitive labor with respect to the encoding, storing, retrieving, and communicating of knowledge from different but complementary domains (Wegner, 1986; Brandon and Hollingshead, 2004). Over time, members of a group may develop a common understanding of each other's areas of competence and expertise. Transactive memory is the group's members shared understanding of "who knows what" in the group (Brandon and Hollingshead, 2004). This type of transactive memory is similar to mentalizing in that it involves an understanding of what others know, but mentalizing has a much broader focus. Not only does it refer to the understanding of others' knowledge but also, more importantly, to the understanding of their intentions and beliefs (Tomasello et al., 2005).

Perspective taking refers to the consideration and adoption of someone else's psychological viewpoint (Davis, 1983), which activates a process of "self-other merging" (Davis, Conklin, Smith and Luce, 1996: 714). This process rests on the cognitive and emotional levels (Galinsky and Moskowitz, 2001; Galinsky and Ku, 2004). Perspective taking is similar to mentalizing, as it relates to the understanding of what others know, think, imagine, and feel. However, whereas perspective taking has both cognitive and emotional dimensions, mentalizing refers exclusively to cognitive theorizing about another individual's mental states.

Knowledge Assumptions in Agency Theory in Light of the Mentalizing Construct

Agency theory assumes that the principal has perfect access to and knowledge of certain mental states of the agent. Typically, what exactly is included under this wide-ranging knowledge assumption depends on the specific kind of agency model. For example, in moral hazard models, the principal perfectly knows the agent's attitudes regarding risk, the actions that the agent thinks of as being available, the agent's perceived opportunity costs, and so on. Of course, this is not necessarily intended as a descriptively accurate assumption, but as an assumption that eases mathematical modeling. However, in managerial practice, principals are imperfect mentalizers and mentalizing is not in unlimited supply. Managers/principals, like econometricians who work empirically with agency theory (Salanié, 2003: 462), face much "unobserved heterogeneity" with respect to the actual contents of agents' minds. In turn, their mentalizing capabilities matter with regard to reward design and value creation.

In sum, we argue that to design and manage incentives, a principal needs to build a cognitive map of the agent's cognitive categories and states. For reasons of mathematical tractability, agency theory models assume that this is unproblematic, as embodied in the assumptions of common priors and common knowledge. In contrast, we argue that mentalizing is imperfect and that it provides access to information sources that are not considered in agency theory. In the following, we address the principal's mentalizing as a crucial determinant of incentive design and management (and, hence, value creation) in the principal-agent relation.

CONSEQUENCES OF MENTALIZING IN PRINCIPAL-AGENT RELATIONS

Boundary Conditions and Research Model

Our theorizing applies to the standard principal-agent setting of a principal and an agent, and it holds wherever this setting occurs, regardless of the organizational type. To facilitate exposition, we adopt the perspective of the principal in the sense that we address the principal's mentalizing (and black box the agent's mentalizing, see Hendry, 2002). Although cognitive, motivational, and emotional processes are intertwined (Cohen, 2005; Kruglanski, Shah, Friedman, Fishbach, Chun and Sleeth-Keppler, 2002), we follow recent research in social psychology (e.g., Galinsky et al., 2008) in that we separate these processes. We focus our attention on the cognitive level, and disregard any emphatic, emotional, or motivational processes that may accompany mentalizing. Moreover, as we focus on the interrelationship between mentalizing capability and value creation, we hold all other determinants of value creation in principal-agent relations (including the agent's risk preferences, sensitivity to incentives, etc.) constant. We assume that the principal seeks to maximize value creation in the relationship. We do not make any specific assumptions about whether the principal lets the agent share in any additional value creation. Figure 1 shows how we reason from mentalizing capability to value creation.

Insert Figure 1 here

Learning the Agent's Type and Managing Signals

We begin by examining the consistency of the mentalizing construct and key agency theory predictions. Agency theory shows that decreasing the level of asymmetry of information in the relation between principal and agent increases value creation in the relation. In other words, a better-informed principal can better ascertain an agent's type, reducing the need for costly signaling. Moreover, he is better able to infer the agent's true effort level from the signal on the agent's effort—the output—and can design his incentives more precisely. This reduces the agent's perceived risk and the risk premium, thereby increasing value creation.

Mentalizing and information asymmetry are distinct constructs. However, mentalizing can antecede the degree of information asymmetry in a principal-agent relationship. Specifically, increased mentalizing leads to a reduction in information asymmetries. In turn, this increases value

creation in the relation because improved mentalizing improves the principal's understanding of the agent's type and the signals related to the agent's actions. For example, rather than relying on knowledge of the average characteristics of a group of agents, the principal can better ascertain characteristics specific to a certain agent.

