

# Beliefs of Children and Adults About Feeling Stares of Unseen Others

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Three studies investigated participants' beliefs about feeling the stares of an unseen other, which was apparently first examined by E. B. Titchener (1898). Results showed that most adults believed they could feel the unseen stares of another. Young children frequently responded similarly, although across age there were some increases in beliefs about feeling unseen stares. Several aspects of participants' theories about feeling stares from an unseen other were also studied. Findings suggested participants believed that in order to feel stares, some cognitive maturity was required, it was important to have seen the starrer, and thinking on the part of the starrer was not important. Participants also believed that stares of animals could be felt. The age trends present a challenge to traditional developmental theories of cognition, which generally assume more rational behavior with advances in age, and they suggest broadening the bases for conceptualizing theories of mind.

This article deals with the development of what appears to be a common belief, namely, that one can feel the stare of another person without seeing the other person looking. The belief about feeling stares is of interest to psychology in general and developmental psychology in particular for a number of reasons. To begin with, it appears to be extremely widespread, powerful, and inherently intuitive, in contrast to beliefs presumed to be more cognitively based, thus raising the issue of the relation between cognition and intuition. In this context, intuition implies spontaneous reactions that are not firmly based on logic or analysis and that are apparently grounded on feelings. Moreover, because virtually all major current theories of development hold that logically based thinking increases with age, the question arises of how the development of intuitively based thought compares with developmental changes in cognition. The belief about feeling the stares of another also relates to theories of mind and cognition, that is, the system of inferences that allows us to impute perceptual and cognitive processes, as well as mental states, to ourselves, and to others (Premack & Woodruff, 1978). Finally, the belief is of interest because it relates to many superstitions about vision and the eye, and it appears to bear striking similarities to formal theories of vision as well. Indeed, our interest in this topic sprang from developmental studies on theories of vision that were based on the beliefs of ancient philosophers. In the following review we will first report on scientific and cultural ideas in the history of the understanding of vision. We will then turn our attention to the literature in psychology that directly deals with feeling stares and then indicate why developmental analyses of this phenomenon are of significance.

Attempts to understand how our eyes function can be roughly divided into two categories, each of which relates to the idea that stares might be felt: formal (i.e., philosophical or scientific enquiries on the nature of vision) and informal beliefs based on personal observation, superstition, and folklore. Scholars (Lindberg, 1976, 1992; Meyering, 1989) have traced the formal type of investigation to ancient thinkers who held two opposing theories of vision. The one known as the intromission theory, championed by Aristotle, is similar to modern theory in that it hypothesized a projection that enters and stimulates the eye. However, a perhaps more pervasive theory among early philosophers was elaborated by a host of other thinkers, including Plato, Ptolemy, Euclid, and the influential Muslim scholar, al-Kindi. In their view, which came to be known as the extramission theory (Lindberg, 1976, 1992; Meyering, 1989), vision involved emissions from the eye. Such emissions might be interpreted as the mechanism through which stares are felt. So prevalent was the extramission theory that it appears to have been held by some scholars until late into the Renaissance (Lindberg, 1976). Although put to rest in scientific circles, the extramission theory of perception appears to be still alive and functional today in many children and even in a surprising number of college students (Cottrell & Winer, 1994).

The second type of understanding of vision, that involving folklore and superstition, comprises a number of beliefs also consistent with the idea that there might be projections from the eye that could be felt. For instance, a number of ancient thinkers held that the eye could bewitch or kill those who were the object of its gaze. According to the Roman scholar, Pliny the Elder (Gaius Plinius Secundus, 23/24–79 CE), who was regarded as a scientific authority for many centuries, there were tribes of people and certain animals (e.g., wolves, hyenas, and goats) who were endowed with powers of the evil eye (see Pliny, 1940). Gifford (1958), Elworthy (1895/1989), Dundes (1981/1992), and Waterman (1929) have documented throughout much of history and across many cultures the pervasive belief in the power of the eye to cast evil.

Beliefs about the projective powers of the eye also appear in literature. Many writers have recognized, for example, that emotions can be communicated through the eye. A long line of treatises on the transmission of love through emissions from the

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eyes began with Petrarch in the Italian Renaissance and lasted throughout the 16th century. The Petrarchan notion is, simply stated, that a fine substance of some type enters the eyes of the lover from the eyes of the Beloved and travels immediately into the heart (see Sonnet 3, Lind, 1954, p. 186, for a good example of this notion). Throughout the next two centuries, Petrarch's followers debated the physical, physiological, and psychological manner of "innamoramento," as Petrarch called it. Castiglione (1528/1959), for example, wrote of "vital spirits" in the form of rays generated near the heart that are emitted from the eyes and enter into the eyes of another. A kind of consensus later developed around the notion that love was transmitted in some form of refined blood, mingled with emanations from the eyes, as was described in the French poetry of Louise Labé (see Labé, 1555/1986, p. 92; for a review of the eye topos in Romance literature, see Donaldson-Evans, 1980). These writings do not deal with feeling stares *per se*. But they are consistent with feeling stares, and they portray a mechanism through which such feelings could occur.

Our current language also provides evidence consistent with the belief that people can feel the looks or stares of another. Several English expressions and metaphors make reference to cutting, penetrating, searching, probing, and even withering and killing powers of the eyes. These colorful images seem to point to a shared belief in some kind of emanations from the eyes.

Modern psychologists have not ignored gaze and its impact on emotions and interpersonal relations (for reviews of some of the literature on gaze, see Cappella, 1981; Edinger & Patterson, 1983; Kleinke, 1986; see also Argyle & Cook, 1976, and Cook, 1977, for older reviews). However, research on "feeling" the stares of others has been sparse. In 1898 Titchener discussed the firm persuasion he consistently found among students in his classes that they could "'feel' when they were being stared at from behind" and even that "by persistent gazing at the back of the neck, they have the power of making a person seated in front of them turn round and look at them in the face . . . [a result of] the direct effect of the focussing of vision upon the back of the head and neck" (p. 895). Although he mentioned that he conducted a series of laboratory experiments on whether people could feel the stare of another or make another person turn around by staring—all with negative results—Titchener did not provide more explicit information on his experiments.

