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**The Ordinary and Extraordinary Struggle of Social Life:
Perceiving, Understanding, and Connecting with Other Minds**

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Abstract

The world is teeming with minds other than our own. Although we are equipped with the social acuity to engage with these minds, we also make systematic errors in doing so. This chapter highlights challenges and opportunities for mind perception (how people attribute mental capacity to others) and mind reading (how people assess others' mental states) through the lens of six different types of "minds." Three minds illustrate forms of mind perception—*invisible minds*, those we cannot directly experience, *dehumanized minds*, those that seem weaker than our own, and *anthropomorphized minds*, those that we perceive but may not actually exist. The other three illustrate mind reading—*misread and misunderstood minds*, those that are apparent but not accurately inferred, and *unlocked minds*, those that can be accurately read using effective communication. Understanding the minds that surround us is critical, as it has the power to transform strangers into life-long relationships.

Keywords: Social, Mind, Perception, Mind Perception, Judgment, Relationships, Mind Reading, Dehumanization, Anthropomorphism

*“Was everyone else really as alive as she was? ... If the answer was yes, then the world, the social world, was unbearably complicated, with two billion voices, and everyone’s thoughts striving in equal importance and everyone’s claim on life as intense, and everyone thinking they were unique, when no one was. One could drown in irrelevance. But if the answer was no, then [she] was surrounded by machines, intelligent and pleasant enough on the outside, but lacking the bright and private inside feeling she had. This was sinister and lonely, as well as unlikely. For, though it offended her sense of order, she knew it was overwhelmingly probable that everyone else had thoughts like hers. She knew this, but only in a rather arid way; she didn’t really feel it.” (Ian McEwan, *Atonement*, p. 34)*

Human beings are arguably the most social primates on the planet today, with brains specially adapted to handle the demands of living in large social groups (Dunbar, 1993, 1998). In particular, humans have the ability to reason about the minds of others, thinking about others’ beliefs, attitudes, and intentions, as well as monitoring and remembering who knows what within a group (Herrmann, Call, Hernandez-Lloreda, Hare, & Tomasello, 2007). Whether talking with others, in the midst of a competitive negotiation, or simply in the checkout line at the grocery store, human beings understand each other through the language of intentions, emotions, goals, attitudes, beliefs, and other states of mind. Indeed, people are so adept at engaging in what has been termed “mind perceiving” (i.e., forming attributions about others’ mental capacities) and “mind reading” (i.e., assessing others’ mental states) that they even perceive and read mind in *nonhuman* animals and objects, whether seeing faces in clouds or talking to one’s pet (Epley, Waytz, & Cacioppo, 2007; Guthrie, 1993).

How and when people make judgments about others’ minds is important for social life for several reasons. Mindful agents come to be seen as moral agents worthy of empathic care and concern, deserving treatment that respects their capacity to suffer, to reason, and to have conscious experience (Gray et al., 2007) whereas mindless agents, conversely, may be seen as objects that can be used as tools (Nussbaum, 1999)—or, even, at times, as inert or sinister agents upon whom violence can be perpetuated (Bandura, 1990). Some of the most pressing ethical questions of our time, such as whether abortion should be banned or eating meat is immoral, hinge on beliefs about whether fetuses and animals, respectively, are

mentally conscious and worthy of human moral standards. Relatedly, if a mind is seen as capable of reasoning and thought, it can be held more accountable for its actions. Consider examples of when people have attributed minds to animals and gods. In times when people were more willing to attribute minds to their domesticated animals, it was routine to arrest animals accused of a crime and try them in a criminal court (Humphrey, 2002). And even in the modern age, anthropomorphized gods are held responsible for everything from major weather events to minor successes and misfortunes (Gray & Wegner, 2010). Determining whether or not an agent has a mind—and, if so, subsequently ascertaining the strength of their mental capacities and reading their mental states—is thus critical for understanding how people interact with others in their daily lives.

The following sections review classic and emerging research on mind perception and mind reading, each focusing on a different aspect of mind. There are three types of minds that illustrate when people perceive—or fail to perceive—mind in others: invisible minds, dehumanized minds, and anthropomorphized minds. First considering “invisible minds,” I argue that sophisticated perception of other people’s minds typically requires both attention and effort. Because other people’s minds are inherently invisible to us (in that they literally cannot be seen, only indirectly sensed), there is a default tendency to perceive other minds as weaker than one’s own mind, albeit similar in form and function. This tendency to perceive other people’s minds as weaker or “lesser” than one’s own is the underlying process by which dehumanization occurs, which I discuss in the “dehumanized minds” section. In this section, I suggest that the act of dehumanizing another person—seeing a person as being subhuman—involves believing that that person’s mental capacities, specifically their capacities for being agentic and experiential, are deficient. This is because a principle part of what people think it means to be a human is to have the mental capabilities to exert agency (e.g., to act upon the world in a meaningful way) and to experience life deeply (e.g., to feel

pleasure, pain, and more sophisticated emotions). When defining dehumanization as perceiving others' minds to be weaker than one's own, it becomes apparent that dehumanization is relatively widespread and commonplace. Indeed, dehumanization can occur relatively innocuously and subtly, not born solely from antagonism but also from mere indifference when an individual does not actively engage in perceiving or reading another's mind. A recent empirical example of this subtle form of dehumanization shows that people perceive others' psychological needs as less important and primary than their own ("demeaning"; Schroeder & Epley, 2021). Next considering the inverse of dehumanization, the section on "anthropomorphized minds" reviews when and how people see minds in nonhuman agents, arguing that anthropomorphism can be intuitively "triggered" by motivational states like the desire to understand one's environment (explanation motive) and to connect with other agents (connection motive).

An implication that emerges from research on these three forms of mind (invisible, dehumanized, and anthropomorphized) is that human social life is governed by divides, not just between "us and them" but, even more fundamentally, between the self and all other individuals to whose minds the self does not have direct access. This divide between the experience that people have of their own minds—their intimate, online awareness of their own thoughts and reactions—and the (lack of) experience they have about others' minds, which can be only observed indirectly through psychological tools like stereotyping, projection, and behavioral deduction, is the most fundamental divide of social life, forming the basis for many other self/other judgment gaps.

In the second section of the chapter, I propose three more types of minds that illustrate successful and unsuccessful mind reading: misread, misunderstood, and unlocked minds. In the section on "misread minds," I argue that assessing accuracy in judging mental states is challenging and depends on both the standards of comparison and the calculation of

accuracy. Thus, I caution against statements about whether mind reading is accurate or inaccurate without a clearer definition of what constitutes “accuracy” and what is ground truth. More recent research is reviewed in the section on “misunderstood minds,” whereby the lack of insight that people have into others’ minds is revealed in suboptimal social outcomes, from people’s failure to socially engage with their peers even though it can make them happier, to their hesitance to be prosocial despite its documented benefits for both givers and receivers, to their tendency to be more paternalistic toward needy others than those others desire. In each case, the psychological impetus for people’s tendency to disengage socially (or prosocially) comes from overly pessimistic predictions about how others will react to well-intentioned social gestures—more specifically, failing to recognize that others want what they want. The section on “unlocked minds” examines the way people communicate what is on their minds to others, suggesting that mental states are more clearly expressed when a person is speaking than writing because paralinguistic cues like the intonation of a voice are important for conveying sophisticated mental states like sarcasm or humor.

The social implication of these three types of minds is that mindreading challenges can lead people to be less social (and prosocial) than they would otherwise be because they underestimate others’ interest in conversation and appreciation of their prosocial gestures. Mindreading can be improved through various means, such as explicitly getting others’ perspective through conversation. I review the research on how and when conversation can be effective in improving mindreading and enhancing wellbeing. Overall, the six types of minds illustrate challenges and opportunities in mind perception and mind reading: when people fail to attribute mind to others (invisible and dehumanized minds), when they attribute too much mind to others (anthropomorphized minds), when they misread others’ mind

(misread and misunderstood minds), and when they successfully connect with others (unlocked minds).

PART 1: PERCEIVING MIND (OR NOT)

Invisible Minds: When Perceiving Other Minds is Effortful

Mind perception is functionally distinct from the inferences people make about others' bodies, personality traits, or other personal attributes. It is guided by a unique network of neural structures and psychological processes (Bruneau, Jacoby, & Saxe, 2015; Koster-Hale et al., 2017) that serve as inputs into the dispositional inferences that people make about others' enduring traits (Malle & Holbrook, 2012). Theories propose, and empirical evidence supports, that the capacity to reason about others' minds is one aspect that distinguishes humans from their nearest primate ancestors. By the time human children are two years old, they perform similarly to adult chimpanzees and orangutans on tasks involving physical objects, such as using tools to open a box, but perform significantly better on tasks that require inferences about others' minds, such as guessing what another agent plans to do (Hermann et al., 2007). Humans' ability to reason about the minds of others appears to enable the social intelligence necessary to live successfully in enormous social groups (Humphrey, 1976; Tomasello et al., 2005). As Dunbar once argued in his social brain hypothesis: "The cognitive demands of maintaining close pairbonds... provided the precursor for the evolution of social cognition that takes its ultimate form in theory of mind in humans" (Dunbar, 1997, p. 570). In other words, people's capacity for sophisticated theory of mind may well be born from the cognitive demands of social living.