There are a number of mechanisms through which the principal's improved mentalizing leads to higher value creation. First, the principal can design a contract that better matches the specific agent in terms of striking the right tradeoff between providing the agent with insurance and offering performance incentives. Second, a principal who learns the agent's type can better match the agent with specific tasks. For example, if the agent has a high degree of risk aversion, he may dislike being exposed to an environment in which he has to handle several tasks, as this makes it more difficult for the principal to reliably measure his effort (Holmström and Milgrom, 1991). Mentalizing is the psychological mechanism that provides the principal with key information about the agent—information that agency theory assumes the principal *already* possesses. Thus, mentalizing serves as a vital mechanism for understanding real-world principal-agent relations. It may be that principals can gain such information through, for example, trial-and-error with different incentives, and infer agent characteristics from such a learning process. However, such processes are costly and lengthy, and mentalizing is a lower-cost alternative. This reasoning suggests the following proposition:

> **Proposition 1**: *Mentalizing on the part of the principal is a lower-cost way of getting to know the agent's risk preferences, disutility of effort and sensitivity to incentives. This knowledge increases value creation in the relation.*

In addition, mentalizing can provide access to soft psychological information that is not considered in agency theory. For example, mentalizing may provide insight into the agent's self-concept orientation—whether the agent thinks of himself mainly in individualistic, relational, or collective terms (Cooper and Thatcher, 2010). This element matters for incentive design because it influences whether the agent should be offered team, rather than individual, incentives (Lindenberg and Foss, 2011). Because mentalizing can provide access to additional information (relative to what is considered in agency theory), the principal can develop a reward design that better fits the peculiar

characteristics of the agent. This increases value creation in the relation, as the agent's perceived risk is reduced, necessitating a smaller risk premium.

Mentalizing also creates value because it is geared toward interpreting signals about the agent's effort and trustworthiness (Singer and Fehr, 2005). Signaling helps to reduce information asymmetry between the two parties (Riley, 2001; Spence, 2002). This reduction depends on the reliability of the signal and on the receiver's capability to correctly interpret the signal (Connelly, Certo, Ireland and Reutzel, 2010). Clearly, the ability to distinguish honest signals from false signals—and, in turn, to recognize trustworthy agents—is important for the design of efficient reward systems. Bonus contracts that rely on fairness and trust can, in fact, be more efficient than explicit incentive contracts that are enforced by the courts (Baker et al., 1994; Fehr, Klein, and Schmidt, 2007; Fehr and List, 2004; Fehr and Schmidt, 2004). However, attributions of dishonesty are often stereotypical and inaccurate (Aavik et al., 2006). This is partially due to game playing on the side of the agent, who may adjust his conduct in social interactions so as to guide the impression that the principal forms of him (Goffman, 1990; Leary and Kowalski, 1990). The principal's ability to accurately detect dishonesty and impression management on the side of the agent is linked to the principal's ability to recognize and decode subtle (verbal and non-verbal) micro-expressions (Ekman and O'Sullivan, 1991). Given his improved understanding of the agent's mental states, a mentalizing principal is clearly better equipped to decode an agent's signals—facial gestures, body language, communication, etc.—as clues to his trustworthiness. Thus, mentalizing leads to better comprehension of the information content and the reliability of the diffuse signals on the agent's effort and trustworthiness, and therefore to an improvement in monitoring (see Holmström, 1979). This means that the principal can better ascertain the agent's true effort level, and, if necessary, influence him to increase this level. Again, principals may be capable of gaining such information by adopting various learning theories or by experimenting with different incentives. However, we submit that mentalizing is a lower-cost alternative. Thus:

Proposition 2: *Mentalizing on the part of the principal enables him to interpret subtle clues regarding the agent's effort and trustworthiness at a lower cost, and improves his*

understanding of the agent's type and effort relative to what is posited in standard agency theory.

Rewards, punishments, and even informal encouragement or criticism are signals themselves. They tell the agent something about the principal, his intentions, and his attitudes (Bénabou and Tirole, 2003). Specifically, a principal's decision to use one reward as opposed to another (or as opposed to not using a formal reward) has been proven to be an extremely strong signal for the agent (Bénabou and Tirole, 2003; and, outside of agency theory, Ryan and Deci, 2000). Agents' receptiveness to the same signals differ. Incentives may, therefore, have a substantially different impact on various agents. An important issue is for the principal "to understand in what cases they [monetary incentives] should be used with caution" (Bénabou and Tirole, 2003: 490). Simply put, the principal needs to understand what a given incentive will signal to a given agent. Such an understanding is derived from the principal's mentalizing, part of which originates deliberately. For example, if the principal is capable of mentalizing with the agent, he may understand that the agent is intrinsically interested in her task, and he may realize that a monetary reward may signal mistrust and, eventually, crowd out that agent's motivation. In this case, the principal should choose a reward that signals trust or flexibility to the agent. In other words, high mentalizing allows the principal to make more sophisticated use of the signaling component of incentives. In particular, he can fine-tune signals to increase the agent's effort. Thus:

Proposition 3: *Mentalizing on the part of the principal enables him to design incentives so that they convey desired signals to the agent.*

The improved ability to interpret clues about the agent's effort and signal to the agent provide a novel source of value creation, as the agent's perceived risk goes down, necessitating a smaller risk premium.