In a follow-up study to Titchener's (1898) report, Coover (1913) found that 68% of 169 psychology students answering a questionnaire reported having had the feeling of being stared at, and in another class 86% admitted to similar experiences. Having established the generality of the "feeling," Coover tested Titchener's report that participants could not in fact experience such stares. He gave 10 normal participants, who had confidence in their ability, 100 trials each to guess whether they were being stared at or not and asked them to introspect about their inferences. Coover found his participants' performance to be no better than chance (50.2% correct guesses overall), thus supporting Titchener's report. (Pilot studies in our laboratory replicated Coover's findings.) Introspections from Coover's 10 participants about the nature of their feeling included reference to kinesthetic imagery (e.g., feeling sensations and visual imagery). In a few instances participants thought they could hear the experimenter, which Coover claimed was possible given the experimental procedures.

Writing on the evil eye, Gifford (1958) drew a parallel between beliefs about the evil eye and beliefs about feeling the stares of another. Moreover, he mentioned (but failed to reference) a study in which 72% of male and 84% of female Stanford University students claimed they could feel the stares of another. He further reported that there were essentially chance results on 1,000 tests of the accuracy of a person feeling the stares of another. Cook (1977) described similar findings, again without citing a reference, although from the description of the data it is possible that Gifford and Cook were referring to Coover's 1913 research.

There appears to be practically no developmental research on children's beliefs about feeling the stares of others. In the context of extramission theories of perception, Piaget (1929, p. 48) made passing reference to statements suggesting that children believed their looks mixed when they met.

Despite the lack of attention to children's beliefs about their ability to sense the stares of others, there is ample reason to pursue developmental analyses. To begin with, developmental information can enrich our understanding of children's theories of psychological properties of humans (and, as we will see, non-humans as well), which might generally be subsumed under the topic of theory of mind. To the extent that children believe that they and others can feel the stares of another, they demonstrate an awareness of both receptive and projective powers of perception. What is particularly interesting is that such attributions are invalid, because there are in fact no known<sup>1</sup> emanations from the eye. Thus research on beliefs about projective powers of the eye relates to a topic that has not, to our knowledge, received attention in developmental literature, namely, the ontogenesis of intuitively based beliefs that are not formally part of our culture (such as religious beliefs are) but that might loom large in the lives of many people.

Analyses of age changes in such beliefs may provide significant information about their origins and about their relation to advancing reason. Consider two possibilities: the first, that the belief in the ability to feel stares declines across age; the second, that it increases. A decrease over age in beliefs about felt stares would suggest that they might be linked to extramission beliefs in perception, because the frequency of extramission beliefs declines with age (see Cottrell & Winer, 1994). Conceptually the two types of belief are related in that both seem to involve emissions, but are they psychologically related? That is, do people see a connection between the two? Such an age trend would also be consistent with the hypothesis that superstitions decline with increasing reason. However, we should point out that Titchener's (1898) and Coover's (1913) research, which found so many adults believing in the ability to feel stares, makes it unlikely that these beliefs decline sharply across age.

Now consider the alternative, namely, that the belief in felt stares increases with age. Such an age change would be interesting in its own right, because it might suggest that with increasing age, and presumably increasing reason, there is an increas-

<sup>1</sup> One professor at our institution accused one of the authors of this article of being closed minded for assuming that there are no emanations from the eye. However, Coover (1913) reported no evidence of the ability of adults to feel stares of unseen others, and in pilot work we have replicated this effect.

ing belief in a superstitious notion or a reliance on intuition—which might be at the heart of this phenomenon. Within recent years students of cognition have recognized that much of adult thought is not rational (e.g., Arkes, 1991; Epstein, 1994; Gilovich, 1991; Stanovich, 1994; Tversky & Kahneman, 1974). In fact, Epstein (1994) has argued for an intuitive experiential mode of knowing, which he pits against a rational system, and Stanovich uses the term *dysrationalia* to describe illogical and superstitious behaviors of adults who otherwise possess advanced logical capabilities. It would seem to be important to track developmental changes in such illogical modes of thought to examine, at least implicitly, their relation to improvements in reasoning that develops with age.

But the tendency for beliefs in felt stares to increase with age might also point to mechanisms through which such beliefs arise. Thus, as children mature they should more frequently experience linguistic expressions with metaphorical reference to ocular projections (or at least be more frequently aware of such expressions), and these experiences might contribute to increased beliefs in feeling stares. Advances in age might also be associated with an increasing number of experiences in which beliefs about feeling stares are reinforced. During an experience of feeling that one is being stared at, for example, one might turn and occasionally verify the feeling by actually finding a person looking. Such validation of one's beliefs would be subjected to a partial reinforcement effect and thus presumably be very resistant to extinction. Also contributing to either of these potential means of acquiring beliefs about feeling stares might be developmental changes in cognition. Thus cognitive maturity should be associated with an increasing ability to appreciate metaphors relating to vision, and increasing social cognition should make people more sensitive to the thoughts and concerns of others. Although this study will not analyze the impact of such experiential or social processes, the age data it provides might at least suggest their importance.

This article reports on three studies in detail and summarizes a fourth (follow-up) investigation. In the first study we used a brief group-administered, paper-and-pencil test to measure the extent and strength of sixth graders' and college students' beliefs about feeling the stares of others. This initial investigation was designed to replicate the Titchener (1898) and Coover (1913) findings on adults, as well as to extend their work so as to compare adults and children. In the remaining investigations we determined beliefs about feeling stares in reference to a number of situations that might conceivably affect one's experiencing the unseen looks of another person. These studies allowed us to define more specifically the nature of our participants' beliefs or theory about experiencing such visual projections, that is, to isolate variables that participants thought might affect or be associated with the ability to feel stares or to project felt stares.

### Study 1

The first study represented an initial attempt to determine whether children and adults share similar beliefs about feeling the stares of another. This study was also originally part of a larger investigation (Cottrell & Winer, 1994)<sup>2</sup> designed to compare age data on the "feeling stares" questions with data on children's explicit beliefs about extramissions of rays or the like

during the act of visual perception; it is conceivable that the belief in feeling stares represents a corresponding belief in a type of visual emission.

### Method

**Participants.** Participants were 68 sixth graders, 33 boys and 35 girls (mean age = 11.9 years,  $SD = 6.3$  months) from an upper-middle-class school district, and 67 college students, 30 men and 37 women (mean age = 25.8 years,  $SD = 8.7$  years) in an advanced undergraduate course on the psychology of childhood, at a major state university.

