

Perspective taking in children and adults: Equivalent egocentrism but differential correction

Nicholas Epley,^{a,*} Carey K. Morewedge,^a and Boaz Keysar^b

^a *Department of Psychology, 33 Kirkland Street, Harvard University, Cambridge, MA 02138, USA*

^b *University of Chicago, Chicago, IL USA*

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Abstract

Children generally behave more egocentrically than adults when assessing another's perspective. We argue that this difference does not, however, indicate that adults process information less egocentrically than children, but rather that adults are better able to subsequently correct an initial egocentric interpretation. An experiment tracking participants' eye movements during a referential communication task indicated that children and adults were equally quick to interpret a spoken instruction egocentrically but differed in the speed with which they corrected that interpretation and looked at the intended (i.e., non-egocentric) object. The existing differences in egocentrism between children and adults therefore seems less a product of where people start in their perspective taking process than where they stop, with lingering egocentric biases among adults produced by insufficient correction of an automatic moment of egocentrism. We suggest that this pattern of similarity in automatic, but not controlled, processes may explain between-group differences in a variety of dual-process judgments.

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Successful social interaction often requires an understanding that others may not interpret the world exactly as we do. Differing motivations, expectations, knowledge, or even visual perspective can lead people to interpret the same event very differently, and a failure to recognize these differences can lead to miscommunication and conflict (e.g., Pronin, Puccio, & Ross, 2002). Unfortunately for social functioning, accurate perspective taking is not a skill with which humans are born, but is a skill that must be developed. Before this development, children tend to believe that their perceptions of the world are accurate reflections of its actual properties and that others will therefore perceive the world as they do. Children younger than 4 years of age, for example, do not distinguish between what they know and what others know (Perner, 1991; Wimmer & Perner, 1983), fail to provide enough information to identify referents in ambiguous communication (Deutsch &

Pechmann, 1982; Sonnenschein & Whitehurst, 1984), and rarely distinguish between the way an object appears and its reality (Flavell, 1986).

Clearly these particular egocentric errors are child's play and adults rarely—if ever—commit them. But adults do not appear to outgrow their child-like thinking altogether, as a wide variety of social judgments are still egocentrically biased. Adults, for example, tend to overestimate the extent to which others share their own attitudes and feelings (Krueger & Clement, 1994; Ross, Greene, & House, 1977), believe others have more access to their internal states than others actually do (Gilovich, Savitsky, & Medvec, 1998), use their own knowledge as a guide to others' knowledge (Keysar, 1994), use themselves as a standard when evaluating others (Alicke, 1993; Dunning, Meyerowitz, & Holzberg, 1989) and focus excessively on their own phenomenology or experience when anticipating how they will be evaluated by others (Epley, Savitsky, & Gilovich, 2001; Gilovich, Medvec, & Savitsky, 2000; Kenny & DePaulo, 1993; Savitsky, Epley, & Gilovich, 2001). Although the re-

* Corresponding author.

E-mail address: nepley@gsb.chicago.edu (N. Epley).

search that established these phenomena did not contrast children with adults, it does demonstrate that egocentrism is not merely a passing phase of childhood, but a fact of life.

In this article we seek to explain why egocentric biases in adults are less common than in children—but by no means absent—by comparing the time course of social cognition in children and adults. At least two explanations seem plausible. First, adults may be less egocentric than children because they are less likely to use their own perspective when assessing another's interpretation, and instead rely on an entirely different psychological process for perspective taking. Over time, adults may acquire domain specific theories or prototypes about how other minds work that are applied when adopting another's perspective in much the same way that a person applies a formula when solving math problems (Gopnik & Wellman, 1992; Karniol, 2003). With repeated experience, adults come to learn that their perceptions may differ from others in specific ways. Once those ways are known, they replace theories based on one's own unique perspective. Adults may be less egocentric than children, quite simply, because they tend to apply less egocentric theories when adopting another's perspective (Elkind, 1967; Flavell, 1992; Piaget, 1959).

A second possibility is that adults and children share an automatic egocentric default in perspective taking that adults, over time, become better at correcting when necessary. Adults are less egocentric than children on this account, not because they are less likely to automatically interpret their perceptions egocentrically, but rather because they are better at effortfully correcting that initial interpretation in a subsequent processing stage to accommodate differences between their own perspective and another's perspective. This dual-process account of adult perspective taking suggests that egocentrism isn't outgrown so much as it is overcome each time a person attempts to adopt another's perspective (Nickerson, 1999).

As with other dual-process accounts of human judgment, the automatic default occurs quickly and rapidly whereas the corrective process must be activated by motivation and sustained by attention. As a result, corrections are notoriously incomplete and outcomes consistently biased in the direction of the default or "anchor" (Epley & Gilovich, 2004; Gilbert, 1989; Gilbert & Gill, 2000; Trope & Gaunt, 2000). Egocentric biases are therefore the product of insufficient correction, and the differences in perspective taking between children and adults on this account are a matter of degree, rather than kind.

These two general views of perspective taking make different predictions about the time course of social cognition in children and adults. The theory-driven account suggests that children and adults engage in different mental operations when adopting the perspective

of another, with children applying more egocentric theories than adults. The egocentric-correction account, in contrast, suggests that adults and children do not differ in their initial egocentric interpretation, but in the speed and effectiveness with which they overcome that interpretation. Differences in egocentric biases by this correction account are produced by the subsequent ability to correct or modify an egocentric interpretation, not by differences in the initial tendency to make one.

We tested these different predictions by tracking children and adults' eye movements as they completed a perspective taking task. The task was a referential communication game in which participants were directed by an experimental confederate to move objects around an upright array of boxes (see Fig. 1). The participant and confederate—hereafter, the "director"—were seated on opposite sides of the array and the director's (ostensible) task was to instruct the participant to move objects into a new arrangement provided by the experimenter. Some of the objects were occluded from the director's view by a wooden slat but were still observable to the participant, creating a critical difference in their visual perspective. Any egocentric tendency in interpreting the instructions would be evidenced when participants consider objects that are visible only to them—exactly as participants did in previous experiments (Keysar, Barr, Balin, & Brauner, 2000; Keysar, Lin, & Barr, 2003). The inclusion of children in the current experiment moves beyond previous work by directly investigating the etiology of perspective taking differences in children and adults.

On critical trials, the director referred to an ambiguous object from the participant's perspective. Consider the example in Fig. 1. The participant on this trial can see three trucks, but can also see that the director sitting on the other side can only see two. When the director asks the participant to move the small truck, he can only be referring to the truck that is medium sized from the participant's perspective (second row, far left, from the participant's view). But to the extent that participants are even temporarily egocentric, they should automatically consider the hidden, smaller truck as a referent (middle row, far right, from the participant's view).

To evaluate whether participants initially entertained an egocentric interpretation, we recorded the object they moved. More important, we also measured the speed with which their eyes fixated on either the hidden or the intended object. Eye-fixations provide a unobtrusive method for tracking on-line cognition, and is well accepted as a valid indicator of information processing and attention (Rayner, 1998; Tannenhaus, Magnuson, Dahan, & Chambers, 2000; Tannenhaus, Spivey-Knowlton, Eberhard, & Sedivy, 1996). Eye movements track linguistic processing while reading (Rayner, 1998), reveal interference between languages among bilinguals (Spivey & Marian, 1999), follow the logical causal sequence in

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