How is mind perceived? Mental state and capacity inferences are guided by at least three psychological processes: egocentric projection (inferring others' minds from one's own mind), stereotype application (inferring others' minds from preexisting schemas), and behavioral inference (inferring others' minds from others' behaviors including their verbal

reports). The first two processes are top-down processes guided by a perceiver's existing knowledge or beliefs, whereas the latter is a bottom-up process that requires obtaining individuating information from another agent through that agent's observed behavior.

Thinking about the mind of another person is not necessarily a spontaneous process (Apperly et al., 2006). Reasoning about others' minds typically requires both motivation and effort to do well. For an entertaining example, consider how Tufts University was forced to enact a policy that banned students from having sex in their dorm rooms—while their roommate was present (Miguel, 2009). Students apparently completely failed to think about other minds—specifically, those of their roommates—when their own minds were otherwise focused! Empirical evidence that perceiving a sophisticated, humanlike mind in another agent requires effort comes from experiments showing that explicit instructions to consider another person's perspective have demonstrable effects on judgment and behavior (e.g., Batson, Early, & Salvarni, 1997; Galinsky & Moskowitz, 2000; Galinsky, Wang, & Ku, 2008; Genschow, Florack, & Wänke, 2013; Steffel & Le Boeuf, 2014; Vorauer, 2013). If people were automatically considering others' minds to begin with, instructing them to do so would have no impact—yet such instructions meaningfully change people's perceptions of others' mental capacities and states.

For example, in one experiment (Galinsky & Moskowitz, 2000, Experiment 1), participants who wrote a narrative essay about the typical day in the life of an elderly man showed less stereotypic bias toward the elderly than those given no instructions or told to “suppress their stereotypes,” indicating that people need to be reminded to engage in mind perception to counteract their implicit stereotypes. In another experiment (Batson, Early, & Salvarni, 1997), participants were assigned to three different types of instructions while listening to a radio interview of a woman in serious need. In the objective condition, they were told to “remain objective and detached,” in the imagine other condition they were told

to “imagine how the person interviewed feels,” and in the imagine self condition, they were told to “imagine how you yourself would feel.” After listening, they rated their own distress and empathy for the other person. Participants reported more empathy in both the imagine self and imagine other conditions compared to the objective condition, suggesting that they needed to be instructed before engaging in perspective-taking and consequently caring about the other person’s plight. But participants reported more personal distress in the imagine self than imagine other condition, leading them to be more egoistic instead of altruistic. Only when they considered the other person and not themselves did they try to altruistically help the other person, demonstrating another point: that that one’s own mind takes precedence above others’.

Indeed, one reason why it takes some effort to consider perspectives other than one’s own is because people are so easily consumed by their own perspective. One’s own perspective, knowledge, and beliefs typically take priority over others’ perspective, knowledge, and beliefs (Decety & Sommerville, 2003; Epley, Keysar, VanBoven, & Gilovich, 2004). In one clever paradigm demonstrating people’s egocentric perspective (Epley, Morewedge, & Keysar, 2004), experimenters built a display in which certain boxes were visible to both the participant and a director, but other boxes were visible to only the participant. The director then asked participants to move items from one box to another, but the participant had to ascertain the item to which the director was referring to by taking the director’s visual perspective – and, at times, ignoring their own perspective. In one of the trials in which participants had to ignore their own visual perspective to take the director’s perspective, for instance, the director asked participants to “move the smallest truck” but participants could see a smaller truck that the director could not. The egocentric but wrong response is to move the smallest truck from the participant’s perspective, whereas the correct response is to move the smallest truck from the director’s perspective (which was the second-

smallest from the participant's perspective). In those trials, 51% of children reached for the wrong (egocentric) item, and 21% of adults also did so. Moreover, adults who were under cognitive load or had lower working memory capacity were more likely to make the egocentric error (Keysar, Lin, & Barr, 2003; Lin & Keysar, 2005), showing that overcoming one's own visual perspective to take another person's perspective requires mental effort.

The “Other Minds Problem.” There are reliable social consequences from the fact that perceiving one's own mind requires less motivation and effort than perceiving others' mind. For one, when perceivers lack either the interest or ability to consider another person's mind, it results in a tendency to attribute inadequate mind to that target person. Without being able to directly see and experience another person's mind, perceivers simply rely on their indirect guesswork (egocentrism, stereotyping, behavioral interference) to ascertain mindfulness, which can lead them to miss nuances of other people's perspectives as well as their mental capacities. Philosophically, this inferential guesswork has been implicated in the ‘*Other Minds Problem*’ (Locke, 1689/1986). The Other Minds Problem notes that humans' inability to directly introspect into other minds creates challenges. For instance, if nobody can know for sure that any other mind exists besides their own, then we cannot assume that others have minds at all. Indeed, while other people may look from the outside as they are going through similar human experiences as oneself, it cannot be assumed that those experiences are commensurate with each other.

Dehumanized Minds: Perceiving Less Mind

While philosophers might lose sleep puzzling about whether other people really have minds or not, everyday people do not seem particularly concerned about this so-called ‘problem.’ Most people do not walk around wondering if the people around them actually have minds. Yet there remains a psychological remnant of the Other Minds Problem: people's tendency to perceive other minds as being “lesser” than their own—systematically

lacking in intensity, complexity, and depth. This tendency has been referred to as the ‘*Lesser Minds Problem*’ (Waytz, Schroeder, & Epley, 2013). The extra work that it takes to make inferences about other minds compared to one’s own mind creates a systematic bias whereby people perceive others’ mental capacity as lesser than their own in three specific ways: less intense, less causally impactful, and less objective.

First, illustrating people’s underestimation of the intensity of others’ minds, people often underestimate others’ mental and emotional experiences (like others’ experience of physical and social pain; Nordgren, Morris-McDonnell, & Loewenstein, 2011; Nordgren, Banas, & MacDonald, 2011). Second, illustrating the perception that others’ minds are less causally impactful, people tend to think others have less “free will” than they do (Wegner & Wheatley, 1999)—specifically, participants reporting their own future behavior would be guided more by intentions but others’ behavior would be guided more by their circumstances (Pronin & Kugler, 2011). Finally, illustrating people’s beliefs that others are less objective than themselves, people report believing that they are better able than others to avoid bias (Pronin, Gilovich, & Ross, 2004; Pronin, Lin, & Ross, 2002).

Models of dehumanization. The tendency to perceive other minds as lesser than one’s own is the essence of dehumanization—that is, representing others as being more like a non-human animal or object than like a fully developed human being capable of sophisticated thought and feeling (Gray et al., 2007; Harris & Fiske, 2009; Haslam, 2006; Haslam, Loughnan, & Holland, 2013; Leyens et al., 2000; Waytz et al., 2013). The concept of humanness has been widely studied, with at least seven different models or operationalizations of dehumanization: *infrahumanization* (perceiving an agent to lack secondary emotion; Leyens et al., 2000, 2001, 2003, 2007; Paladino et al., 2002; Viki et al., 2006), *stereotyping* (perceiving an agent to lack competence and warmth; Fiske et al., 2002, 2007; Harris & Fiske, 2006, 2011), the *dual model of dehumanization* (perceiving an agent to

lack human uniqueness and human nature; Haslam, 2006; Haslam et al., 2005, 2008; Bain et al., 2012; Park, Haslam, & Kashima 2012), *mind perception* (perceiving an agent to lack agency and experience; Epley et al., 2007; Gray et al., 2007; Waytz et al., 2010), *objectification* (perceiving an agent like an object; Kant 1797/1996; Frederickson & Roberts, 1997; Nussbaum, 1999), *blatant dehumanization* (perceiving an agent as not fully evolved; Kteily, Bruneau, Waytz, & Cotterill, 2015; Kteily & Landry, 2022), and *demeaning* (demoting an agent's psychological motives; Schroeder & Epley, 2021). The proliferation of models is due in part to different camps of researchers across the globe each studying different aspects of dehumanization.

Although these models differ in the exact metrics by which they operationally define dehumanization, they are alike in conceptualizing dehumanization as involving the denial of mental traits or capacities to others. Specifically, the infrahumanization model measures the extent to which observers attribute secondary emotion to a target person, the stereotyping model measures attributions of warmth and competence¹, the dual model of dehumanization measures attributions of uniquely human and human nature traits², the mind perception model measures attributions of the mental capacities of agency and experience, the objectification model measures beliefs about an agent's instrumentality (i.e., being used as a means to an end), the blatant dehumanization model measures attributions of being "evolved" (i.e., on an evolutionary spectrum from "early human ancestors reminiscent of modern apes" to "culturally advanced modern humans"), and the demeaning model measures focus on one's body relative to one's mind.