**Procedure.** A paper-and-pencil questionnaire was handed out during class time. It consisted of two main questions designed to test implicit extramission beliefs on feeling the stares of another and one request for explanations. The main questions were (a) "Do you ever feel that someone is staring at you, without actually seeing them look at you? For example, in class, on a bus, in a restaurant, etcetera?" with the following options offered to the participants "often," "sometimes," "rarely," and "never"; (b) "Do you think that other people can feel (without seeing) when someone is looking at them?" with the choices, "yes," "maybe," "probably not," and "never." Use of the different series of response options was based on our desire to maximize responses in the paper-and-pencil format by giving participants the most meaningful choices for each item. Because prior research has shown that most adults believe they can feel stares of others, the choices offered permitted them to indicate how frequently they experienced this effect. We were less sure of their beliefs about other people, so the options offered for the second question were designed to determine whether participants believed in the effect. Also, the first question was accompanied by the following prompt, with blank spaces provided for a written response: "If you had such a feeling, explain how you got it; why you had it."

Two additional questions were presented to elicit information about explicit visual perception beliefs. These two items asked whether participants thought that looking at something or someone was accompanied by rays or energy going (a) into the eyes or (b) out of the eyes: "When people look at something or someone, do you think rays or energy or something else enters (goes out of) their eyes?" The order of these intramission-extramission questions and the items asking about feeling stares was systematically varied.

### Results and Discussion

Table 1 presents the frequencies of responses to the item asking "Do you ever feel that someone is staring at you without actually seeing them look at you?" The results show first that participants avoided the extremes of "often" and "never," responding instead with "sometimes" and "rarely." Thus almost all participants (approximately 92%) at both grade levels answered affirmatively, indicating they had experienced feeling the stares of another. Notice, there were no grade differences in the overall analysis of the frequencies in Table 1. However, there was a shift between grades among participants responding "sometimes" and "rarely" with more adults answering "sometimes." A chi-square analysis comparing the frequencies of participants giving "rarely" versus "sometimes" responses across grades revealed a significant grade effect,  $\chi^2(1, N = 134) = 3.94, p < .05$ . An additional analysis showed no sex effects.

Many participants did not respond to the question asking

<sup>2</sup> Because the sex of the original college sample was uneven in Study 1 of the Cottrell and Winer (1994) investigation, additional children and adults were added to this study's sample.

**Table 1**  
*Frequencies of Response to Item Asking "Do You Ever Feel That Someone Is Staring at You Without Actually Seeing Them Look at You?" in Study 1*

Grade	Response type							
	Never		Rarely		Sometimes		Often	
	n	%	n	%	n	%	n	%
6	4	6	23	34	36	53	5	7
College	7	11	12	18	43	65	4	6

Note.  $\chi^2(3, N = 135) = 4.98, p < .2$ .

them to describe how and why they got the feeling of being stared at, or they responded that they did not know. Several adults simply repeated the idea that they experienced a "feeling." Some adults specifically described the feeling as involving physical reactions, such as "hairs on the back of the neck standing up," or "shivers through your body." Interestingly, compared with adults, children more often related actual incidents in which they felt the stares rather than describing the nature of their experiences.

Table 2 presents frequencies of responses to the item asking whether others can feel the stares of an unseen person. The results of this analysis show that most participants responded "maybe" or "yes," avoiding even the "probably not" choice. Thus there seems to be evidence that people believe that they and others can feel the stares of unseen lookers. Results of explanations generally confirmed the ability of many participants to feel stares among those answering the question. Additional analyses showed no sex effects.

It is interesting to compare responses to the questions on feeling stares with responses to questions asking whether rays or the like go into the eyes or out of the eyes during the act of vision. Results on the extramission items showed an unmistakable decline in extramission beliefs across grades: 51% of the children rejected extramission versus 84% of the adults,  $\chi^2(1, N = 138) = 18.14, p < .001$ . Thus, there was no parallel in the developmental trends shown on questions asking about extramissions during vision and items asking about feeling stares. A specific test of the impact of the initial appearance of one type of question on responses to a question of the second type also showed no evidence of a relation between responses to each type of item. Finally, the correlations between participants' beliefs that they or others could feel stares and beliefs in emissions from the eyes during vision were not significant ( $r_s < -.16$ ).

In summary, the results of the initial study showed evidence of experiencing the stares of another person by the sixth grade and of attributing the same experiences to others. There was also some evidence of a strengthening of such experiences through adulthood, although the responses of the children and adults were very similar. Finally, the belief in one's ability to feel stares was not related to beliefs about extramissions from the eye during the act of perception.

### Study 2

Because virtually all participants in Study 1 indicated some possibility of feeling the stares of others and attributed the same expe-

riences to other people, Study 2 was designed to investigate the theories participants have about receiving and projecting stares and how these theories might change as a function of development. That is, we examined how children's and adults' beliefs about feeling stares change as a function of information about variables that might be associated with the ability to feel stares.

In one series of comparisons we were interested in beliefs about how different degrees or types of interference between a viewer and the receiver of stares might affect one's experiencing the gaze of another. Would participants be as likely to assume people could feel the stares of another when the other was looking through something that impeded or interfered with the transmission of light rays, such as a curtain or a mirror? Evidence of such occlusion effects would be important in linking beliefs about felt stares to more formal notions of extramission during perception. For example, if participants believe that occlusion hinders the experience of felt stares, then at least they are implicitly suggesting some medium passing from the starrer to the viewer that is being interrupted by the occlusion. However, included among the occlusion items was a single question making reference to a peephole, which, although preventing the recipient of stares from viewing the starrer, does not impede the starrer's looks. This item served as a control to determine whether responses to the occlusion items were reflecting beliefs about occlusion as opposed to beliefs about the effects of not being able to see the starrer.

In another series of questions, we pitted beliefs about staring against those about thinking. In other words, would participants believe that they could feel the gaze of another person if that other person were staring at, but not thinking about, the participant? Conversely, would participants believe that they could feel a person thinking about but not staring at them? If participants failed to respond differently to these items, they might well be treating the phenomenon of feeling stares as something akin to a belief in extrasensory perception. We also wanted to determine how participants' beliefs varied as a function of reference to cognitive and physical states such as sleeping and having one's eyes closed.

Third, we wondered if information about the genetic and comparative status of the recipient or starrer was important, so we compared responses to questions involving a baby, a child, and an animal. Comparing the age or type of starrer or recipient can provide information about the participant's theory of the

**Table 2**  
*Frequencies of Response to Item Asking "Do You Think That Other People Can Feel (Without Seeing) When Someone Is Looking at Them?" in Study 1*

Grade	Response type							
	No		Probably not		Maybe		Yes	
	n	%	n	%	n	%	n	%
6	2	3	4	6	35	51	27	39
College	3	5	5	7	29	43	30	45

Note.  $\chi^2(3, N = 135) = 1.02, p < .8$ .