Diagnosing Inefficiencies and Adjusting Incentives

We have argued that principals that are skilled in mentalizing can learn the type of the agent, interpret signals about the agent's effort, and design incentives so as to convey given signals to the agent ("incentive focus"). However, mentalizing principals are also capable of evaluating (*ex post*) the fit of incentives with the agent. In fact, by simply matching an understanding of the agent's type with

the agent's reactions (i.e., signals) to a given reward, the mentalizing principal can evaluate the extent to which that reward actually fit the agent ("incentive adjustment") in a time- and, in turn, cost-efficient way. Thus:

> **Proposition 4:** *Mentalizing on the part of the principal enables him to diagnose reward inefficiencies at an early stage and to reduce such inefficiencies in a low-cost manner by redesigning rewards.*

A principal who can gain additional insight into the characteristics, intentions, and beliefs of the agent by mentalizing can also better utilize the incentive instruments at his disposal. For example, he is better positioned to judge the best combination of fixed and variable pay components in a contract that he offers to the agent and how to use verbal recognition as a complement to (or substitute for) such incentives. Also, mentalizing improves monitoring and the sending of signals to the agent, as argued above. Principals with more mentalizing capability will benefit more from the use of existing incentive instruments and *vice versa*. Thus, the relation between mentalizing and the principal's extant portfolio of incentive instruments is characterized by complementarity (Milgrom and Roberts, 1995).

Moreover, an improved understanding of the agent's characteristics and intentions (i.e., his type), and of the signaling potential of incentives increases the principal's motivation to explore new incentives, to build a richer and more refined reward portfolio ("expanded incentive portfolio"), *and* to adjust existing incentive instruments so that they better fit the agents with whom the principal is mentalizing ("incentive refinement"). Thus, with a low level of mentalizing, the principal will tend to choose incentives that are "at hand" and that fit the average agent. Mentalizing improves the principal's understanding of the agent's type as well as his interpretation and sending of signals, and allows him to build a richer, more refined incentive portfolio by combining incentives in novel ways and by including new kinds of incentives. We therefore suggest:

> **Proposition 5:** *Principals skilled in mentalizing will rely less on routine or habitual behaviors when choosing reward mechanisms, and they will exhibit a higher degree of creativity in their rewarding practices.*

Costly Mentalizing

Mentalizing on the part of the principal is a source of value in the principal-agent relationship. It is the mechanism through which soft psychological information is included in the principal's assessment of the agent's type and effort, and the signaling in which he engages. In a long-term relation, much mentalizing happens as a costless by-product of the main activities in the relation. However, we treat mentalizing as a deliberate mental act. Mentalizing requires mental effort (attention, information processing, etc.) that cannot be spent on other activities. Thus, mentalizing may have fixed costs. For example, a principal that is new to the culture of a firm in which he has assumed a managerial role needs to learn about the culture of that firm to ensure that he and the firm's agents share some of the basic premises upon which mentalizing is built (Kunda, 1992). Similarly, establishing a relation with a new agent involves a certain initial investment in mentalizing with that agent. For instance, internship programs are used with increasing frequency by firms in order to get to know potential employees before deciding whether to hire them. These fixed costs of mentalizing suggest that principals will prefer agents who are similar in type, so that they can spread the fixed costs of mentalizing over many agents. There are also variable costs of mentalizing. For example, the principal may invest effort into interpreting a certain signal about the agent's effort.

Optimum mentalizing balances these costs against the benefits of mentalizing (i.e., the optimum is described by equality between the marginal benefits and the marginal costs of mentalizing). Note that there may be other benefits to learning the agent's type and managing signals in addition to those that we have already identified. For example, persons low in mentalizing may experience greater social anxiety in interpersonal contexts. In such cases, an enhancement of mentalizing may reduce psychological costs. Overall, mentalizing introduces an additional tradeoff in the principal's problem, and entails additional costs and benefits that need to be taken into consideration in understanding how value is created in principal-agent relations. From a prescriptive point of view, we need to identify: (a) the factors that cause value creation in such relations; (b) the main problems in the realization of these factors; and (c) the main instruments through which these problems can be averted or mitigated. Thus far, we have dealt with mentalizing capability as a factor that causes value creation in principal-agent relations and we have noted the costs of mentalizing. In

the following section, we deal in greater detail with the obstacles, represented as a cognitive distance construct, as well as the distinctly organizational facilitators of mentalizing capability.

MENTALIZING AND VALUE CREATION: THE IMPACT OF COGNITIVE DISTANCE AND ORGANIZATIONAL SENSEMAKING

Agency theory is "institutionally neutral" in the sense that principal-agent relations are not uniquely tied to specific governance structures or institutions. They can exist within as well as between firms (and in numerous other social arenas) (Hart, 1995). However, a significant part of principal-agent relations are embedded within firms (Eisenhardt, 1989; Shapiro, 2005).