¹ The stereotyping model is more typically used for describing different types of minds than for identifying lesser mind, but the "low warmth, low competence" quadrant of person perception has been identified as dehumanizing (Harris & Fiske, 2006).

² The dual model of dehumanization proposes two forms of dehumanization: animalistic dehumanization, which consists of the denial of cognitive capacity, civility, and refinement, (i.e., the "uniquely human" traits) and mechanistic dehumanization, which consists of the denial of warmth and emotional openness (i.e., the "human nature" traits).

There are several means by which to organize and understand these various models. For one, the models vary in their hypothesized mechanisms by which dehumanization occurs, with some proposing that dehumanization can occur via apathy (“subtle dehumanization,” of which infrahumanization and demeaning are examples) but others suggesting it occurs primarily via antipathy (“blatant dehumanization”). Relatedly, the models examine implicit and explicit forms of dehumanization. Whereas infrahumanization, objectification, and even mind perception can occur implicitly and be measured below the level of consciousness, demeaning and blatant dehumanization, for instance, are typically measured explicitly via people’s self-reports. The theorized consequences also tend to vary. Infrahumanization is typically most relevant for outcomes such as empathy, the dual model and blatant dehumanization for outcomes like intergroup conflict, the mind perception model for questions of moral regard for ambiguous agents like fetuses or brain-dead individuals, the demeaning model for outcomes like charitable donations and helping behavior, stereotyping for person judgment outcomes, and objectification for sexual abuse or workplace harassment.

Two dimensions of mind: thinking and feeling. Despite the wide variety of theoretical conceptualizations of dehumanization, when people are asked directly to report the characteristics that are unique to human beings, there is remarkable empirical convergence. If you ask philosophers (Dennett 1987; Locke 1997), lawyers (Universal Declaration of Human Rights 1948), or a randomly selected set of humans to define what “human characteristics” entail, they will tend to describe two basic capacities involving a mind. One is the ability to think—to reason, to choose, to deliberate, to strategize, to act on preferences. The other is the ability to feel—to suffer, to have inner conscious experiences like joy or shame or pride or guilt (Farah & Heberlein, 2007; Gray et al., 2007; Haslam et al., 2013; Leyens et al., 2000; Epley & Waytz, 2010). People attribute these capacities in full primarily to the self and to adult humans similar to the self (Gray et al., 2007). Several

theoretical models of dehumanization acknowledge that these two dimensions of mind exist, particularly the dual model of dehumanization (human uniqueness and human nature), the mind perception model (agency and experience), and the stereotyping model (competence and warmth). Across empirics and theory, the central characteristics attributed to humanization are mental capacities related to thinking (e.g., cognition, rationality, self-control) and/or feeling (e.g., secondary emotions, emotional experience, interpersonal warmth; Epley et al., 2007; Gray et al., 2007; Harris & Fiske, 2009; Haslam, 2006; Haslam et al., 2013; Leyens et al., 2000; Rai, Valdesolo, & Graham, 2017; Waytz, Schroeder, & Epley, 2013).

Sources of dehumanization: antipathy and apathy. Dehumanization comes from at least two differentiable sources. One is antipathy, a desire to separate oneself and one's own group from outgroups, stigmatized groups, subjugated groups, or simply disliked targets. Antipathy elicits *blatant dehumanization* (also called dehumanization by commission or active dehumanization; Waytz & Schroeder, 2014). Blatant dehumanization has been theorized to occur when internal moral control is disengaged from detrimental conduct, and serves to justify perpetrating aggression and violence against others (Bandura et al., 1975; Bandura, 1990), particularly instrumental, rather than moral, violence (Rai, Valdesolo, & Graham, 2017). As Bandura et al (1975, p. 255) wrote in his seminal theory of the social learning: "Inflicting harm upon individuals who are regarded as subhuman or debased is less apt to arouse self-reproof than if they are seen as human beings with dignifying qualities. The reason for this is that people are reduced to base creatures." In the original set of experiments (Bandura et al., 1975) supporting this theory, participants administered higher intensity electric shocks to someone characterized in dehumanized terms—as "animalistic, rotten"—than to someone characterized in neutral or humanized, mentalistic terms (e.g., "perceptive, understanding").

Blatant dehumanization tends to occur when people evaluate an outgroup member who holds beliefs, values, or attitudes different from their own (Haslam & Loughnan, 2014). Indeed, prior research identifies certain outgroups, such as homeless people and drug addicts, who are presumed to have particularly weak mental capacity (Fiske, Cuddy, & Glick, 2007; Harris & Fiske, 2006, 2011; Leyens et al., 2000). The strength of conflict with the outgroup (Struch & Schwartz, 1989), feelings of disconnection from the outgroup (Opatow, 1990), and perceived threat from the outgroup (Bar-Tal, 1990; Kelman, 1973) have all been proposed as mechanisms propelling blatant dehumanization. In one set of studies exemplifying blatant dehumanization, Canadians depicted refugees as barbaric in terms of lacking basic mental sophistication and values (Esses, Veenvliet, Hodson, & Mihic, 2008), and their reduced attribution of mental sophistication mediates the relationship between ingroup glorification and acceptance of torturing outgroup members (Leidner, Castano, Zaiser, & Giner-Sorolla, 2010). More recent data from two reverse-correlational experiments showed that U.S. respondents' mental representations of Arabs, an outgroup, are significantly more dehumanizing, as assessed by image raters, than representations of Americans, an ingroup (Petsko et al., 2022). Blatant dehumanization can also occur during ideological disagreement (e.g., different politics or social positions), whereby people may attribute disagreement to the other person's inability to think reasonably about the problem (Dorison, Minson, & Rogers, 2019; Finkel et al., 2020; Kennedy & Pronin, 2008; Minson, Chen, & Tinsley, 2019; Pronin, Lin, & Ross, 2002; Yeomans et al., 2020).

A second source of dehumanization is apathy, people's lack of caring about others, which can stem from any factor that frees people from having to carefully consider others' mental states. Apathy elicits *subtle dehumanization* (also called dehumanization by omission or passive dehumanization; Waytz & Schroeder, 2014). Just as people judge harms of commission to be worse than harms of omission (Baron & Ritov, 1994; Ritov & Baron, 1990;

Spranca, Minsk, & Baron, 1991), subtle dehumanization has been seen as relatively less concerning, and less worthy of study, than blatant dehumanization. Yet subtle dehumanization is more likely to be the “default” inference than blatant dehumanization (occurring more frequently; for examples see Cortes, Demoulin, Rodriguez, Rodriguez, & Leyens, 2005; Demoulin et al., 2005; Haslam, 2006; Leyens, Demoulin, Vaes, Gaunt, & Paladino, 2007). As Holocaust survivor Elie Wiesel once argued (1986), “The opposite of love is not hate; it's indifference.”

Examples of subtle dehumanization are everywhere. Anecdotes indicate that it is not just the enemy or the disadvantaged who occasionally get treated as mindless. Aaron Rodgers, quarterback of the National Football League's Green Bay Packers, once defended a teammate by noting that “fans sometimes forget we're human...we are people, and we have feelings.” NFL player Ray Lewis expressed the same sentiment about NFL owners after they proposed extending the already grueling 16-game season to 18 games. “We're not automobiles. We're not machines. We're humans” (Feith, 2011). Some research supports these anecdotes: one way in which Black athletes may be subtly dehumanized is that they are seen as not feeling pain as strongly or intensely as White people (Trawalter, Hoffman, & Waytz, 2012). Games like Fantasy Football have also been theorized to encourage participants to view players more as commodities and less as humans (Larkin et al., 2020).

In a very different domain, the protagonist in Arthur Miller's *Death of a Salesman* lamented, “You can't eat the orange and throw the peel away—a man is not a piece of fruit.” This quote illustrates a particular form of dehumanization: being seen as instrumental for a goal, which can lead to being valued only for the ability to fulfill that goal. Instrumentality is an essential feature of objectification (Orehek & Weaverling, 2017, p. 720; see also Bartky, 1990; Calogero, 2013; Dworkin, 1981; Fredrickson & Roberts, 1997; Gervais, DiLillo, & McChargue, 2014; Goldenberg, 2013; Gruenfeld et al., 2008; Marx, 1844/1964; MacKinnon,

1989; Nussbaum, 1999). Instrumental others tend to be categorized based on their ability to fulfill a goal; for example, instrumental others are more easily confused with similar instrumental others in memory tests (Fitzsimons & Shah, 2009) and are judged more in terms of the characteristics that make them instrumental (Maner, Miller, Moss, Leo, & Plan, 2012) compared with non-instrumental others. Likewise, the minds of instrumental others tend to be perceived in line with the perceiver's goals. In one series of experiments, when people considered others to be instrumental for sexual goals, they perceived these others to have more experiential but less agentic capacities compared to their less instrumental counterparts (Gray et al., 2011). In another set of experiments, people perceived their physicians to have characteristics more accommodating to their health goals (e.g., physicians having competence and empathy) and less antithetical to their goals (e.g., physicians having self-experiential needs like needing to eat; Schroeder & Fishbach, 2016). A final set of experiments conducted with employees showed that people treat employees more instrumentally and perceive them more akin to objects in work than personal situations, an effect mediated by the perception of more calculative and strategic norms in workplace settings (Belmi & Schroeder, 2021).