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cognitive requisites of feeling the stares of others. For instance, if a baby is thought to be less able to register the stares of others than, say, an adult, then it would appear that participants believe that a certain level of maturity, presumably representing cognitive development, is necessary to feel stares (see Premack & Woodruff, 1978). Reference to animals taps beliefs about whether the qualities necessary for "successfully" projecting and feeling stares are strictly human. In fact, the power of the eyes of certain animals is one of the branches of persistent extramission beliefs in ancient world writings (e.g., Pliny, 1940) that retained the reputation of scientific authority throughout the Middle Ages and Renaissance (Gifford, 1958). It was also, for some, the core of the extramission theory of perception. Leonardo da Vinci (Ackerman, 1978), for example, wrote that the projection of rays out of the eyes was responsible for the ability of animals to see in the dark, although in his later writings Leonardo became an intromissionist.

### Method

**Participants.** Seventy-six sixth graders, 32 boys and 44 girls (mean age = 11.8 years,  $SD = 4.0$  months) from an upper-middle-class school district, and 115 college students, 40 men and 75 women (mean age = 24.8 years,  $SD = 7.5$  years) in an upper level undergraduate psychology course at a major state university, participated in the study.

**Procedure.** Participants were presented with a 16-item questionnaire during class time. Two items were identical to the two main feeling-the-eyes-of-others questions in Study 1. One asked participants whether they had ever experienced someone staring at them, giving examples of on a bus, in a restaurant, and so on. Responses to this item were not included in the analyses comparing various types of questions, because the form of the response choices offered for this question (often, sometimes, rarely, and never) was different from that used on the other items. Responses to this item were instead used as a means of comparing the results of the two studies.

The second question asked participants about other people, namely, "Do you think that other people can feel (without seeing) when someone is looking at them?" This item and all of the remaining items (except for the first) had response choices of "yes," "maybe," "probably not," and "never." In various analyses, the item on other people often served as a control question for the remaining questions.

Five items asked about feeling the looks or stares of another through varying types or degrees of occlusion, including the single control item involving the peephole: window, sheer or transparent curtain, peephole, one-way mirror, and a screen that dropped between the starrer and the recipient. Some examples follow: "Could you feel it if someone stared at you through a one-way mirror?" "If someone were looking at you and a screen suddenly dropped between you and that person, would you be able to feel it if he or she continued to look where you were?" "Could you feel someone staring at you through a peephole?"

Another set of four items inquired about feeling the eyes of another when one is in different physical and cognitive states—eyes closed, asleep, thinking of but not looking at another, staring at another but thinking of something else: "When you stare at someone whose eyes are closed, do you think he or she can feel it?" "Do you think that a person who is asleep can be awakened by someone staring at him or her?" "If a person is in a room with you and thinking about you but not looking at you, could you feel it?" and "If a person is staring at you but thinking of something else, would you be able to feel him or her staring at you?"

An additional set of four items asked participants about the ability of people of different ages and the ability of animals to feel or project stares: small children, babies, and a dog or cat. Examples are "Do you think small children (babies) can feel when people are staring at them?"

"Can you feel when an animal like a dog or cat is staring at you?" and "Do you think an animal like a dog or cat could feel you staring at it?"

Finally, we had a single extramission-type question that asked participants whether they thought they could feel something coming out of the eye when someone was looking at them: "When you feel a person looking at you do you think rays, energy, or something goes out of his or her eyes?" This question was different from the items used in Study 1 and those used by Cottrell and Winer (1994) insofar as the extramission-type question in the present study was explicitly linked to feeling the stares of others, whereas the extramission questions in the other research asked only about the act of looking and made no reference to feeling stares.

Four orders of questions were used, including a complete reversal of the questions in one set and various positions of the single question asking about emissions. Order, however, had no effect.

### Results and Discussion

In the main analyses, comparing responses to the various questions, a score of 3 was assigned to *yes*, 2 to *maybe*, 1 to *probably not*, and 0 to *no*. Separate repeated-measures analyses of variance (ANOVAs) were used on different sets of items.

**Occlusion.** A 2 (sex)  $\times$  2 (grades, 6 and college)  $\times$  5 (type of occlusion) repeated-measures ANOVA was conducted with the repeated measures on the five questions presumed to measure different types of occlusion: curtain, peephole, window, one-way mirror, and dropped screen.

An overall occlusion effect in the main analysis,  $F(4, 697) = 25.62, p < .0001$ , was highly significant. The order of the means, from lowest to highest, with higher means indicating increased feeling of stares, was as follows: one-way mirror ( $M = 1.37$ ), dropped screen ( $M = 1.46$ ), peephole ( $M = 1.54$ ), sheer or transparent curtain ( $M = 1.8$ ), window ( $M = 2.06$ ). An analysis of the means revealed that there was no difference among the mirror, screen, and peephole items, but significant differences between each of them and the scores for window and curtain. The item asking about the window received significantly higher scores than all of the others.

At first blush, the data seem to support the hypothesis that participants believed occlusions hinder possible emissions from the eyes. For example, the fact that the window item received higher scores than the item referring to the sheer or transparent curtain suggests that something that interferes with emissions from the eye might impede the feeling of stares. The other significant differences might suggest the same conclusion. However, consider that a peephole does not interfere with the passage of light or any emanations from the starrer's eyes. It does, though, prevent the recipient of stares from being able to see the starrer. Thus the lower scores on the one-way mirror, dropped screen, and peephole items than for the window and sheer or transparent curtain questions probably represent the participant's belief that being unable, at some point, to see the person who is staring will diminish the ability to feel the starrer's looks. In fact even the difference between the answers to the window and the sheer or transparent curtain questions might represent a distinction in the relative ease or difficulty of being able to see a person looking. This analysis is admittedly speculative, and there are alternative interpretations. For example, perhaps feeling responses to the peephole were lower because a peephole is a hole for just one eye.

The ANOVA also revealed an effect for grade,  $F(1, 175) = 9.48, p < .01$ , with elementary school students obtaining higher scores ( $M = 1.8$ ) than college students ( $M = 1.5$ ), indicating that for the occlusion items children were more inclined than adults to believe in the feeling of stares. This grade effect deserves special comment. In the course of our studies we have not always obtained an effect for grade because even among the younger students there are beliefs about feeling stares of unseen others. When grade or age effects occurred, however, they were consistently in the opposite direction of the one obtained when analyzing responses to the occlusion items, that is, more rather than less evidence of feeling stares among older, as compared with younger, participants. One explanation for the apparent reversal of this age trend on the occlusion items is the possibility that adults, in comparison with children, more generally believed that occlusion or inability to see the starrer hinders the ability to feel stares. If such were the case, then we would expect no age trend on items that did not involve occlusion, and if such items were added to the analysis of the occlusion items, evidence of an Age  $\times$  Condition interaction in which there would be no age change on the nonocclusion items but one on the occlusion questions. This analysis was conducted, and the results supported the aforementioned interpretation.

