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Learning How to Believe: Epistemic Development in Cultural Context

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Over the last decade, researchers have become increasingly interested in students' beliefs about the nature of knowledge and how these beliefs develop. Although initial psychological accounts portrayed epistemic development as a domain-independent process of cognitive maturation, recent studies have found trajectories of epistemic development to vary considerably across contexts. However, few studies have focused on cultural context. This article examines the role community values and practices play in fostering particular epistemological orientations by comparing the epistemological beliefs of 5th, 8th, and 12th graders ($N = 200$) from General and Religious schools in Israel regarding 2 controversies: belief in God and punishment of children. In both controversies, older participants were less likely than younger participants to consider the controversy rationally decidable. However, this shift emerged earlier in the God controversy than in the punishment controversy. In the God controversy, General pupils were less likely than Religious pupils to consider the question rationally decidable or their own beliefs infallible. But no such school differences were observed in the punishment controversy. Qualitative and quantitative analyses linked these differences to divergent discourse practices at General and Religious schools, suggesting that the relations between learning and epistemic development are more intricate than has been assumed hitherto.

Epistemology is an area of philosophy concerned with questions of what knowledge is and how it is justified. Although few people give these questions such detailed and sustained attention as professional philosophers, anyone attempting to acquire, produce, or evaluate knowledge relies, at least implicitly, on some set of epistemological beliefs. Such beliefs are of obvious interest to educators. To understand how students acquire, evaluate, and justify knowledge, we need to under-

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stand what they consider knowledge to be. And to help students become discerning consumers and responsible producers of knowledge, we need to understand how people learn to exercise reflective judgment in the face of competing claims.

The psychological study of epistemic development is undergoing something of a renaissance. Interest in this area can be traced back to Piaget (1970), Dewey (1933), and beyond (e.g., Plato's *Theaetetus*). But only recently have psychologists begun to draw together hitherto disparate strands of empirical inquiry to chart in detail the course of epistemic development from infancy to adulthood (see, e.g., Hallett, Chandler, & Krettenauer, 2002; Kuhn, Cheney, & Weinstock, 2000; Wainryb, Shaw, Langley, Cottam, & Lewis, 2004).

Initial research in this field was conducted largely within a neo-Piagetian paradigm. Epistemic development was characterized as a progression through discrete stages or levels of epistemological understanding, each following the other in invariant sequence and constituting a comprehensive transformation of the individual's conception of knowledge (see, e.g., Chandler, 1975; Kitchener & King, 1981; Perry, 1970). Researchers differed somewhat in their nomenclatures and in their criteria for distinguishing levels of epistemological sophistication, but they concurred broadly in positing at least two major shifts in epistemological understanding (for recent reviews, see Hofer & Pintrich, 1997, 2002). Initially, the individual subscribes to an objectivist conception of knowledge, in which every question is believed to have a single, correct answer that is knowable with absolute certainty. Subsequently, in a radical shift, objectivism is abandoned in favor of subjectivism, and the individual equates all knowledge claims with matters of personal taste or preference. Finally, a balance is achieved in which objective and subjective aspects of knowing are coordinated. At this "evaluativist" stage (cf. Kuhn, 1991), the individual sees knowledge as something that is constructed tentatively by evaluating the evidence for and against competing beliefs and points of view.

There was some debate about the precise relations of these stages to Piaget's stages of intellectual development (see, e.g., Boyes & Chandler, 1992). However, they were viewed by most researchers as a kind of "post-formal operations" taking up the formal operational attainments of hypothetical thinking and perspective-taking and applying them wholesale to knowledge claims as such, in a form of meta-metacognition (see, e.g., Kitchener, 1983; Kuhn, 2000; Moshman, 2003).

Empirical support for this model of epistemic development came from several parallel research programs. Overall, these studies provided substantial evidence of development in the hypothesized direction (Hallett et al., 2002; Hofer & Pintrich, 1997; King & Kitchener, 1994). However, the ages at which the key shifts in epistemological understanding were observed varied enormously from program to program. As Hallett et al. (2002) noted regarding the emergence of subjectivism, "one could read selectively from the literature and, with good reason, conclude that such abilities put in their appearance at either 4 or 6 or 8 or 12 or 16 or 20, or in receipt of a Ph.D." (p. 289).