These anecdotes, and the corresponding research, illustrate the wide range by which people can inadvertently perceive or treat another person, whether an athlete or a white-collar employee, in a subhuman way. Another form of subtle dehumanization can be found in anecdotes of how people decide to help others. A speech by Joy Sun (2014), the Chief Operating Officer of the charity GiveDirectly, exemplifies this form of dehumanization: "I believed that I could do more good with money for the poor than the poor could do for themselves. I [assumed] that poor people are poor in part because they're uneducated and don't make good choices [and they] need people like me to figure out what they need and get it to them." In other words, Sun treated poor people paternalistically in part because she believed they did not have adequate agency to know how to satisfy their own needs.

A new form of subtle dehumanization: Demeaning. Sun's statement is related to a broader psychological phenomenon that has been termed *demeaning*, the tendency in social judgment to diminish the presumed importance of psychological needs in some people compared with their physical needs (Schroeder & Epley, 2021). Hints of this tendency can be found in Abraham Maslow's theorized hierarchy of needs, wherein Maslow wrote, "In certain people, the level of aspiration may be permanently deadened or lowered... so that the person who has experienced life at a very low-level, i.e., chronic unemployment, may continue to be satisfied for the rest of his life if only he can get enough food" (Maslow, 1943, p. 386). This statement suggests a general presumption that psychological needs are relatively less important or foundational than physical needs, thereby minimizing the importance of people's psychological motives. Because a sophisticated humanlike mind is required for an agent to be motivated by psychological needs, whereas any agent with a body—including nonhuman animals—can be motivated by physical needs, demeaning another person represents a form of subtle dehumanization.

Empirical evidence for demeaning comes from a series of experiments in which participants rated the needs of various groups such as homeless people, children, drug addicts, lawyers, and friends, in either between-subjects or within-subjects designs (Schroeder & Epley, 2021, Studies 1a-c). For all agents (even themselves), participants rated physical needs (e.g., satisfying hunger and thirst) as being more important than psychological needs (e.g., achieving autonomy, having meaning in life) but the presumed dominance of physical needs was stronger for more dehumanized group members (e.g., homeless people) compared to more humanized group members (e.g., lawyers). Most starkly, participants rated the psychological needs of dehumanized group members like homeless people as being similarly unimportant as the psychological needs of a nonhuman animal, a chimpanzee—showing literal evidence of dehumanization. Moreover, they did not just rate dehumanized

group members' psychological needs as being less important, but also peers' psychological needs (Schroeder & Epley, 2021, Studies 2-4), suggesting that demeaning may occur whenever a person's psychological needs are less apparent than one's own.

Other evidence of demeaning comes from the Extrinsic Incentives Bias (Heath, 1999), whereby people tend to believe others are more motivated by extrinsic incentives (e.g., money) than by intrinsic incentives (e.g., recognition). Similarly, the "motive attribution asymmetry" (Waytz, Young, & Ginges, 2014), whereby partisans in conflict view their own side's actions as primarily motivated by love but the other side's actions as primarily motivated by hate, is a manifestation of demeaning insofar as hate is considered a more basic and animalistic motive than love.

An interesting way in which demeaning differs from prior studied forms of dehumanization is that it focuses on assessments of needs and motives rather than assessments of traits. To the extent that forming causal inferences about others based on their motives is more intuitive and automatic than forming trait-based impressions of them (Hastie & Pennington, 2000; Malle, 1999, 2004, 2006, 2008; Pennington & Hastie, 1993), assessing inferences about the presumed importance of others' needs could likewise be a more ecologically valid way of conceptualizing dehumanization, and one that is more closely aligned with how dehumanization actually develops and influences behavior toward others.

Anthropomorphized Minds: Perceiving Mind When It Does Not Exist

Whereas dehumanization occurs when people fail to attribute mind to a human agent, *anthropomorphism* instead occurs when people attribute mind to a nonhuman agent such as a god, animal, object, or algorithm. Typically, people's social senses are directed at other human beings, monitoring others' intentions, goals, emotions, and preferences, and remembering what others know and believe (Herrmann et al., 2007). Under the right circumstances, however, these social senses can enable a person to attribute a humanlike

mind to another entity, thereby anthropomorphizing it. Humanlike minds can appear widely, from pets that seem loving and thoughtful to financial markets described as “anxious” one moment and “optimistic” the next, to an algorithmic chatbot that feels like it really understands your customer service issue. Whereas it can require effort and motivation to carefully read another person’s mind and recognize their diverging viewpoint, it may take relatively little effort to inappropriately and superficially apply human social rules, norms, and mental states to nonhumans. Notably, anthropomorphizing a nonhuman is not necessarily inaccurate (a cat, after all, may well have a very humanlike mind), but the most obvious cases of anthropomorphism entail attributing a mind to something—even momentarily—that is unambiguously mindless. Consider Google engineer Blake Lemoine who was placed on leave at his job after arguing that Google’s artificially intelligent chatbot generator, LaMDA, was sentient and should thus be afforded the same rights as other human employees (Tiku, 2022). As natural language models are getting increasingly sophisticated and able to craft not just humanlike sentences, but full paragraphs and papers, billions of people are being faced daily with a real version of the Turing Test whereby they must ascertain whether their chatbot conversations are occurring with algorithms or real humans (Adam, 2018; Turing, 1950).

Both bottom-up perceptual processes (i.e., the perception of phenotypic cues within targets of perception) and top-down motivational processes (e.g., people’s motives to explain and connect) can cause people to anthropomorphize nonhuman agents. As examples of perceptual processes, perceiving similarity in motion and morphology can make an agent that looks humanlike on the outside also be evaluated as more humanlike on the inside (Epley et al., 2007; see also Harrison & Hall, 2010).³ In general, people tend to attribute more humanlike characteristics or mental capacities to robots and avatars that project more

³ Interestingly, physical features may influence dehumanization as well as anthropomorphism: emerging research suggests that heavier-weight targets are dementalized due to attributions of their lacking control (Sim, Almaraz, & Hugenberg, 2022).

humanlike facial expressions, body configurations, or movements, and those that speak with a humanlike voice (e.g., Looser & Wheatley, 2010; Nass & Brave, 2005; Schroeder & Epley, 2016; Zhao, Phillips, & Malle, 2019). Objects with humanlike faces, for instance, are more readily anthropomorphized than those without such faces (Johnson, 2003), and animals that move at a humanlike speed are judged to have more humanlike mental capacities than those who move much faster (e.g., a hummingbird) or much slower (e.g., a sloth) than humans (Morewedge et al., 2007). Moreover, textual paralanguage—written manifestations of audible, tactile, and visual elements that mimic nonverbal cues in face-to-face interaction (e.g., exclamation points, emojis, handwritten-like typefaces, and vocalizations)—have been shown to humanize communicators or products (Candello, Pinhanez, & Figueiredo 2017; Luangrath, Peck, & Barger 2017; Schroll, Schnurr, & Grewal 2018).

These perceptual mechanisms, however, cannot explain the wider variety of cases where minds emerge apart from bodies or any other humanlike perceptual cues, such as when people attribute minds to volatile financial markets or to weather events. They also cannot explain why some people (and some cultures) anthropomorphize more than others (Medin & Atran, 2004) and some situations induce anthropomorphism more readily than others (Christian, 2011; Epley et al., 2008; Waytz et al., 2010).

Two top-down motivational processes in particular—the motives to explain and connect—appear better equipped to explain these variations in anthropomorphism. When other minds matter, either because they need to be explained or they are desired sources of social connection, then a person may employ their capacity to reason about the minds of others. When other minds are irrelevant—there is no motivation to explain or connect with the minds of others—then this capacity may not be employed.

Explanation motive. People who are especially motivated to explain and understand an agent's behavior are also the ones most likely to anthropomorphize it, holding all else

constant. For instance, in one study (Epley et al., 2008), participants who were high in desire for control were more likely to anthropomorphize an agent than those low in desire for control, but only for the agent that behaved unpredictably. In another experiment, participants evaluated a robot after watching six brief videos of it in action (Waytz et al., 2010). Participants predicted what the robot would do after the end of each video; half were paid \$1 for each correct prediction and the other half were not. Those incentivized to explain the robot's behavior also anthropomorphized it significantly more than those who were not incentivized.

