framework for over 30 years. In their own particular formulation of the two-mind syndrome, the authors remind us of an important objection to the dual-system approach, which is that there has been no empirical test of the alignment of processes that are described as co-occurring in most dualist typologies. The authors already show in their review of the evidence that the alignment of processing characteristics (e.g., unconscious, uncontrollable, unintentional, inefficient) does not bear out according to a typical dualist account. It is worth noting that if the dual process enthusiasts wanted to mount a defence along the same lines as they have done previously, they could argue that the typology varies by the type of dual-system theory that exists, of which there are many, none of which reduces to a single agreed typology [11]. However, one might wonder how convincing a defence is, that makes a virtue of a failing in coherence across different theoretical variants of the same underpinning theoretical framework.

In any case, what is the outcome of yet another elegant and convincing dismantling of the dual-system typology? Given the diagnosis, it seems that we the psychology community are chronically suffering from two-mind syndrome. This means we still cannot quite face up to the weight of conceptual challenges, and evidence showing that our popular dual-system formulation of the mind is not scientifically warranted. The problem is that being in the grip of this syndrome has an impact on those around us (i.e., public, industry, government). We have a scientific responsibility to communicate the challenges to grand ideas, even if we are not ready to accept them ourselves. An approach of this kind helps to promote healthy scepticism in society [12], while maintaining faith in the institution of scientific progress through discovery, which depends on the push and pull between ideas.

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Forum
Pint-Sized Public Relations: The Development of Reputation Management

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Until recently, many psychologists were skeptical that young children cared about reputation. New evidence suggests that by age five, children begin to understand the broad importance of reputation and to engage in surprisingly sophisticated impression management. These findings prompt exciting new questions about the development of a fundamental social competency.

Most of us intuitively understand the importance of reputation. We know that the way others view us constrains our ability to succeed, and we work hard to present ourselves favorably [1]. We also recognize that reputational incentives tempt others to behave dishonestly, and we tend to dislike braggarts and dishonest self-promoters (e.g., [2]). For psychologists, reputation management and evaluation in adults have long been topics of interest [1,2]. Less attention has been paid, however, to the emergence of reputational cognition in young children. Until recently, many were skeptical that complex reputational behavior could emerge before age nine (e.g., [3]). However, recent developmental studies tell a different story. According to these new findings, children's understanding of reputation expands rapidly at around age five, when children begin to track and manage the impressions they convey and recognize reputational motives and behaviors in others. Here, we review a number of these results, and we discuss how they expand our understanding of reputation management and open important avenues for future research.

Around age five, children begin to recognize that their actions can signal important information about their desirability to potential social partners, and they will vary their behavior based on audience and social context. Indeed, 5-year-old children are consistently more generous when they know they are being observed [4]. Furthermore, they appear to signal selectively, looking to cultivate positive impressions with key individuals in their social groups. In one recent experiment, young children behaved more generously when they were observed by a potential

reciprocator than by someone with whom they would not later interact [5]. In another study, 6-year-old children behaved fairly in the presence of an experimenter, but not when they knew (because of a false belief the experimenter held) that they could behave unfairly but still appear fair [4]. Young children are also motivated to protect and maintain existing positive impressions. Researchers recently told some preschoolers and kindergarteners that they had a good reputation in the eyes of their classmates. When later tempted to cheat, these children were much less likely to than their classmates with no such positive reputation to maintain [6]. Such results suggest that at around age five children are actually relatively adept reputation managers, aware of the social implications of their behavior and prone to signal selectively (Box 1).

In addition to a robust awareness of their own reputations, young children also display a surprisingly sophisticated tendency to track and evaluate the reputations and reputational behaviors of others. At around five years, children begin to anticipate impression management from others, expecting them to disclose successes more readily than failures [7]. They also seem to understand that they can help others by improving others' reputations and will spontaneously offer positive evaluations of classmates to improve these classmates' social standing [8].

By age six, children begin to make negative moral evaluations of individuals who inflict reputational harm [9,10] by falsely taking credit for positive actions (i.e., claiming someone else's good idea or helpful behavior) or by falsely blaming others for negative actions (i.e., blaming someone else for the individual's bad ideas or behavior). However, they more positively evaluate individuals who give away credit for their own good ideas and actions. Young children thus appear to recognize the broader importance of reputation for others and display intuitions about acceptable and unacceptable forms of reputational behavior.

The results above indicate that reputation management skills emerge earlier than previously believed. Still, there is much left to explore. For one thing, what counts as 'true' reputation management remains a key topic of debate. In the adult literature, reputation management, self-presentation, social signaling, and many other terms describe a constellation of phenomena regarding how reputation is constructed and evaluated. However, more precise terminology and a clearer delineation of underlying psychological mechanisms is needed to track how reputational skills develop. One way to achieve more clarity is to consider how reputation management connects to more rudimentary forms of social motivation in even younger children (e.g., [11])

and to investigate when children develop explicit reputational concepts (Box 2). Another is to examine where children may continue to struggle with reputation until later on (see below). Here, we offer a tentative definition of reputation management as cognition or behavior aimed at cultivating desirable impressions. We believe that such behaviors require (i) an awareness of the distinction between the self and others' evaluations and (ii) a motivation to achieve desirable evaluations from others and assess others accurately. Future work can help clarify this definition by connecting the effects reviewed here to underlying mechanisms and by tracking how early reputational behavior becomes the sophisticated reputational toolkit seen in adults. To that end, we offer a few concrete paths forward.