*Physical-cognitive state.* In this analysis we were concerned with comparing questions that made reference to different physical or mental states of either the projector or the recipient of a gaze. We were particularly interested in comparing participants' beliefs concerning thinking about, but not viewing, another person with viewing, but not thinking about, the other person. Additional questions asked whether a person asleep or with closed eyes could feel stares. Responses to these questions were compared with answers to a single control item that asked whether others could feel the stare of a person looking at them. All the aforementioned questions were designated as variations of physical-cognitive state, and responses to them were analyzed in a repeated-measures design. Other variables in the ANOVA included the between-subjects variables of grade and sex.

A 2 (grade)  $\times$  2 (sex)  $\times$  5 (physical-cognitive state) repeated-measures ANOVA revealed an effect for physical-cognitive state,  $F(4, 700) = 51.43, p < .001$ . An analysis of the means revealed that the lowest score (indicating less belief in feeling stares), which was significantly different from all others, occurred for the question in which the person was thinking about but not viewing the other ( $M = .99$ ). The highest score, which was also significantly different from all others, occurred when we asked a general question about whether other people could feel stares (the control item), in which no state was imputed ( $M = 2.2$ ). Finally, the three other questions yielded scores significantly different from the extremes but not from each other (staring-no thinking,  $M = 1.79$ ; receiver's eyes closed,  $M = 1.65$ ; sleeping receiver,  $M = 1.59$ ).

It is clear that reference to different mental and physical states affected participants' beliefs about feeling stares or thoughts. One important finding is that participants appeared to believe that a starrer's thinking about the person viewed was not necessary in order to experience the unseen gaze of another. This conclusion is based on the fact that there were lower scores on the thinking-but-not-looking item than on the looking-but-not-thinking question, a finding that suggests that the participants

differentiated the phenomenon of felt stares from something akin to extrasensory perception. Nevertheless, we might infer that some role was attributed to thinking because the looking-without-thinking question, an item that explicitly excluded thinking, received a lower score than the single item in which no mention was made about the state of the other and which by implication allowed for thinking.

Interestingly, there was no effect for grade, and there were no significant interactions. However, there was an effect for sex,  $F(1, 177) = 11.08, p < .01$ , with female participants scoring significantly higher ( $M = 1.82$ ) than male participants ( $M = 1.47$ ); that is, female participants indicated a stronger tendency to believe in felt stares than did male participants. This sex effect, which occurred in only one other analysis, reported here later, is difficult to explain, as are many sex effects. However, there are a few intriguing possibilities. The stronger tendency for female versus male participants to believe in felt stares might be a function of the tendency of girls and women to be more able than boys and men to decode facial and other nonverbal body cues (Hall, 1978) or to be more inclined to gaze. Argyle and Cook (1976, p. 147) have stated, in fact, that "Females look more than males, on all measures of gaze." They consider, among other possibilities, that there might be a biological predisposition for girls and women to be more attentive to gaze. Staring might also have threatening or even sexual implications that might be more meaningful for female than male individuals. It would be interesting to vary other details about the staring situation to tease out this effect. We might thus compare a man staring at a woman (and the reverse) on a bus, or in a social situation, to other, presumably less highly charged, interactive settings.

*Referent.* In this analysis the main concern was whether different referents, namely, children and babies, and animals such as dogs or cats (described as receiving stares of an unseen other or as staring at another), versus a general other, might influence the participants' belief in felt stares. A 2 (grade)  $\times$  2 (sex)  $\times$  5 (referent) repeated-measures ANOVA showed a significant effect for referent,  $F(4, 706) = 23.7, p < .001$ . Analysis of the means revealed that the two lowest scores, which did not significantly differ from each other, came from questions asking about babies feeling the stares of people ( $M = 1.54$ ) and people feeling the stares of animals ( $M = 1.58$ ). A significantly higher set of scores occurred for two items asking, respectively, about children ( $M = 1.95$ ) and animals such as dogs and cats ( $M = 1.93$ ) feeling the stares of people. Once again the highest score occurred on the item asking about the general other feeling stares ( $M = 2.2$ ).

As was the case for physical-cognitive state, there was no effect for grade but a significant effect for sex,  $F(1, 177) = 4.44, p < .05$ , with female participants ( $M = 1.95$ ) demonstrating a stronger belief than male participants ( $M = 1.72$ ) in the ability to experience stares. No interactions were significant.

*Comparisons between like staring items in Studies 1 and 2.* Recall that the first and second items from Studies 1 and 2 were identical. A comparison of the results of the first item of the two studies showed that responses to this item were similar (cf. Tables 1 and 3). Another identical item asking whether participants thought others could feel stares also produced similar response patterns in both studies (cf. Tables 2 and 4).

*Analysis of responses to the single extramission-type question.* Responses to the single extramission-type question ("When you feel a person looking at you, do you think rays, energy, or something goes out of his or her eyes?") were scored like the other items, with a 3 indicating *yes* and a 0 indicating *no*. A 2 (sex)  $\times$  2 (grade) ANOVA on the scores indicated that the only significant effect was for grade,  $F(1, 174) = 12.13, p < .001$ , with college students having lower scores ( $M = .7$ ), indicating a weaker belief in extramission, than sixth graders ( $M = 1.2$ ). Correlational analyses also indicated that responses to the extramission question were often significantly related to responses to many of the other questions. The correlations were generally from .2 to .29 (e.g.,  $r_s = .29$  and  $.21, p_s < .0002$ , with participant and others feeling stares, respectively).

In summary, there was evidence that the belief about feeling gazes was influenced by a number of variables. Analysis of the occlusion variable suggested that occlusion per se was not a significant factor. Instead, it appeared as if the possibility of seeing the person who was the source of a gaze was necessary for feeling that person's stares. Reference to physical-cognitive state also had an effect. The question that produced the highest scores for feeling stares made no reference to thinking but referred specifically to looking. The items yielding the next highest scores included reference to some physical or cognitive state that might impede the feeling of stares, such as absence of thinking by the starrer, describing the receiver of stares as sleeping, or having closed eyes. A critical finding was that participants reported the least likelihood of feeling something when the viewer was thinking about them but not looking at them. Thus, thinking about someone without looking at that person was not seen as an important contributor to the type of effect we are studying. It appears likely, then, that participants did not confuse the phenomenon of feeling stares with something like extrasensory perception.