Put simply, when your car, or cat, or particle accelerator works as you expect it to do so, as it has been built to do, it seems mindless. But when something unexpected happens—thus activating people's motive for explanation—then a mind may emerge as a suitable explanation, producing anthropomorphism. Heider and Simmel (1944) suggested this possibility for anthropomorphism many years ago when describing their classic video of geometric shapes moving around a hinged box that quickly take on a mental life of their own: “As long as the pattern of events shown in the film is perceived in terms of movements as such, it presents a chaos of juxtaposed items. When, however, the geometrical figures assume personal characteristics, so that their movements are perceived in terms of motives and sentiments, a unified structure appears... The “mentalistic concepts” bring order into the array of behavior mediating them” (p. 31-32). Indeed, a primary reason for why participants anthropomorphize Heider and Simmel's shapes is that they are trying to find a way to make sense of the shapes' movements, and imbuing the shapes with minds (e.g., intentions, thoughts) is a way to readily do that. Without the language of mind, explanations of behavior provide no sense of understanding (even if the sense is, objectively speaking, illusory).

Connection motive. The desire to connect with others has also been associated with increases in anthropomorphism. In fact, biologists have suggested that the domestication of

dogs was driven by “anthropomorphic selection” of traits that best enabled people to recognize a mind in their pet (Serpell, 2003). The big eyes and baby-faced features of domestic dogs are much more approachable and socially engaging than the narrow eyes and long faces of their wolf ancestors. Cuteness prompts social engagement, and may therefore lead to anthropomorphism, whereas ugliness prompts social disengagement and avoidance (see Sherman & Haidt, 2011 for a review). In one intriguing study, the more people liked their car, the more they perceived it to have a mind of its own (Morewedge, 2006). One prominent theory of religion is that these agents are themselves the product of anthropomorphizing natural events (Guthrie, 1993), one that is a byproduct of people’s ability to reason about the minds of others (Bering, 2006; Atran & Norenzayan, 2004). Consistent with this account, this experiment also found that those induced to feel lonely reported a stronger belief in these religious agents than those in the fear or control conditions (see also Aydin et al., 2010; Gebauer & Maio, 2012). Altogether, these results suggest that the motivation to connect with others enables anthropomorphism.

Summary of Part 1 (Perceiving Minds)

When ascertaining the moral value of an agent, a relevant question is whether it has a mind that is actually capable of agency (acting on the world) and experience (engaging with the world). Moral rules, and the corresponding punishments and rewards, are typically only applied if the agent is perceived as having such a mind. Three types of minds—invisible, dehumanized, and anthropomorphized—illustrate how people perceive other minds.

First, because minds are (literally) invisible, they can be (figuratively) overlooked. It takes both effort and motivation to overcome one’s own egocentric perspective to take another person’s different perspective and recognize the full capacity of another person’s mind. Second, a consequence of minds being invisible is that the default tendency is to infer others’ minds are less vivid and consequential than one’s own mind—a subtly dehumanizing

inference. Many different models of dehumanization exist, with variation in the proposed source and consequences of dehumanization. The models can be subsumed into two broad types, blatant dehumanization, used to justify violence and stemming from antipathy, and subtle dehumanization, arising from default inferences and stemming from apathy. Third, the antithesis of dehumanization (failing to attribute mind to a mindful human) is anthropomorphism (attributing mind to a mindless nonhuman agent). Whereas most people would agree that nonhuman agents like robots, hurricanes, and buildings don't have sentient minds, such agents are sometimes imbued with humanlike thoughts and feelings. There are two pathways by which this occurs: the agent has perceptual features that mimic humanness (e.g., painted human eyes on a building), or the perceiver is motivated to think of the agent as having a mind, for instance when the perceiver wants to connect with the agent or understand it. These three types of minds (invisible, dehumanized, anthropomorphized) have several implications for social life. One implication is that people have stronger introspective access into their own minds than into others'. This leads them to perceive themselves as having more intense experiences, exerting more causal will, and being more objective than others.

Next, I move beyond examining and when people perceive that other agents have minds to examining their specific ability to accurately read other people's minds. In so doing, I focus on social engagement more broadly, as reading mind is a necessary precursor for social connection and coordination. I introduce three more types of minds (misread, misunderstood, and unlocked) to highlight the challenges of inaccurate mindreading and the opportunities for closer connection via unlocking other minds.

PART 2: READING MIND (OR NOT)

Misread Minds: Are People Accurate When Reading Other Minds?

Determining whether people are accurate in their judgments of other people's mental states and capacities is challenging for many reasons. First, there is rarely a clear criterion

variable by which to compare people's judgments. For instance, if an evaluator thinks that a target individual is lacking in mental capacity what is the best way to go about measuring whether the evaluator is accurate in their assertion? Measures of mental capacity, like the intelligence quotient (IQ) test, have been challenged for being noisy estimates that are influenced by factors beyond intellect such as socioeconomic status, perinatal environment, and culture. Even measures of specific mental states, such as whether or not a person is being sarcastic, are subject to social desirability concerns in reporting that make it difficult to know where the "truth" lies. The question of whether people can accurately detect others' lies, for example, is often compromised because a person's statement may not be a clear lie or truth but instead fall somewhere in the vast gray area in between.

Second, even once the criterion is clearly operationalized, calculating accuracy presents challenges. Consider a classic set of experiments by Kenny (1994) in which people were trying to guess how others viewed them. When accuracy was calculated by comparing a target's predictions against the average of other group members' judgments, a fairly "easy" test of accuracy because averaging observers' judgments eliminates idiosyncratic impressions from targets, then judgment accuracy was fairly high. The average correlation across six experiments on this measure of "generalized accuracy" was .51, suggesting that people can have a reasonable sense of how they are judged by others in general. But when the difficulty of the judgment itself was increased, by measuring how well people could predict how each individual observer rated them, then accuracy dropped dramatically. On this measure of "dyadic" accuracy, the average correlation between predicted and actual ratings across observers was only 0.13. Similar results emerged in judgments of how much one was liked by others, where the generalized accuracy was 0.47 and the dyadic accuracy correlation was 0.18. Kenny (1994, p. 159) summarized, "People seem to have just a tiny glimmer of insight into how they are uniquely viewed by particular people."

Although several papers have concluded that people can be “accurate” in their judgments of others’ minds, the authors typically mean that people can perform statistically better than random guessing, rather than meaning that people are performing close to perfect (for reviews see Epley, 2014; Rollings et al., 2011; Todorov, Olivola, Dotsch, & Mende-Siedlecki, 2014; West & Kenny, 2012). For instance, research claims to demonstrate that people can accurately guess a variety of internal traits and behavioral tendencies from facial photographs, such as political orientation (Rule & Ambady, 2010; Samochowiec et al., 2010), sexual orientation (Rule & Ambady, 2008, Rule et al., 2009), and even criminal behavior (Porter et al., 2008; Valla et al., 2011; Olivola & Todorov, 2010; Rule et al., 2013). But this line of research comes with a number of caveats. For one, accuracy rates are typically just above chance. In one set of experiments (Olivola et al., 2012), the average judge could identify which of two rival candidates was Republican or Democrat from facial photos 56% of the time. However, this does not imply that people can read political orientation from faces; after controlling for social categories like gender, ethnicity, and age, which tend to be associated with political attitudes (Republicans are more likely to be male, Caucasian, and older than their Democrat rivals), accuracy dropped to 50.7% -- no higher than chance (Olivola et al., 2014). Perhaps these results should be interpreted less as examples of accurate mind reading or accurate trait-level inferences and more as examples of people’s ability to infer base-rates from social categories. Indeed, in another study, judges presented with facial photos of targets generally performed *worse* on tasks such as determining the target’s sexual orientation or drug use than judges who relied on their knowledge of base-rates alone (Olivola & Todorov, 2010). More recent research has found that algorithms trained to identify human personality characteristics are able to do so with perhaps even greater accuracy than human judges provided the same information (Matz et al., 2017). Thus, the conclusion that people are able to “accurately” read minds must be tempered substantially:

people are only slightly, though systematically, better than chance, and may not really be reading any relevant cues at all, but instead just relying on their broad stereotypes about base rates.

Similarly low accuracy levels have been observed in research on lie detection. In one review of 206 studies with 24,483 judges, people achieved an average of 54% correct lie/truth judgments (Bond & DePaulo, 2006). But this statistic obscures a great deal of variance that sheds light on people's actual mind reading abilities. For one, people's accuracy is driven by better-than-chance accuracy for detecting truths (61%) but not lies (48%), suggesting that it may in part derive simply from a bias toward believing people are telling the truth. Early emerging evidence suggests that lie detection rates get slightly better when people judge lies subconsciously (ten Brinke, Vohs, & Carney, 2016). Indeed, people actually become more accurate at detecting deception when they are given less information (15 s vs. 3 min of video footage; Albrechtsen et al., 2009) and when they are kept from consciously deliberating between viewing a lie and then making a veracity judgment (Reinhard et al., 2013).