Much research proceeds from the assumption that agency problems are endemic in organizations (Hart, 1995; Milgrom and Roberts, 1992). At the same time, organizations encompass key instruments for handling these problems. Thus, established agency theory points to rewards coupled with performance measurement (Laffont and Martimort, 2002), tournaments (Lazear, 2000), and task design (Holmström and Milgrom, 1991) as means to overcome agency problems. Hendry (2002) stresses the importance of training and instruction. Akerlof and Kranton (2005) argue that workers' identities can function as important work incentives because they encompass ideals as to how a given job should be done, which significantly reduces principal-agent problems. Lindenberg and Foss (2011) point to a specific kind of social motivation that arises in team situations and argue that firms can succeed in mobilizing such "joint production motivation," keeping agency problems at bay.

We propose a different view of how organizational instruments can mitigate agency problems. Our starting point is that mentalizing capability is functional to the extent that individuals are cognitively distant. The higher the level of cognitive distance in a relation, the more difficult it is for a principal with a given level of mentalizing capability to understand the agent's type, actions, signals, and so on. However, cognitive distance is a variable that can be influenced by organizational means. Figure 2 shows how we introduce cognitive distance and organizational instruments into our framework (the dotted arrows and boxes represent the main parts of Figure 1).

Insert Figure 2 here

Cognitive Distance and Value Creation

By assigning attributes to the agent's intentions, knowledge, and beliefs, the principal tries to understand—and eventually look at the world through—the agent's cognitive lens. By definition, the construct of cognitive distance captures variability (Cannon-Bowers, and Salas, 2001; Hodgkinson and Healey, 2008; Nooteboom, 2000). The principal and the agent may look at the world through completely different (high distance) and quite similar (low distance) cognitive schemes. As sensemaking processes are facilitated by familiarity with the focus of attention, mentalizing is simpler when cognitive distance is limited. Thus, high cognitive distance between principal and agent has a negative impact on the accuracy of the principal's mentalizing. As the principal's mentalizing influences value creation through the mechanisms of learning the agent's type and signaling (and the improved use of incentive instruments that this gives rise to, see P1 to P5), cognitive distance indirectly influences value creation. Specifically:

Proposition 6: *The positive effect of mentalizing on value creation in principal-agent relations is negatively moderated by the cognitive distance that separates principal and agent.*

Experience and Physical Proximity

Mentalizing rests on innate and cultural bases. Whereas the former are constant, the principal's experience (Gavetti and Levinthal, 2000), including his understanding of a cultural context (Kunda, 1992), and his physical proximity with the agent (Gavetti, 2005) are important determinants of the principal's mentalizing. Principals base their decisions on evaluations of potential alternatives that can (probabilistically) lead to certain consequences (March, 1994). These evaluations can be driven by experience or cognition. While experiential evaluations depend on actual trials of alternative options, cognitive evaluations depend on mental representations of reality (Gavetti and Levinthal, 2001). Cognitive and experiential evaluative mechanisms are closely interrelated: cognition influences experiential learning, while experience effects cognitive representations (Gavetti and Levinthal, 2000; Gavetti and Rivkin, 2007). Consequently, we expect to see an interaction effect between cognitive distance and physical proximity such that the principal's experience (negatively) moderates the

(negative) impact of cognitive distance on the value-creation implications of the principal's mentalizing.

In addition, a principal's mentalizing depends on his physical positioning relative to the agent. Consistent with the idea that rationality is bounded and situated (Simon, 1955; Dearborn and Simon, 1958), there is evidence that important signals of human behavior can be perceived only by direct observation of specific verbal and non-verbal micro-expressions (Ekman and O'Sullivan, 1991). This suggests that given a fixed *cognitive* distance between principal and agent, *physical* proximity between the parties eases the principal's bridging of that distance. Physical proximity allows the principal to grasp additional aspects of the agent's behavior, which leads to the making of more accurate attributions. Thus, like the principal's experience, physical proximity (negatively) influences the (negative) impact of cognitive distance on the contribution to value creation of mentalizing (i.e., P6):

> **Proposition 7:** *The negative effect of cognitive distance on the value creation arising from mentalizing is negatively moderated by the principal's experience and physical proximity to the agent.*

The Role of Organizational Sensemaking Instruments in Bridging Cognitive Distance

Evolutionary anthropologists argue that humans have been equipped by evolution to spontaneously recognize joint endeavors and see themselves as part of such endeavors. This involves definitions of roles and responsibilities, and cognitions about the relevant tasks, interdependencies, timing, and possible obstacles to coordination in the joint endeavor (Tomasello et al., 2005; Higgins and Pittman, 2008). Lindenberg and Foss (2011) argue that organizations need to nurture, mobilize, and sustain these innate, but latent, capacities for coordination if they are to overcome the cognitive distance that is inevitably produced by the organizational division of labor, as well as implications for ingroup/outgroup dynamics (Brewer, 1991), and organizational roles and their emotional and cognitive correlates. The tension between the organizational division of labor and shared cognition is generally recognized in organization theory, and many researchers emphasize the role of the organization in shaping members' beliefs, and, in effect, reducing cognitive distance (Kogut and Zander, 1996; Lindenberg and Foss, 2011; Weick, 1995; Weick and Roberts, 1993; Witt, 1998).