There was also an effect for the referent of the question, with babies and animals ranking lowest on the list of those who can feel stares or whose stares have an impact on others. These results suggest that participants believed that some cognitive maturity or sophistication is necessary for feeling stares or projecting a gaze that can be felt. A comparison between items referring to small children and others supported the same conclusion.

Finally, there was a decline over grades in the belief about extramission, similar to the decline noticed in other studies (see Cottrell & Winer, 1994; Study 1). There was also, however, a correla-

Table 3  
*Frequencies of Response to Item Asking "Do You Ever Feel That Someone Is Staring at You Without Actually Seeing Them Look at You?" in Study 2*

Grade	Response type							
	Never		Rarely		Sometimes		Often	
	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%
6	2	3	21	28	42	56	10	13
College	4	3.5	26	23	73	63.5	12	10

Note.  $\chi^2(3, N = 190) = 1.38, p > .7$ .

Table 4  
*Frequencies of Response to Item Asking "Do You Think That Other People Can Feel (Without Seeing) When Someone Is Looking at Them?" in Study 2*

Grade	Response type							
	No		Probably not		Maybe		Yes	
	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%
6	2	2.5	8	8	36	48.5	28	38
College	9	8	9	8	44	38	53	46

Note.  $\chi^2(3, N = 189) = 4.34, p < .23$ .

tion between responses to the extramission-type item and questions on feeling stares. Our other research has consistently failed to show such a correlation, but the extramission question in this study clearly referred to feeling stares, whereas those in our other studies referred to looking or seeing. In other words, general extramission beliefs about the process of vision were unrelated to beliefs about feeling stares. But when questions were asked about extramission during the act of feeling stares, some participants believed that extramission might be involved.

### Study 3

Studies 1 and 2 had several possible limitations. To begin with, neither study included face-to-face interviews with participants. Furthermore, our youngest sample in each study consisted of sixth graders, raising the question of how younger children would respond to questions on feeling stares. Do young children, for example, also believe they can experience someone staring at them, and do they think other people might have had the same kind of experience? And what do they believe about the abilities of animals to project and feel gazes? Finally, the question format might also have had limitations. As will be recalled, participants tended to avoid extreme answers when asked for ratings. In the present study, participants were required to give categorical yes or no responses to the main questions. This format permitted a clearer separation between those who believed and those who did not believe in the phenomenon of feeling stares.

### Method

*Participants.* The sample consisted of 41 first graders, 21 boys and 20 girls, (mean age = 7 years, 4 months,  $SD = 5.8$  months); 40 third graders, 18 boys and 22 girls (mean age = 9 years, 4 months,  $SD = 7.0$  months); 49 fifth graders, 26 boys and 23 girls (mean age = 11 years, 6 months,  $SD = 6.6$  months), and 58 college students, 32 men and 26 women (mean age = 19 years, 9 months,  $SD = 1.8$  years). The children were mainly White, from working-class families, and were attending a school located in a suburb of a city in the Midwest. College student participants were attending a state university in the Midwest and participated in the experiment as a course requirement.

*Procedure and measures.* Four sets of questions were administered verbally to participants in one-on-one interviews. An initial set of five warm-up questions on seeing, hearing, and smelling that had obviously correct answers was presented to all participants at the outset (e.g., "Do

you touch with your fingers [smell with your nose]?"). Two of these items were worded to produce a negative response (e.g., "Do you hear with your eyes?") in order to help offset tendencies toward automatic acquiescence. Because virtually all participants answered these questions correctly, responses to them will not be reported.

A set of four questions asked whether participants had ever experienced others staring at them. One item asked, "Do you ever feel that someone is staring at you, without actually seeing them [the improper grammar was intentional] look at you, for example, in a class or on a bus or in a restaurant?" A second question asked about other people, "Do you think other people can feel it without seeing, when someone is looking at them or that they can't?" There were also two questions on animals: "Can you feel it when an animal like a dog or a cat is staring at you if you aren't looking at it?" and "Do you think an animal like a dog or cat could feel you staring at it without seeing your eyes or that it couldn't?"

Also included was an extensive set of direct intromission-extramission questions, presented in various orders with the feeling-stares items. (Because of these items we were able to ask a total of only four questions on feeling stares.) Analyses showed no effects due to order, though, and no correlation between responses to the two types of questions. (For the results on the intromission-extramission items, see Cottrell & Winer, 1994).

Finally, two other questions designed to be set-breakers (asking whether participants could see well in the dark and whether they could see through a solid brick wall) were included in the two sets of main questions. It is important to note that all questions asked for categorical yes or no responses, unlike the items of the preceding studies, which asked for ratings.

**Results and Discussion**

Table 5 shows frequencies of correct and incorrect responses to self-other and animal questions. A chi-square analysis revealed significant grade differences in responses to questions asking (a) whether participants ever felt staring and (b) whether they thought others felt staring, with a clear developmental trend for both questions in the direction of increased experience of feeling the stares of others, across increases in grade level. On

the question asking participants whether they felt the stares of others, there were significant differences between college students and participants in each of the other grades, with more college students than children expressing a belief in feeling stares. On the question asking whether others could feel stares, follow-up analyses indicated a slightly different age trend. In this instance, the combined results of the first and third graders differed significantly from the combined results of college students and fifth graders,  $\chi^2(1, N = 188) = 28.42, p < .001$ .

The same age trend did not occur on the questions asking about animals. There was a significant grade effect on the question asking whether animals could feel stares, but it was attributable to the fifth graders, who more frequently than participants in other grades affirmed that animals could feel the stares of humans.

Table 5 also shows that participants seemed to believe that humans are more capable than animals of experiencing felt stares. Thus, by and large, participants believed they could feel a human stare more frequently than an animal stare, and they more frequently believed that other people, as compared with an animal, could feel them staring. These conclusions were supported by chi-square analyses in which responses to the two types of question, human and animal, were cross-tabulated (e.g., feel on human question and on animal vs. feel on human but not on animal items).