One widely used test of mind reading accuracy, the "false belief test," overcomes several issues with accessing accuracy by using a scenario in which there is a clear right and wrong answer (Baron-Cohen, Leslie, & Frith, 1985; Wimmer & Perner, 1983). In this test, the participant reads a story about a character, Sally, who places a desirable object, like chocolate, in a box. Her sister, Anne, moves the chocolate to the cupboard while Sally is out of the room. Where will Sally look for the chocolate when she comes back? The box or the cupboard? If the participant says the cupboard, he is making the egocentric error of applying his own knowledge inappropriately to Sally; although the participant knows correctly that the chocolate is now in the cupboard, Sally does not know this. Thus, this task is useful for ascertaining the participant's ability to correctly or incorrectly recognize a perspective that is

distinct from his own. Another benefit of this task is that it can be conducted nonverbally (e.g., via images; Avis & Harris 1991), removing confounds of language and providing consistency in cross-cultural tests.

Results from the false belief task provide insight into how theory of mind develops. Children younger than age four tend to make the egocentric mistake of extending their own knowledge to Sally (Wellman 1990; Wellman, Cross, & Watson 2001). Thus, they assume that Sally will look in the cupboard (where they know the chocolate is) instead of the box (where Sally last left it and would therefore presume it to be). Adults rarely make this mistake. But make the task just a little more difficult by presenting adults with four different containers (instead of two) and asking them to indicate the likelihood that Sally will look in each container, and now glimmers of a child-like egocentric error begin to emerge. Adults now believe there is a nonzero probability that Sally will look in the container that the object was moved to without her knowledge (Birch & Bloom, 2007). Increase the difficulty in this task by inducing a negative mood that makes adults more myopic in their reasoning, and the egocentric error is larger compared to when adults are in a positive mood (Converse, Lin, Keysar, & Epley, 2008).

Confidence in reading minds. Whereas people's accuracy at reading what others think and feel appears to be relatively low (slightly above chance, depending on how it is measured and the reference point being used), their confidence at being able to read others' minds is relatively high. Consider an experiment conducted with married and dating couples (Eyal, Steffel, & Epley, 2018, Experiment 25) in which one person predicted how their partner would respond to a series of 20 consumer preference questions. Although these predictors guessed their partner's response exactly right at significantly better than chance levels (an average of 4.9 when chance was 2.8), predictors also dramatically overestimated their accuracy, believing that they had predicted 12.6 exactly correctly.

Similar overestimations emerge in thin-slice judgments (Ames, Kammrath, Suppes, & Bolger, 2010), lie detection (DePaulo, Charlton, Cooper, Lindsay, & Muhlenbruck, 1997; Swann, Silvera, & Proske, 1995), and evaluations of others' intentions in communication (Kruger, Epley, Parker, & Ng, 2005). Interestingly, reported confidence seems to correlate only weakly, if at all, with accuracy. A meta-analysis of the relationship between judges' reported confidence and their actual accuracy at detecting deception identified a correlation of .04—not significantly different from zero (DePaulo et al., 1997). And across a set of 25 experiments that asked participants to make various mind-reading predictions (specifically, predicting another person's emotions from facial expressions and body postures, predicting fake versus genuine smiles, predicting when a person is lying or telling the truth, and predicting a spouse's activity preferences and consumer attitudes), the correlation between predicted and actual responses was just .11—statistically significant and positive, but not a very large association (Eyal et al., 2018).

Beyond people being overconfident that they can read others, they are also typically overconfident that *others* will be able to read *them*. This form of egocentrism is apparent in communication. For example, in storytelling, communicators tend to leave out information that seems obvious to themselves even if it is not necessarily obvious to their audience (Brown & Dell, 1987; Dell & Brown, 1991). Communicators also overestimate their ability to convey their intention to others. In one experiment (Keysar & Henly, 2002), subjects were asked to say syntactically ambiguous sentences in such a way that their meaning would be unambiguous to a listener. For instance, they had to say, “Angela killed the man with the gun,” while trying to convey the idea that Angela used the gun to kill the man, not that he had the gun. Participants in this experiment wildly overestimated the extent to which listeners would understand their intent: about 80% of communicators believed their listener would understand them, but they were wrong about 50% of the time. What was obvious in the mind

of the communicator was not so obvious to the listener, and communicators often failed to realize that listeners would not be able to clearly read the intent behind their words.

In another experiment (Kruger et al., 2005, Experiment 2), dyads were asked to select ten statements from a larger set, half of which were sarcastic and half which were not, about topics like the weather and food. They were then told to convey their selected statements either via email or audio message to another set of readers or listeners and guess how many of the recipients would be able to correctly guess whether or not the statement was sarcastic. Communicators guessed that 78% of recipients would correctly infer their intended sarcasm in both the email and audio conditions, but only 56% of recipients in the email condition (not statistically different from chance) and 73% in the audio condition were able to correctly ascertain the communicator's sarcasm. A subsequent experiment revealed a similar result using a different paradigm (Kruger et al., 2005, Experiment 3): communicators attempted to convey one of four emotions to either a friend or a stranger through a sentence they created either by email, voice, or face-to-face. Each communicator created 5 sentences, each conveying a different emotion. They then predicted judges' accuracy in identifying their communicated emotions. Judges were more likely to accurately identify the communicator's emotion when using his or her voice—voice or face-to-face conditions compared to email (text only). Communicators were again unaware of this difference, overestimating the percentage of times they communicated their emotion accurately in all conditions, but especially when communicating over email. In other words, communicators overestimated their audience members' ability to read their minds, and they particularly did so when the medium of communication lacked the extra nonverbal cues necessary for making mental intention clearer (i.e., the email condition). Communicators also tend to be more

overconfident when communicating with friends than with strangers (Savitsky, Keysar, Epley, Carter, & Swanson, 2011)⁴.

Improving mind reading. To improve mind reading accuracy, it is often not enough to ask individuals to simply “adopt the perspective” of another person. In fact, a meta-analysis suggested that these instructions actually *reduce* accuracy of estimating mental states compared to not telling participants to do anything ($d = -.23$; Eyal et al., 2018). As noted earlier, a nudge to think about another person’s perspective may help perceivers to recognize that person’s mental capacity or empathize with their plight (Batson et al., 1997), but simply may not be enough to allow them to read a nuanced mental state such as that person’s level of happiness—especially if the target person is trying to conceal that information.

What does seem to improve mental state reading is when perceivers are literally put in the other person’s perspective, thus experiencing a moment in the life of that person. In one experiment, people who had just experienced a physically painful procedure were more accurate in predicting another person’s experience in going through the procedure than those who had not experienced the same procedure (Ruben & Hall, 2013). Indeed, a reason why people are able to feel empathy for those in pain appears to be that the perceiver engages in the same neural processes involved in producing the expression of pain as the target. When perceivers’ facial action is disrupted, it can interfere with their performance on verbal emotion recognition tasks (Wood et al., 2016). This interesting finding suggests that the literal re-enactment of the same pain experience (through mimicking a facial expression) is a source of empathy. In another experiment instead examining social pain rather than physical pain, people more accurately predicted another’s reaction to social exclusion after being excluded in the same way themselves, compared to people who had not been excluded

⁴ Not all mind perception tasks yield such overestimation. Underestimation has also been observed when judging unknown strangers (for review, see Eyal et al., 2018).

(Nordgren et al., 2011). A third set of experiments that examined broader emotional reactions found that people predicted a target's emotional reaction to viewing a picture far more accurately when they could see the picture themselves, and hence were in the same situation as the target, compared to when they were trying to read the target's emotional expression (Zhou, Majka, & Epley, 2017).

If it is not possible to actually experience the other person's situation (to "walk in their shoes"), another way to improve mind-reading accuracy is to directly ask the other person to share their own perspective—in other words, seeking to get their perspective, rather than just imagine it. One experiment compared romantic couples guessing their romantic partners' opinions using "whatever strategy you think is best" (control condition), "imagining a typical day in the life your partner" (perspective-taking condition), or "asking your partner about their opinions" (perspective-getting condition). Participants' accuracy was lowest in the perspective-taking condition and highest in the perspective-getting condition (Eyal et al., 2018, Experiment 25).

The benefit of getting perspective from direct simulation may extend to predicting one's own future mental states as well. Women in one experiment were more accurate in predicting how much they would like a man after a 5-minute speed date when they learned of a prior woman's evaluation, compared to basing their prediction on the man's personal profile and photograph (Gilbert, Killingsworth, Eyre, & Wilson, 2009). Not only can you understand others' minds more accurately by getting perspective, but you can also understand your own future mind more accurately by getting perspective from a person who has already been in the same situation.