These vast discrepancies have led researchers to reexamine some of the assumptions underlying their models and measures of epistemic development. In particular, researchers have begun to question the comprehensiveness of shifts in epistemological understanding and to attend more closely to the variety of contexts within which epistemic beliefs are held, employed, and articulated (cf. Elby & Hammer, 2001; Hammer & Elby, 2002, 2003). This attention to context has taken several forms. One line of research has sought to show that epistemic development is a somewhat domain-dependent process that occurs with respect to some kinds of knowledge claim before others. For example, it has been proposed that subjectivism emerges in relation to aesthetic claims before it emerges in relation to claims about the physical world (e.g., Hallett et al., 2002; Kuhn et al., 2000; Wainryb et al., 2004). Another line of research has sought to show that epistemological beliefs are multidimensional rather than unitary. For example, it has been proposed that people's beliefs about the complexity of knowledge develop more or less independently of their beliefs about its certainty (e.g., Schommer, 1990, 1993). Although the accumulated empirical evidence is as yet suggestive rather than conclusive (see Elby & Hammer, 2001; Hallett et al., 2002, pp. 303–304; Kuhn et al., 2000, pp. 321–322), both research programs hold out the possibility of disentangling the course of epistemic development by identifying elements of epistemological understanding that emerge at different points in the lifespan (cf. Hallett et al., 2002, p. 290; Wainryb et al., 2004).

However, "domains" and "dimensions" are not the only contexts within which epistemic beliefs are situated. Just as people's epistemic beliefs may be affected by the particular content of the knowledge claims being evaluated, so too may they be affected by the particular procedures of knowledge evaluation practiced in, and sanctioned by, the communities in which they participate (cf. Hammer & Elby, 2003). Few studies have directly examined cross-cultural variation in epistemological beliefs. And those that have done so have tended to focus on comparisons between U.S. and East Asian college students (e.g., Chan & Elliott, 2002, 2004; Nisbett, Peng, Choi, & Norenzayan, 2001; Zhang, 1999). Nonetheless, the findings of such studies are highly suggestive. Especially striking is Zhang's finding that Chinese students' epistemological beliefs shifted over the college years in exactly the opposite direction to those of their U.S. counterparts. Specifically, rather than moving from objectivist to subjectivist conceptions of knowledge, similar to their peers at U.S. universities, Chinese students appeared to shift from more subjectivist conceptions of knowledge to more objectivist ones.

Such findings raise intriguing questions about the relations between culture and epistemic development, and about the relations between learning and epistemic development more generally. For a field of inquiry dominated by educational psychologists, remarkably little is known about these relations. As Hofer and Pintrich (1997) noted, "there is little empirical evidence for precisely what fosters epistemological development or how epistemological beliefs are altered" (p. 123). Research has

shown that schooling makes a difference (e.g., Bell & Linn, 2002; King & Kitchener, 1994), but it has yielded little insight into how or why it makes a difference. Moreover, researchers have tended to equivocate between viewing epistemological beliefs as causes and effects of learning—as age-dependent constraints on instruction on one hand and as outcomes of instruction on the other hand (cf. Kuhn, 1991, 2003; Schommer, 1990, 1993).

Cross-cultural studies of age trends in epistemological belief are one way to investigate systematically the relations between age, learning, and epistemic development. If the nature and timing of age-related shifts in epistemological belief vary cross-culturally, then this is presumably because participants in different cultures learn, through participation in practices particular to their respective communities, to treat knowledge claims in different ways. To the extent that researchers can pinpoint such practices and measure their impact on individuals' epistemological beliefs, we can begin to characterize more precisely the relations between learning and epistemic development.

However, in designing such studies, researchers must take great care to distinguish between reportage and editorial. "Development" is a value-laden term. Theoretical models of psychological development do more than describe a sequence; they attach values to different points along the sequence. Specifically, they define some psychological states or capacities as more mature, adequate, or sophisticated than others. When developmental studies are restricted to homogeneous cultural settings, within which there is little serious disagreement among experts about the relative adequacy of different psychological states or capacities, the risk of bias in diagnosing participants' levels of development is relatively slight. However, as the cultural heterogeneity of the sample increases, so too does the risk that the model on the basis of which participants' development is diagnosed is ethnocentrically biased against a portion of the sample. For example, beliefs that are defined as immature by the developmental model might be considered mature within one of the cultures from which the sample is drawn, or vice versa.