In Table 6 we cross-tabulated feeling and no-feeling responses on the item asking about the self with similar responses on the item asking about other people. Examination of this table suggests that younger participants believed that they could feel another person's stare more frequently than the other person could feel their stare, whereas responses of older participants to each of these items were very similar. For example, approximately 32% of first graders and third graders said they had felt the stares of another but did not believe that other people had similar experiences. This finding most likely represents a type of egocentrism in which there is a centration on the self as opposed to

**Table 5**  
*Frequency of Responses to the Items on Feeling the Eyes of Other People and Animals, by Grade, in Study 3*

Grade	Item							
	I feel the stare of other people <sup>a</sup>		Other people can feel staring <sup>b</sup>		I can feel an animal stare <sup>c</sup>		An animal can feel me stare <sup>d</sup>	
	Yes	No	Yes	No	Yes	No	Yes	No
1								
<i>n</i>	28	13	20	21	15	25	14	27
%	68	32	51	49	37.5	62.5	34	66
3								
<i>n</i>	30	10	24	16	15	25	19	21
%	75	25	60	40	37.5	62.5	47.5	52.5
5								
<i>n</i>	39	10	41	8	22	26	36	12
%	79.5	20.5	84	16	46	54	75	25
College								
<i>n</i>	54	4	54	4	20	38	29	29
%	93	7	93	7	34	66	50	50

<sup>a</sup>  $\chi^2(3, N = 188) = 10.4, p < .015$ . <sup>b</sup>  $\chi^2(3, N = 188) = 30.96, p < .001$ . <sup>c</sup>  $\chi^2(3, N = 186) = 1.51, p < .67$ . <sup>d</sup>  $\chi^2(3, N = 187) = 15.83, p < .001$ .

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Table 6  
Contingency Table Summarizing 2 × 2 Tables Relating Responses to Self and Other People Feeling Stares in Study 3

Grade	Item							
	I feel and other people can also feel staring		I feel but other people cannot feel staring		I do not feel but other people can feel staring		I do not feel and other people cannot feel staring	
	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%
1	15	37	13	32	5	12	8	19
3	17	42.5	13	32.5	7	17.5	3	7.5
5	35	71	4	8	6	12	4	8
College	52	90	2	3	2	3	2	3

another (i.e., younger participants attributed the feeling of stares to themselves but not to others). By the fifth grade, though, a major shift occurred, with most participants believing that they and others could feel stares to about the same extent.

Responses to the intromission-extramission questions that asked whether rays or the like left or entered the eye during the act of vision, presented in Cottrell and Winer (1994), revealed that the belief in extramission generally declined across the same ages during which there was an increase in beliefs about felt stares. The different developmental trajectories of these two beliefs suggest that they represent different belief systems, a conclusion supported by the fact that the correlations between responses to the two types of question were low and nonsignificant.

In summary, it was surprising to find that the youngest children in this study reported feeling the stare of another considerably less frequently than did older children or college students, but it was even more surprising to learn that so many young children who did indicate feeling another's gaze did not believe that other people had the same experiences. Responses to the questions on animals also provided some unexpected findings in that there were no age differences in numbers of participants who believed they could feel an animal stare, but there was a clear age trend in responses to the question asking whether an animal could feel a human gaze, with the greatest percentage of affirmative responses given by fifth graders. There is no explanation for this unusual age trend.

In a replication and enlargement of the present study, Smith (1993) asked third and fifth graders and college students whether children, babies, and a variety of different animals could feel the participant's stares, and likewise, whether the participant could feel their stares (Smith, 1993). When responses were categorized into "no" versus all others, the results replicated the age trends of a general increase in feeling the stares of another or of having another feel one's stares, with college students showing higher admissions of feeling stares and beliefs that others could than did children. There were, however, many children who subscribed to beliefs about feeling stares. Thus 97% of the college students believed they could feel stares and 98% believed that others could versus less than 77% or 87% for self and "others feeling" questions among the children (the age differences were significant). The results also indicated that babies and children were thought to be somewhat less likely to perceive felt stares than a general "others," although with increasing grades there was a tendency to differentiate the refer-

ents. The effect for animals, interestingly, seemed to depend on the animal. Animals independently rated as most fierce, namely, a gorilla or tiger, were rated as likely as humans to project and receive felt stares and more likely to project and receive felt stares than animals that were independently rated as the least fierce. These other animals (e.g., cat, rabbit) were seen as less likely than humans to experience felt stares or have their stares felt by others. However, we cannot be entirely certain about the interpretation of the differences in responses to questions referring to different animals, because the array of animals was not large enough to eliminate alternative explanations. In any event, the main findings of Study 3, namely, the age trends and the tendency to view babies and children, and at least some animals, as different from others in their ability to experience or project stares, were replicated.

### General Discussion

The results of three studies presented here, and of a replication and extension (Smith, 1993), indicated that both children and adults affirm the ability to feel the stares of unseen others. The studies support and extend the Titchener (1898) and Coover (1913) findings that most college students believe they can feel the unseen looks of another person. The results also indicated several specific aspects of this particular belief. The questionnaire used in Study 2 revealed that physical conditions or cognitive and physical states of the receiver of stares could limit the feeling of an unseen gaze. For example, participants seemed to be less inclined to believe in felt stares when the questions referred to interferences that prevented a person from seeing a starrer. A particularly important set of questions in Study 2 pitted the effects of thinking versus seeing. Participants appeared to believe that thinking about a person was not necessary to having one's gaze felt by the other, because there were lower scores on the thinking-but-not-seeing than on the seeing-but-not-thinking questions. Thus, the effect of feeling the gaze of an unseen starrer is probably viewed as something other than a type of extrasensory perception. The results also suggested, however, that participants believed that thinking about a person while looking at him or her might have some effect because there were lower scores on the seeing-but-not-thinking question than on the item that mentioned seeing with no reference to thinking.

The results of Studies 2 and 3 also indicated that information about the genetic and ontogenetic status of the starrer and recipient

of stares affected beliefs about felt stares. In general, participants imputed a greater tendency to experience felt stares to older as opposed to younger people and to humans as opposed to certain animals. Participants thus seemed to believe that cognitive maturity is an important variable for the experiencing of stares.

A major concern of the research was the nature and direction of age trends. In all the experiments except Study 2, there was some evidence that beliefs in felt stares increased with age. The sharpest evidence for this age change occurred in Study 3. Here, it will be recalled, we presented questions that forced a choice between "yes" and "no" and tested participants younger than those in the other studies. In Study 1, this age change was revealed in comparing sixth graders and college students. Sixth graders more often believed that they "rarely" felt stares; college students answered that they "sometimes" had such experiences. In Smith's unpublished thesis study (1993) a similar grade effect was found. Only in the occlusion questions of Study 2 did we find a reversal to the age trend.