Research on organizational identity (Akerlof and Kranton, 2005; Brewer and Gardner, 1996; Brickson, 2005, 2007; Dutton, Roberts and Bednar, 2010; Kogut and Zander, 1996) focuses directly on how the formation of identity is intertwined with cognitive homogenization processes. The sharing of cognition that organizational identity supports may mean that "procedural rules are learned, and coordination and communication are facilitated across individuals and groups of diverse specialized competence" (Kogut and Zander, 1996: 502). An emerging stream of literature deals with shared cognition in teams (e.g., Mohammed and Dumville, 2001). In this regard, an important goal of effective team design is to assist in the sharing of cognitions (Hirschfeld, Jordan, Feild, Giles, and Armenakis, 2006; Priem, Harrison and Muir, 1995). Mathieu and Rapp (2009) argue that clarification regarding individual roles in the team and how roles are interrelated is a particularly important aspect of team design, as are clear performance objectives, task coordination, and contingency plans for task execution. De Dreu (2007) shows that the more team members understand the interdependencies in the team, the more they engage in helping behaviors and learning, and the higher their productivity. Apparently, clearly defining and communicating task interdependencies contributes to overcoming cognitive distance because it contributes to task reflexivity, that is, "the extent to which team members overtly reflect upon the group's objectives, strategies, and processes and adapt them to current or anticipated endogenous or environmental circumstances" (West, 1996: 559). This includes more than the sharing of cognitions or mental models (or "reducing information asymmetry"), as successful adaptation at the group level also requires "cross understanding" (Huber and Lewis, 2010) in which group members understand how they differ in terms of knowledge, roles, and so on, and how such differences must be taken into account when adapting to change.

On the organizational level, the sharing of cognitions and even task reflexivity can be supported by multiple means. A clear vision and mission statement that focus on a common purpose and are consensually supported by top management support the sharing of cognitions (Ashforth and Johnson, 2001). The same is true of organizational rituals (Dacin, Munir and Tracey, 2010). Chwe (2001) argues that a key purpose of rituals is to support the formation of epistemic conditions that approximate the common knowledge conditions of game theory. Thus, organizational members who participate in rituals and who know that other organizational members participate know that all

participants share the knowledge that was communicated at the ritual. Task reflexivity, which is cognitively more demanding than shared cognition, may be assisted by job rotation and cross-training, as these practices make employees familiar with other functions, roles, activities, and so on, and help them to understand how these contribute to firm goals. In summary:

> **Proposition 8:** *Organizational identity, transparent team and task design, and the communication of shared beliefs reinforce the value-creation potential of mentalizing by reducing the cognitive distance between principals and agents.*

While organizations can be designed to reduce cognitive distance between principals and agents, complete elimination of such distance may not be desirable for reasons of variety generation (Walsh, 1995).

CONCLUDING DISCUSSION

We have argued that mentalizing is a fundamental determinant of value creation in principal-agent relations. Specifically, we have suggested that mentalizing represents one way in which a principal improves his knowledge of the agent's characteristics and efforts, as it allows him to access the kind of soft psychological information that is not considered in standard agency theory. As a result, incentive instruments can be better tailored to agents and principals can be more creative in their use of the incentive instruments that are at hand. Mentalizing thus represents a source of value creation in principal-agent relations beyond those considered in agency theory.

Our analysis proceeded through four different stages. First, we reviewed and problematized (Alvesson and Sandberg, 2011) the cognitive and epistemic assumptions of agency theory. Second, we conceptualized the mentalizing construct. Third, focusing on the context of a simple principal-agent relationship, we showed that the principal's mentalizing leads to an improved understanding of the agent's type and signaling, and in turn to higher value creation in the relation. Finally, we showed that the value creation potential of mentalizing is moderated by the cognitive distance that separates principal and agent. We discussed individual- and organization-level factors that can be used to reduce cognitive distance and moderate its impact on the value-creation consequences of mentalizing. In this section, we close by discussing our model's contributions, practical implications, and desirable future developments.

Contribution to Theory

This paper contributes to management research in a number of ways. First, it explicitly introduces the notion of mentalizing into agency theory. Agency theory implicitly makes assumptions about mentalizing, but unrealistically assumes that mentalizing is perfect with respect to certain parameters and variables (e.g., the agent's risk preferences) and highly imperfect with respect to other variables (e.g., the agent's effort). We introduce a more realistic notion of mentalizing as generally imperfect but given to improvements (Bagozzi, Verbeke, Berg, Rietdijk, Dietvorst, and Worm, in press).

Second, we show that integrating these constructs with agency theory enriches the theory, leading to an improved understanding of the sources of value creation in principal-agent relations. Thus, a principal that is skilled at mentalizing can better learn the type of the agent, read the signals related to the agent's effort, and signal to the agent. Mentalizing thus allows for a fuller understanding of subjective performance assessment (Baker et al., 2004) and relates relational signaling (Lindenberg and Foss, 2011) to agency theory. Mentalizing creates value because it results in better estimates of the agent's effort and type, and eases the matching of agents with contracts. It also leads to greater creativity in contract design. Agents will prefer principals that are more skilled at mentalizing to principals that are less skilled because the mentalizing of the former leads to more value creation and, hence, a bigger "value pie" that can be shared by the principal and the agent.