First, it is illustrative to consider where young children succeed and where they continue to struggle with reputation. For example, they do not appear to react negatively to 'harmless' self-promotion in the way that adults do [2,10]. In addition, while they suspect that others will self-promote, young children may struggle to identify social contexts that make dishonest self-promotion more likely. For instance, by age nine, children recognize that private generosity is 'nicer' than public generosity. If anything, younger children have the opposite intuition [12]. Perhaps young children are better at managing their own reputations than identifying such behavior in others, particularly when harm or obvious dishonesty are absent as cues. What can account for this discrepancy? Reputational cognition is straightforwardly connected to the development of mental state reasoning (i.e., theory of mind [3]). Children begin to pass rudimentary explicit false-belief tests around age four, and, unsurprisingly, self-presentation crops up shortly thereafter. But theory of mind continues to grow in complexity beyond this age and more complex social reasoning is

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Box 1. Balancing Reputational Demands

One of the most interesting features of adult reputation management is the sheer variety of traits that adults can signal, from bravery to wealth to nonconformism. Adults can quite deftly tailor their self-presentational behavior to context and audience in order to advance their interests. By contrast, many developmental studies on social signaling have focused on young children's ability to signal just a few traits, like morality and intelligence. Of course, as early as elementary school, children may be incentivized to signal other traits like social dominance or stubbornness, perhaps even at the expense of appearing generous, smart, or moral. Little is known about how children learn to navigate these tradeoffs and less is known about the breadth of signals young children are motivated to send. Understanding how children balance these complex and conflicting social demands represents an important avenue for future research. Do children ever seek to be viewed as morally bad (e.g., to appear dominant)? Do children engage in conspicuous consumption? How does the concept of 'coolness' emerge over development? Investigating such questions and examining the emphasis children place on different social concerns will help expand our understanding of the building blocks and boundaries of early reputational cognition.

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Box 2. What Comes before Age Five?

We have argued that age five represents a key milestone in the development of reputational cognition. However, we do not mean to suggest that reputation-like concepts are entirely absent before this age or that behavior before age five is necessarily disconnected from reputational cognition. Reputation management clearly builds on earlier social motivations. We know, for example, that toddlers are motivated to elicit positive responses from those around them and that non-human animals behave differently in the presence of observers [1,4]. One recent study found that telling 3-year-old children they are smart can increase their likelihood of cheating [11]. Do these behaviors count as evidence of reputation management? How can we delineate reputational behavior from more rudimentary motivations? At least part of the answer will be found by delving into children's strategic social reasoning (e.g., considering target audiences, reasoning about how behavior might be evaluated by others, noting when others are dishonestly self-promoting). Surprisingly, few studies have asked younger children to reason explicitly about social and reputational consequences of behavior. Although we do not believe that all reputational behavior is necessarily consciously strategic, knowing when children are able to capably engage in simple 'reputational reasoning tasks' will prove an insightful step forward.

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clearly required to identify subtler reputational motives and behaviors in others. While children certainly experience important neurobiological changes during this period, we suspect that trying out various self-presentation tactics firsthand and navigating social interactions accelerates children's ability to make inferences about others' reputational behavior. Examining how social and educational context impact how children internalize norms and interpret reputation-relevant behavior from others is an area for future study.

We can also turn to cross-cultural research to help clarify the developmental trajectory of reputation management. Recent studies find that young children across cultures are motivated to cultivate positive reputations [11,12] but also that they absorb culture-specific norms about what traits are prized and what reputational strategies are effective. In a recent study with 7- to 11-year-old Chinese and Canadian children [13], researchers found that both groups were motivated to make a positive impression after performing a good deed in private, but that they deployed different reputational strategies: Chinese children were more likely to actively conceal their good behavior (signaling modesty) while Canadian children were more likely to actively disclose it

(advertising pro-sociality). Indeed, competent reputation management clearly requires recognizing which specific traits are valued in a given social context and the effectively balancing different reputational demands (Box 1). Cross-cultural studies are helping to tease apart universal reputational motives from culture-specific reputational strategies. Importantly, the fact that children across cultures appear to care about reputation suggests that these concerns are unlikely to represent a quirk of an image-conscious Western culture.

Studying children can help clarify and disentangle the psychologies that broadly contribute to reputation management. As developmental researchers continue to uncover surprisingly sophisticated reputational behaviors in young children, they should also focus on delineating the boundaries of these early skills, decomposing them into their constituent mechanisms, and separating reputation management and evaluation from related phenomena. In addition to the approaches offered here, important questions for future research programs remain. Are children explicitly aware of reputation and at what level of complexity? What is the role of self-conscious emotions in guiding and motivating

reputation management? And how do reputational and moral cognition intersect? Such questions have much to contribute to our understanding of a fundamental feature of human social cognition.

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