The one time when perspective-taking may improve mind reading is when the perceiver has already experienced the target's situation before and can clearly remember their own experience. For example, people tend to underestimate how much others would want

their constructive feedback in a variety of situations (Abi-Esber et al., 2022). In one of the situations tested, people believed that their colleague would not particularly want to get feedback about their email sounding rude (on average, expecting they wanted the feedback 5.2/10.0)—but colleagues actually reported they would very much like to know if their email sounded rude (on average, wanting the feedback 8.0/10.0; Abi-Esber et al., 2022, Experiment 1). In this context, it was enough to simply ask potential feedback-givers, “Would you want to get the feedback yourself?” to help them to recognize the error in their mindreading and substantially close the gap in their predictions. This perspective-taking intervention works not just because people can easily imagine being in such a situation but probably because they have been in exactly such a situation before and can draw upon that past memory to adopt the other perspective accurately.

Misunderstood Minds: When Misreading Minds Leads to Undersociality

When someone misreads another person’s mind, it influences not just how they make judgments about that person but also how they act toward the person in systematic ways. Of particular relevance is how mistaken mindreading can influence people’s willingness to socially connect with others. Social life requires managing approach/avoidance conflicts between the desire to be social—to be friendly by reaching out and connecting—and concerns that another person might not respond positively to your sociality. Accurately anticipating another person’s reaction helps people recognize when to be social and approach another person, versus when to hold back and avoid them. Indeed, any conversation can be considered an exercise in mind-reading: from ascertaining the other person’s initial interest in starting a conversation with you, determining what they would like to talk about, for how long they would like to talk, and so on. Prosocial gestures like giving compliments and providing help also require mindreading, e.g., figuring out how exactly how best to help and whether the other person will really appreciate your gesture.

Emerging research across a variety of social and prosocial interactions (e.g., making conversation, expressing appreciation, and providing acts of kindness) converges to suggest that people systematically underestimate how positively others will respond to their sociality—leading people to be less social than they could be for their own happiness, a phenomenon termed *undersociality* (for a review, see Epley et al., 2022). This section reviews the evidence for people’s undersociality as well as how it is caused by mistaken mindreading.

Social disconnection. Although Aristotle argued “man is by nature a social animal,” it is not uncommon for people to come in close contact with strangers and completely ignore each other. Every day in waiting rooms and coffee shops, walking on sidewalks or standing on street corners, sitting on planes and trains, people can be mere inches from another person and treat that person as they would a lampshade. Indeed, as social as human beings seem to be, and as much as people’s ability to connect with the minds of others enables both happiness and health (Diener & Seligman, 2002), people can at times seem completely unmotivated to use their unique social skills. This tendency to disconnect from strangers has been connected to people’s misunderstanding of others’ minds—specifically, their underestimation of others’ interest in engaging with them.

Several findings suggest that people fail to recognize how pleasant it can be to connect with a stranger. In one series of experiments (Mallett, Wilson, & Gilbert, 2008), White participants expected to have more pleasant interactions with other White participants than Black participants. In reality, they had equally pleasant conversations with both groups. In another series (Zelenski, Whelan, Nealis, Benser, Santoro, & Wynn, 2013), extraverts believed they would have a more pleasant experience interacting with another person in an extraverted fashion than introverts predicted. In fact, both introverts and extraverts reported a more positive experience while acting extraverted in a social interaction than while acting

introverted. In a third series of experiments (Dunn, Biesanz, Human, & Finn, 2007), undergraduates in one experiment expected to feel worse while waiting to interact with an opposite-sex stranger than while waiting to interact with their dating partner, but there were no mood differences among people actually waiting to interact with an opposite-sex stranger versus their romantic partner. A second experiment involving an actual 4-min interaction with either a romantic partner or an opposite-sex stranger found similar results. In contexts that actually require interactions with others, people are happier when told to act extraverted—to be more assertive, adventurous, energetic, and talkative—than when told to act introverted (Fleeson, Malanos, & Achille, 2002; McNiel & Fleeson, 2006; Sandstrom & Dunn, 2014; Zelenski, Santoro, & Whelan, 2012).

Perhaps most clearly demonstrating people's mispredictions about the pleasantness social engagement are a set of field experiments from Epley and Schroeder (2014) and Schroeder, Lyons, and Epley (2021). In these experiments, commuters in Chicago and London traveling on commuter trains were assigned randomly to either talk with someone sitting next to them, sit in solitude, or have their normal commute. The commuters expected that talking would lead to the least pleasant and least productive experience for them—but in reality, commuters reported having the most pleasant commute when they talked (and it was no differently productive) compared to being in solitude or having their normal commute.

Similar results have been shown outside of commuting settings. In one meta-analysis of seven experiments conducted in the U.K. (Sandstrom & Boothby, 2021), participants about to have a conversation with a stranger consistently underestimated how much both they and their partner would report enjoying it afterwards. Not only were these conversations better than expected and therefore surprisingly positive (d s ranged from .79-1.57), the scale ratings also indicated that these conversations were objectively positive.

Even once two people are talking, there may still be a reluctance to connect more deeply (Kardas & Epley, 2022). Even though people in one survey reported wanting to have deeper (i.e., more intimate) conversations with others in their everyday lives, and even reported preferring to hear another person's answers to relatively deeper conversation questions compared to shallower questions, participants nevertheless reported preferring to discuss relatively shallow questions when they imagined having in a conversation with another person. And yet, a series of experiments found that deeper conversations—encouraged either by providing deeper conversation topics or having people generate deeper topics themselves—yielded consistently more positive experiences than expected, and also more positive experiences than shallower conversations (Kardas, Kumar, & Epley, 2022). Although similar gaps emerged for relatively shallower conversations, they were consistently larger for deeper conversations (see also Hart et al., 2021). Additional research indicates that people may similarly underestimate the positive outcomes of connecting over more intimate media, such as talking on the phone versus typing over text chat (Kumar & Epley, 2021), creating a misplaced preference for connecting over less intimate media that yields less satisfying interactions. Finally, people may also underestimate how much they would enjoy longer conversations, expecting conversation quality to decline more quickly over time than it actually does (Kardas, Schroeder, & O'Brien, 2022). Undervaluing the positive impact of sociality might keep people in shallower, and shorter, interactions than would be ideal.

Additional experiments link this tendency toward social disconnection to mistakes in reading others' minds. In the experiments conducted with public-transportation commuters, the commuters had a widely shared, albeit inaccurate, belief that other people were not as interested in connecting as they were. More broadly, both children and adults tend to underestimate how much their conversation partners like them after the conversation is over (Boothby et al., 2018; Wolf et al., 2021). These mistaken beliefs could come directly from

existing behavioral norms. On public transportation, for instance, norms of social isolation exist (e.g., “quiet cars” on trains), which may lead people to mistakenly believe others are uninterested in connecting with them rather than correctly concluding that others are just following the norms. Consistent with this possibility, when people were asked to focus on starting a conversation with a stranger, they expected it to go significantly worse than when they were asked to focus on having the conversation (after presumably successfully starting it; Schroeder et al., 2021, Experiment 2).

Another source of people’s social miscalibration could come from their broader uncertainty about the recipient’s reaction. Whereas in principle, the possible range of outcomes from trying to connect with another person may seem large and inclusive of many negative reactions (Baumeister et al., 2001), in *practice*, the actual range of outcomes may be considerably smaller and more positive because interactions are interdependent, guided by reciprocity (Reis et al., 2011). In principle, revealing intimate information in conversation could lead to a variety of responses; in practice, trusting another person tends to yield trust in return, creating a deeper conversation that is more likely to create lasting relationships (Sandstrom & Boothby, 2021; Garrod & Pickering, 2004; Pickering & Garrod, 2004). Consistent with this possibility, people expect that deeper conversations will be less positive with a stranger than a friend, but their actual experiences differ less than they expected (Kardas et al., 2022).

Overall, mistaken beliefs about others’ potential negative reactions toward initiating conversation can serve as barriers to connecting with others, particularly distant others. These barriers keep people from gaining the very experience they would need to accurately understand the hedonic consequences of social interaction. The preference for solitude in the company of strangers seems to come at least partly from failing to read others’ mind accurately—and failing to learn from experience.

Prosocial disinclination. Although prosocial gestures like giving a compliment or expressing gratitude can reliably brighten recipients' moods, potential givers do not always anticipate how much impact their kind gestures can have. Here again, there is evidence that people fail to accurately anticipate others' mental reactions to their prosocial gestures—specifically underestimating others' appreciation of their prosociality. In one series of experiments, people asked to write a gratitude letter underestimated how positive their recipient would feel after reading the letter (Kumar & Epley, 2018). In another series of experiments, people visiting a public garden were instructed to ask another visitor to help by taking a picture of them in front of a nearby attraction. The helpers felt more positive after taking the requested picture than the requesters expected (Zhao & Epley, 2021). In a third series of experiments (Boothby & Bohns, 2021), people asked to provide compliments underestimated how positively their recipients would feel after receiving the compliments. Indeed, when asked in surveys, respondents reported expressing gratitude and giving compliments less often than they felt they “should” (Kumar & Epley, 2018; Zhao & Epley, 2021). Similar results emerge for people's willingness to share resources, like money, with others. In one experiment, roughly two-thirds of people expected they would be happier spending either \$5 or \$20 on themselves rather than on others. In contrast, people actually instructed to spend this money on either themselves or others returned feeling significantly happier after spending on others than after spending on themselves (Dunn et al., 2008; Aknin et al., 2020). Undervaluing acts of kindness is not limited to purely material exchanges, as similar miscalibrated expectations emerged when participants considered whether or not to give social support (Dungan et al., 2022) or constructive feedback (Abi-Esber et al., 2022) to another person.