A third contribution is the placement of agency theory into an explicit organizational context. Recent research emphasizes the importance of recognizing the institutional contexts in which principal-agent relations take place (Aguilera and Jackson, 2003; Lubatkin et al., 2007). Specifically, the incorporation of an institutional perspective into agency theory is expected to improve our understanding of agency problems and, in turn, to allow for more accurate predictions (Wiseman, Cuevas-Rodríguez, and Gomez-Mejia, in press). We show that when organizational sensemaking instruments reduce the cognitive distance between principal and agent, the value-creation potential of the principal-agent relation is higher (given a fixed degree of mentalizing capability). In so doing, we implicitly confirm that the explanatory power of agency theory may be leveraged by placing the theory in specific organizational contexts.

Before we turn to a discussion of potential avenues for future research, we note that, to some extent, the principal's needs for mentalizing and agent-specific information are mitigated by self-selection and signaling on the part of the agent. Self-selection means that there is an endogenous matching of agents and contracts to the extent that agents choose offered contracts on the basis of their (unobserved) heterogeneity (Lazear, 2000). Agent signaling means that the agent can convey credible information about such factors as his ability to the principal. However, while self-selection and signaling make life easier for the principal, they do not eliminate the need for mentalizing. Even well-developed reward systems with a high degree of automation leave considerable room for judgment on the part of the principal regarding the interpretation of concrete signals on agent performance (Baker et al., 1994). Such judgments may be based on mentalizing. With respect to signaling, signals are often very coarse (e.g., education, grades, job history). The fact that firms conduct complicated hiring processes with multiple face-to-face interview rounds testifies to the fact that signaling is *not* a complete substitute for mentalizing. Thus, firms (principals) need to not only learn the type of an agent but also understand agent-specific characteristics. This requires mentalizing.

Future Research

The introduction into agency theory of cognitive and epistemic assumptions that are more in accord with the traditional emphasis on bounded rationality in management theory is an ambitious target toward which this paper makes but a first step. Our contribution to current theory can be further elaborated and extended in several ways. Specifically, we envision eight attractive avenues for future research.

The mentalizing construct and its antecedents. Mentalizing has been researched in evolutionary anthropology (Call and Tomasello, 2008), neuroscience (Gallagher and Frith, 2003), neuro-economics (Singer and Fehr, 2005), and psychology (Galinsky et al., 2008). We have conceptualized it in a managerial context, but we have provided a highly abstract treatment in the specific context of the agency relation. However, as monitoring (in a broad sense) employees only constitutes a subset of a manager's activities, it seems promising to extend mentalizing to other managerial activities, such as coordination (Heath and Staudenmeyer, 2000) and leadership. A useful avenue for future research would be to investigate what, specifically, may antecede intentional

mentalizing in a managerial context. In other words, are there any organizational factors that may actually trigger the deliberate mentalizing potential of a low-mentalizing principal?

The agent's mentalizing. To keep our analysis manageable, we have made several simplifying assumptions. One such assumption is that we only need to consider the principal's mentalizing. Although we have "frozen" the agent's mentalizing, mentalizing is clearly an interactive process involving both principal and agent. The question is whether taking the agent's mentalizing into account will change our conclusions. On the one hand, a mentalizing agent will better understand that a mentalizing principal seeks to improve his understanding of the agent's characteristics, effort, and so on to the benefit of both. Given such reasoning, our conclusions should be strengthened by including the agent's mentalizing. On the other hand, it may be that agents who are high in mentalizing relative to principals may better game incentive systems to their own advantage (Tirole, 1986). This would complicate our reasoning because it would suggest that the agent's mentalizing may be value destroying. However, to the extent that principal-agent relationships are placed in competitive conditions, value-destroying relationships are not viable and the sorting process will match agents and principals that are high in mentalizing.

Empathy. Recent evidence from social psychology depicts the capacities to cognitively understand others' point of view and to emotionally connect with others as "related but distinct social competencies" (Galinsky et al., 2008: 378). This paper focuses only on the perspective-taking (i.e., cognitive) dimension of empathy. However, cognition, emotion, and motivation tend to be intertwined in human behavior (Cohen, 2005; Kruglanski et al., 2002). We did not freeze motivation *per se*; for instance, we considered the agent's motivation as key to value creation and, therefore, as a crucial target of the principal's mentalizing. Rather, we controlled for the possibility that the principal's mentalizing may trigger affective and emotional behaviors in the principal himself. In other words, a precise theory of the agent's mind might engender emotional and affective reactions in the principal that could, in turn, substantially condition the principal-agent interaction. For example, a principal who is high in mentalizing may recognize that an agent is misbehaving because of honest incompetence rather than for self-seeking reasons (Hendry, 2002). Such a principal may feel sympathy for the (incompetent) agent and decide not to use the intended sanctions. Consistent with

Galinsky et al.'s (2008) analysis of the impact of empathy in negotiations, it could be argued that the emergence of strong affective and emotional feelings linked to enhanced mentalizing on the side of the principal likely influences value creation in the principal-agent relation. The effects may be negative or positive, as increased mentalizing may foster antipathy or sympathy, and both may have negative as well as positive consequences for value creation depending on the concrete situation.