Two points should be mentioned about the association between increases in age and increases in beliefs about feeling looks of unseen others. The first is that the age trends were small, and in two instances, one of which is Smith's (1993) thesis, depended on particular partitionings of the data. The second is that many participants of all ages expressed a belief in feeling stares. In other words, the belief in the ability to feel stares is evident at a very young age. Recall that in Study 3 nearly 70% of first graders believed they could feel stares. The presence of this belief among young children at least partially accounted for the fact that increases across age were small.

Another issue that arises, not only regarding the age trends but also with respect to other generalizations about the beliefs of children and adults, is whether the participants actually believed that they or others could feel stares. Consider that we asked a variety of questions, such as "Do you ever feel that . . . ?" "Can you feel it when . . . ?" "Could you feel it if . . . ?" and "Do you think that . . . ?," and it might be argued that participants might have answered such items affirmatively without actually believing what they had said. For example, they might have experienced something like felt stares (i.e., as if they had experienced someone staring) but not actually believed that they could really feel such stares. However, in pilot work we tried to change participants' beliefs about feeling stares and were unable to do so. Informal questioning of many people has also suggested that they believe they can really feel stares. We have also conducted an additional study with college students in which we systematically varied the wording of two questions, one about whether the self could feel stares, the other asking whether others could. The questions were (a) "Can you (others) feel it when . . . ?" (b) "Do you think that you can feel . . . ?" (c) "Do you believe that you can feel . . . ?" (d) "Can you actually feel . . . ?" (e) "Do you think that you can actually feel . . . ?" and (f) "Do you believe that you can actually feel . . . ?" The results revealed no differences due to wording. The *F*s (5, 120) were 1.07 and 1.53! Finally, Coover's (1913) work also leaves little doubt that participants really believed that they felt the stares. The few participants who inferred they could feel stares because they heard the experimenter (who could have been making some minimal noises)—which would indicate they did not really feel stares—seemed

also to report other reactions that indicated that they did believe they felt the stares. Undoubtedly, if we compared children's and adults' definitions of feelings, we would obtain differences. But there seems to be little question that adults really believe they feel stares, and there is no reason to doubt that children do also.

Although the age trends were sometimes small, they are nevertheless significant in several respects. To begin with, the age data bear on the question of the origins of the belief in felt stares. In the introduction we proposed several mechanisms that might account for an increase in such beliefs across age, including partial reinforcement of feelings of being stared at, increased exposure to or awareness of linguistic metaphors suggesting projections from the eyes, and increased cognitive and social maturity. The results are not inconsistent with these explanations. But they are not strongly supportive of them, either. Especially significant here is impressive evidence for the belief in feeling stares among the first and third graders, which suggests that such beliefs are not dependent on the ability to abstract at a high level. Such children were also probably too young to have been meaningfully exposed to many of the linguistic expressions suggesting projections from the eye. Perhaps these beliefs evolved from experiences in infancy in which the prominence of vision and gaze are important media of social interactions.

It is also interesting that the age trends on beliefs about feeling stares are in sharp contrast to the results on extramission questions (see Cottrell & Winer, 1994, and the results of Study 1), which consistently revealed a decline, over age, in the belief that there are emissions (rays, waves) from the eyes while looking at something. Thus it appears that feeling stares is psychologically distinct from formal beliefs about what occurs during the act of vision and that the two types of belief are unrelated, unless extramission questions make specific reference to feeling stares.

The data also seemingly present a paradox: the highest frequency of apparently intuitive, irrational beliefs usually appeared among the oldest participants (i.e., those who were presumably cognitively the most capable). As was noted, there is considerable evidence that adults often are not rational (Arkes, 1991; Epstein, 1994; Gilovich, 1991; Stanovich, 1994; Tversky & Kahneman, 1974), and our findings are certainly consistent with Stanovich's notion of dysrationalia and Epstein's notion of experiential thought, which is seen as contrasting with rational thought. But it is still somewhat surprising to find that the highest level of what appears to be irrational behavior generally occurred among participants who were presumably the most cognitively advanced. Moreover, even if we do not assume any intrinsic age differences in cognitive ability, say between children in Piaget's concrete and formal operations periods, the age data are surprising from the standpoint of certain developmental theories. Thus, modern theories (e.g., Carey, 1985) stress interpreting cognitive development in terms of increasing expertise, which one can assume is at least partially a product of learning. There is no intrinsic reason why formal learning or the acquisition of expertise should be associated with an increased belief about feeling stares.

There are several explanations for this paradoxical finding, including some of the mechanisms for the development of beliefs in felt stares, such as partial reinforcement effects. Another dimension that should be considered is style and type of thought. Tversky and Kahneman (1974) have listed types of

biases and memory-search methods adults use to assess occurrences. The availability of instances that can be brought to mind, the retrievability of instances because of familiarity or salience, and the ease with which relevant instances can be constructed may all lead one to judge an event as more frequent than it actually is and to make illusory correlations about the co-occurrence of two events. Moreover, the illusory correlation effect is, the authors pointed out, particularly resistant to contradictory data.

There is no developmental theory that adequately explains the age trends seen in this study. However, in theorizing about the nature of beliefs of feeling stares, we have been influenced by Werner's (1948, 1957) theory, which makes a distinction between developmentally more primitive and more advanced modes of processing. For example, Werner distinguished between an emotionally laden, physiognomic type of perception and a geometrical-technical perception—the former characteristic of less developed states, the latter more frequently seen among the developmentally more advanced. In the realm of thought and superstition, one might argue that beliefs that one can feel stares are intuitive or emotionally based, whereas beliefs that one cannot feel stares might represent a more mechanistic, scientific orientation, perhaps akin to the type of thinking that Piaget characterized as formal operational. But Werner's theory also claims that the more primitive modes of functioning could co-exist with more advanced processes or beliefs and would vary as a function of situational and individual differences. Thus some adults should be more inclined than others to reason primitively.

In a brief follow-up study, we have in fact found some support for this prediction. We compared students from a college of art, who we assumed might function impressionistically and intuitively, with the college students in Study 2, who being presumably less artistically oriented would, we assumed, be less inclined to respond intuitively. (An alternative hypothesis, namely, that the art students might know more about the transmission of light and thus be less inclined to believe in felt stares, was also entertained.) The results indicated in fact that the art students did show a significantly greater tendency than did the others to believe in the feeling of stares.

Finally, the data are also of significance to much of the research on theory of mind, which shows well-formed beliefs, even in the preschool years (Olson, Astington, & Harris, 1988; Wellman, 1990). Most of this research focuses on children. It implicitly appears to make the assumption that the common-sense folk psychology of the adult is superior, and presumably more correct, than that of the child. Our results challenge these assumptions and stress the importance of considerably broadening the dimensions or domains of theory of mind.

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