Several possible reasons for people's misunderstanding of others' reactions to their prosociality exist. For one, there may exist an empathy gap between those performing a kind

act and those receiving it (Loewenstein, 2005; Nordgren et al., 2011; Van Boven, Loewenstein, Dunning, Nordgren, 2013). A kind act is targeted directly at a recipient, producing uniquely positive feelings for the recipient that are not shared and hence not anticipated by the expresser. For another, those performing prosocial acts may evaluate their actions on different dimensions than recipients, focusing more on their competency (how well they perform the action) while recipients focus more on the warmth conveyed by their action (the positive intent and meaning of the action; Kumar & Epley, 2018). This reflects a more general tendency for actors to evaluate their own behavior in terms of competency, while observers tend to evaluate the same behavior more in terms of its warmth (Abele & Wojciszke, 2007; Bruk, Scholl, & Bless, 2018; Fiske et al., 2007; Wojciszke, Banzinska, & Jaworski, 1998). If expressers are attending to their competence while recipients are attending to their warmth, then expressers are likely to underestimate how positive a prosocial action will make a recipient feel.

Paternalistic helping. Whereas people's (lack of) willingness to engage socially or prosocially with others can be attributed, at least in part, to their beliefs about recipients' mental states (like whether recipients will appreciate their kind gesture), their willingness to be paternalistic toward needy others can be attributed to their beliefs about recipients' mental *capacities*. One reason why the tendency to dehumanize others matters is because it can affect both people's willingness to hurt others (Bandura et al., 1975; Kelman, 1973; Struch & Schwartz, 1989) as well as their attempts to help others. One example comes from a study conducted in the aftermath of Hurricane Katrina, when White and Black individuals reported that they were more interested in helping their ingroup members (same-race) than outgroup members (different-race), in part because they attributed more humanlike secondary emotions to their ingroup (Cuddy, Fiske, & Glick, 2007). Another series of experiments demonstrates that thinking of others as relatively mentally incapable, perhaps more like children than like

adults, can lead people to treat others as relatively childlike by providing more paternalistic aid toward them (Schroeder, Waytz, & Epley, 2017). While the *amount* of giving is influenced by beliefs about recipients (e.g., recipients' need), characteristics of givers (e.g., empathy, Batson, 1991; self-image, Ariely, Bracha, & Meier, 2009), and situational factors (e.g., bystanders, Darley & Latané, 1968; social pressure, Dana, Cain, & Dawes, 2006; DellaVigna, List, & Malmendier, 2012), the experiments from Schroeder et al. (2017) indicated that *how* people give is determined by a different set of factors such as givers' beliefs about recipients' mental capacities.

Unlocked Minds: Reading Mind Through Conversation

How does one person convey their defining features of personhood—the contents of their mind—to another? The clearest way to express one's mental capacity, and one's mental states, is to communicate them to others through speech, writing, or body language.

However, emerging research suggests that not all of these media forms (e.g., speaking, writing) are equivalently clear in conveying a communicator's mind. In particular, speech appears to be uniquely well-equipped to convey a person's mental states and capacities.

The human voice has long been used as a tool for communicating the content of one's mind to others (Pinker & Bloom, 1990). Even when speech lacks meaningful semantic content, a voice conveys paralinguistic information (e.g., volume, tone, and rate of speech) that provides additional insight into a communicator's thoughts and feelings (McAlear, Todorov, & Belin, 2014; Scherer, Banse, & Wallbott, 2001; Weisbuch, Pauker, & Ambady, 2009). Observers thus judge a target's thoughts and feelings more accurately when they hear someone speak than when they read the same text alone (Kruger et al., 2005), or when they watch a person (silently) speaking even while reading subtitles (Gesn & Ickes, 1999; Hall & Schmid Mast, 2007; Kruger et al., 2005; Zaki, Weber, Bolger, & Ochsner, 2009). Moreover, communicating with via speech makes an agent seem more like a person (vs. machine) than

communicating the same content through text or body language. Adding a human voice to a machine makes it seem more like a person (i.e., anthropomorphism; Nass & Brave, 2005; Takayama & Nass, 2008; Waytz, Heafner, & Epley, 2014). Inversely, removing voice from an actual person by communicating through text makes a person seem more like a machine (i.e., dehumanization).

Demonstrating the humanizing capacity of voice, in one series of experiments, job candidates delivering “elevator pitches” were judged to be more intelligent, thoughtful, and rational—traits consistent with perceived humanity—when evaluators heard the pitches than when they read transcripts of the same pitches or read the candidates’ written pitches (Schroeder & Epley, 2015). Being able to see the candidates deliver the pitches, which provided visual cues, did not increase evaluations of the candidates’ intellect. This suggests that mental capacities related to perceived humanity may be uniquely conveyed through a person’s voice. In another series of experiments, participants were more likely to infer that a speech was created by a mindful human than by a mindless machine when they heard the speech being read by an actor than when they read the same semantic content, regardless of whether the speech was actually created by a human or by a computer (Schroeder & Epley, 2016). Although these experiments did not measure humanization directly, their results suggest that cues related to humanization may be conveyed through voice.

Another set of experiments (Schroeder, Kardas, & Epley, 2017) demonstrated that the medium of communication may moderate the tendency to dehumanize the opposition. Because another person’s mind cannot be experienced directly, its quality must be inferred from indirect cues. The human voice contains paralinguistic cues that reveal underlying mental processing involved in thinking and feeling. These cues are absent from text-based media, and as a result, individuals from the opposition seem to have more uniquely human capacities when people hear what they have to say than when they read similar content.

In sum, communication is the means by which people express their minds to others—but some forms of communication, those involving speech, express a person’s mind more clearly than those that do not involve speech (e.g., writing). A person’s voice, through its expressive paralinguistic cues such as an intake of breath or a rise in pitch at the end of a sentence, can convey very different signals about the meaning of the words a communicator uses. And in aggregate, listening to a voice is a stronger reminder to observers that a communicator is thoughtful and feeling than reading the communicator’s same words in the written form.

Summary of Part 2 (Reading Minds)

Three types of minds help to illustrate the pitfalls and opportunities inherent in trying to read another person’s mind. Misread minds are those that are misunderstood, whether believing someone to be lying when they are telling the truth, or thinking that a person will vote for one candidate when they plan to vote for another. While it is often difficult to ascertain accuracy, in cases where there are clear standards for comparison, people typically look slightly better than chance in their ability to ascertain others’ inner mental states. To make people more accurate requires putting them directly into the shoes of the other person—whether having them experience the same situation or get the other person’s perspective explicitly (e.g., via an interview).

Misreading another person’s mind can have systematic social implications, because in social engagement it is critical to read your partner to have a successful outcome. People tend to underestimate others’ emotional reactions to their friendly gestures, whether trying to start a conversation or paying someone a compliment, which can lead them to decide not to speak up or offer the compliment in the first place. This underestimation, and the resulting “undersociality,” comes from several sources including misattribution of behavior to attitudes instead of norms, people’s failure to recognize that social interaction is interdependent (with

their behavior guiding the other person's behavior), and people's failure to recognize that others may focus more on their good intention than on the competency of their behavior.

Finally, unlocked minds highlight the opportunity that language, specifically conversation, provides for better mind reading. Certain forms of communication (those that involve speaking to each other via phone, video call, or face-to-face) are better equipped to convey mental states and mental capacities than other forms of communication (those that involve asynchronous or written communication, e.g., email). Asking a person about their perspective, and listening to their verbal response, is one of the best methods of mindreading available to us.

CONCLUSION: AN UNBEARABLY COMPLICATED SOCIAL WORLD

In the opening quotation of this chapter, the protagonist Briony Tallis of Ian McEwan's novel *Atonement* wonders whether everyone else in the world "has thoughts like hers." If the answer is "yes," then the social world, she concludes, would be "unbearably complicated with two billion voices, and everyone's thoughts striving in equal importance and everyone's claim on life as intense." Briony's concern of an unbearably complicated social world stands substantiated by empirical research. The rich inner mental lives of the billions of people are beyond any single individual's capacity to even try to imagine, and present social challenges for coordination and cooperation. But perhaps the complication of living in a world with many minds is better conceptualized not as unbearable but rather as fascinating. Better we live in a world filled with feeling and thinking people, each of whom has a mind capable of connection and kindness, than a world filled with empty shells. The minds that surround us can be sources of confusion and misunderstanding, but so too are they the sources of our dearest relationships and greatest joys in life.

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