Principal and agent characteristics. Principals and agents differ on multiple dimensions. To simplify the exposition, we only focused on the principal's experience and proximity to the agent. However, principals—not least in their capacities as managers—also differ on dimensions such as attitudes, information-processing styles, and leadership styles, characteristics that seem to be good candidates for additional moderators for the models depicted in Figures 1 and 2. For example, information-processing styles may moderate the relation between mentalizing capability and type learning postulated in Proposition 1. Similarly, agent characteristics need to be introduced more fully in our theorizing. A starting point may be to consider the agent's experience as a potential moderator between mentalizing and type learning. For instance, experienced agents may be better at recognizing and preventing the principal's mentalizing by means of impression management. Thus, the agent's experience may (negatively) moderate the impact of the principal's mentalizing on his understanding of the agent's type.

Variability. Although we place principal-agent relations in an organizational context, we do not discuss them in the context of an environment. Nevertheless, environments differ widely (Dess and Rasheed, 1991) and in ways that could matter to the reasoning in this paper. For example, mentalizing in fast-moving industries may be different from mentalizing in slower-moving industries. Relatedly, the extent to which the firm confronts many different environments (e.g., national firms versus multinational corporations) matters for mentalizing. One important reason why the environment matters is that different environments typically involve agents with different characteristics. Human resource management scholars use the construct of the "human resource pool" (Lepak and Snell, 1999). In analogy to this, firms confront "agent pools." These may be dimensionalized in terms of size, heterogeneity, and turnover. As firms differ widely in size, the size of their agent pools also differs widely. National firms typically confront less heterogeneous agent pools than multinational

firms. Firms in dynamic environments typically experience greater turnover than firms in less dynamic environments (Haveman, 1995). It may be hypothesized that mentalizing is more complex and costly (and its effects are weaker) when the number of agents is high, agents are heterogeneous, and the relation between principal and agent(s) is characterized by high turnaround. Specifically, in terms of the model in Figure 2, the number, heterogeneity, and turnover of the agent pool negatively moderate the (negative) effect of organizational sensemaking instruments on cognitive distance (i.e., Proposition 8).

Performance implications. Much interest has recently been devoted to understanding the micro-foundations of organizational performance in terms of both motivational (Gottschalg and Zollo, 2007; Lindenberg and Foss, 2011) and cognitive micro-foundations (Gavetti, 2005; Gavetti and Rivkin, 2007). A concern with micro-foundations naturally involves human resources, which are perhaps the "key ingredient to organizational success and failure" (Baron and Kreps, 1999: 4). The contribution to value creation made by human resources is, among things, dependent on their motivation. In this paper, we have addressed how factors related to knowledge and rationality influence the provision of incentives and, hence, the motivation of agents. We have identified three factors that influence value creation related to human resources: mentalizing, cognitive distance, and organizational sensemaking instruments. Mentalizing may be treated as resource in the sense of the resource-based view (Barney, 1991). Mentalizing, in fact, may give rise to rents when it yields improvements in value creation (net the costs required to obtain that increase) that exceed those of the competition. The costliness of imitating these rents may make rents sustainable.

Mentalizing and "envy costs." While one strength of mentalizing is that it allows for the design of fine-grained, agent-specific incentives (see Propositions 1 to 5), the implementation of "customized" incentives may raise issues of fairness and consistency in organizations. Although the aim of mentalizing is to improve the measurement of input performance, and thus contribute to a better alignment of efforts and rewards, it is possible that the increased differentiation brought about by mentalizing may lead to perceptions of inequity and even envy among organizational members (Nickerson and Zenger, 2008). Perceived inequity relative to relevant social referents may drive attempts to restore equity in ways that are harmful to the organization (e.g., refusing to cooperate with

those referents who have been "privileged"; Cropanzano, Goldman and Folger, 2003). Such "envy costs" need to be balanced against the benefits of mentalizing in a fuller, more realistic model of the costs and benefits of mentalizing.

Empirical work. Future research may also include empirical work on the ideas proposed here so as to gather additional "empirical detail about how principals and agents actually choreograph their dance" (Shapiro, 2005: 283). With the aid of increasingly sophisticated instruments and multidisciplinary techniques, researchers are developing scales for measuring individuals' capabilities to mentalize (Dietvorst et al., 2009). This makes it possible, in principle, to test our research model and propositions. However, given that empirical research on mentalizing in the context of principal-agent relations and in the organizational context is virtually non-existent, a multi-methodology approach that relies on interview, in-depth observational, and experimental methods seems preferable.

Formal Work. Economic models are deliberately kept simple for the purpose of mathematical treatment. One could fear that taking mentalizing into account in the way we have proposed may make models intractable or, at least, non-parsimonious. However, economists are busy building tractable and parsimonious models of bounded rationality (e.g., Rubinstein, 1998; Mullainathan, 2002). Moreover, the outcomes of substituting the current unrealistic cognitive and epistemic assumptions of agency theory with more realistic ones ultimately need to be examined in the context of formal models that allow for greater stringency than verbal logic.

A first stab at such a formalization could be to add a variable, say "m," that refers to the mentalizing ability of the principal (and, potentially, a second one for the agent's mentalizing ability). This variable, which would vary between 0 and 1 (0 = no mentalizing ability; 1 = full ability, i.e., the classical agency case), would then also show up in, for example, the formula for the optimal incentive intensity (Holmström, 1979), beta. Less than perfect mentalizing (i.e., $m < 1$) would lower the optimal beta, as it is more likely that the variable component of the remuneration is inappropriate given the agent's characteristics. Similar results could be derived for optimal monitoring intensity.

Coda

In recent decades, agency theory has become an important source theory in management. At the same time, the world has become increasingly globalized, the average tenure of employees has been

significantly reduced, environments have become increasingly dynamic and unpredictable, and firms have increasingly made use of fleeting forms of organization and relations. These developments cast doubt on a fundamental assumption in principal-agency theory—that the principal can (in certain crucial respects) perfectly mind-read the agent.

In this paper, we have examined the consequences of making more realistic assumptions with respect to the principal's mentalizing, and we have shown how this leads to a richer, more managerially relevant theory of value creation in principal-agent relations. We believe that an understanding of the role played by the human potential for interpersonal sensemaking will not only enrich the explanatory potential of the theory, but also provide managers with refined guidance for value maximization. We trust that the analysis presented here will encourage future explorations of this new, important path towards understanding value creation in economic relations.

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FIGURE 1
Mentalizing and Value Creation in the Principal-Agent Relation

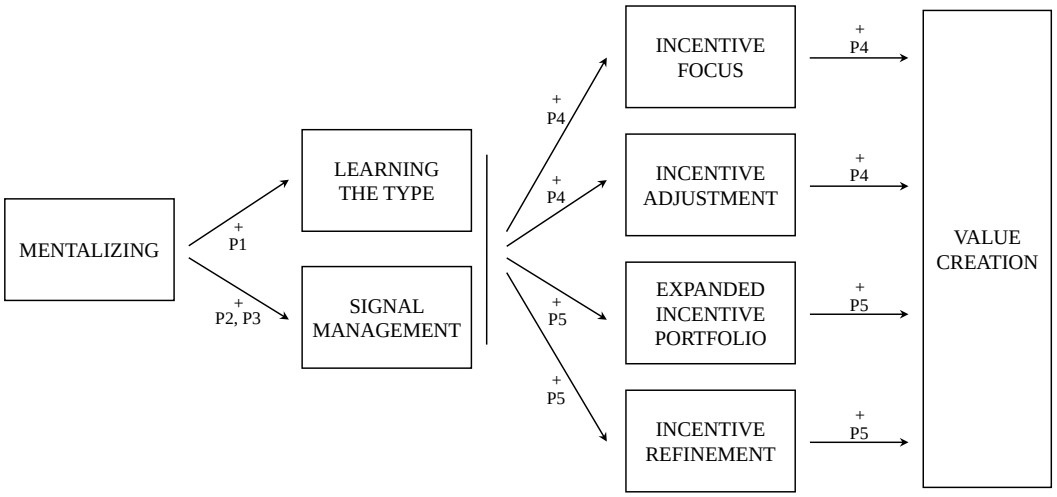
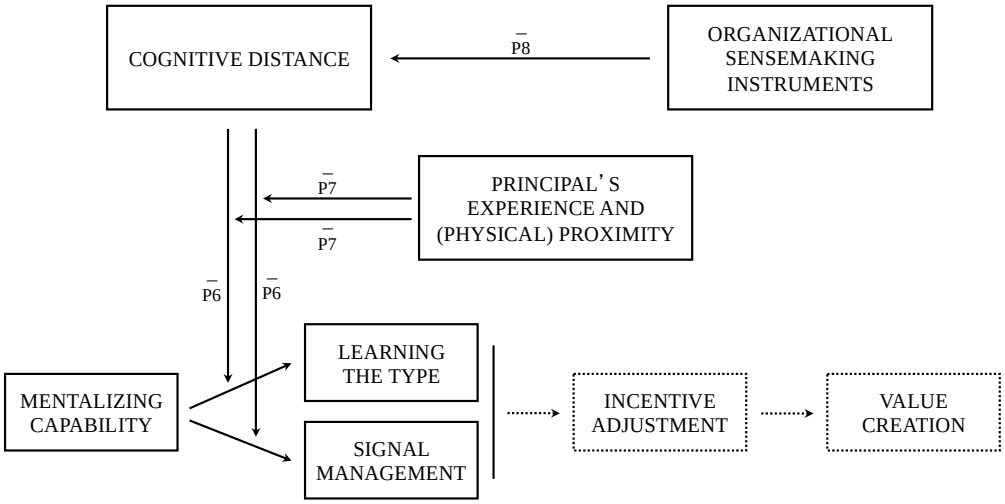


FIGURE 2
Mentalizing and Incentives: Organizational Context and Sensemaking Instruments



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