These dangers exist to some extent in all cross-cultural studies of psychological development (see Cole & Scribner, 1974; Greenfield & Bruner, 1966; Shweder, Mahapatra, & Miller, 1990). However, in cross-cultural studies of epistemic development the danger is even more clear and present. This is because there are at least four levels at which epistemological judgments can be made, and as one ascends from the first level to the fourth, the value assumptions implicit in these judgments become less visible to the naked eye but never quite disappear.

At the first, most basic level, there are judgments about the epistemic status of particular claims, such as whether a given assertion (e.g., "Eating people is wrong") is known or merely believed (e.g., "John doesn't *know* that eating people is wrong; he merely *believes* that eating people is wrong"). At one level of abstraction up from such judgments, there are judgments about the epistemic status of general classes of claim, such as judgments about whether knowledge is possible about, say, matters of

aesthetics or morality (e.g., “There are no such things as moral truths or moral knowledge; morality is a question of commitment—not of what is or is not the case”). At yet another level of abstraction up from such judgments, there are further judgments about the criteria by which epistemic states are distinguished one from another, such as judgments about what differentiates knowledge from belief or opinion (e.g., “Knowledge is justified true belief; if a belief is true but not justified, or justified but not true, then it isn’t known”). And beyond this third level, there is a fourth level of judgments about the relative adequacy of particular criteria for distinguishing between epistemic states, such as judgments about whether the subjectivist equation of knowledge with opinion is less adequate than the evaluativist’s insistence that knowledge differs from opinion in being supported by evidence (e.g., “Subjectivism is inferior to evaluativism because it fails to account for our belief that some claims are better supported than others”).

According to this analysis, authors of contemporary models of epistemic development are themselves exercising a form of epistemological judgment in articulating their models. Specifically, they are operating at the fourth level (outlined previously), expressing their own beliefs about the relative adequacy of particular epistemological orientations. This is all well and good as long as the beliefs in question are compatible with the epistemological beliefs, values, and practices of the communities to which the model is applied. However, in cross-cultural studies of epistemic development, such compatibility cannot be assumed in advance of the investigation itself. Accordingly, if one wishes to avoid ethnocentrism, one cannot conduct a cross-cultural study of epistemic development without suspending, at least temporarily, one’s hierarchical assumptions about the relative adequacy of particular epistemological orientations.

This is not to say that researchers are not entitled to opinions of their own about the relative adequacy of particular epistemological beliefs or that all talk of epistemic development is inherently ethnocentric. It is merely to point out that because standards of epistemological maturity may themselves vary across cultures, assumptions about the relative adequacy of particular epistemological beliefs must not be built into the design of cross-cultural studies. This study, therefore, departs from previous studies of epistemic development by dropping the assumption that some epistemological beliefs are inherently more adequate than others. By dropping this assumption, I do not affirm the contrary assumption that all epistemological beliefs are equally adequate. Rather, I adopt a form of methodological agnosticism to reduce the scope for ethnocentric bias in the study’s design. In the Discussion section, I return to the question of hierarchy and review the assumptions of contemporary models of epistemic development in light of my findings.

This study investigates the relations between age, learning, and epistemic development by comparing the epistemological beliefs of pupils at Religious schools and General schools in Israel about two controversies: one religious and the other nonreligious. Specifically, this study asks three questions. First, how do beliefs about the

nature of religious claims vary with age and school? Second, to what extent are these age and school differences attributable to underlying group differences in religious commitment and general epistemological sophistication? Third, how are variations in epistemological belief across ages, schools, and controversies related to educational practices at Religious and General schools, respectively?

METHOD

Participants

A total of 200 Jewish children and adolescents were recruited from six General and seven Religious urban public schools in central Israel. To the extent possible, General pupils ($n = 103$) were matched to Religious pupils ($n = 97$) by gender and grade (see Appendix A). All schools were located in middle-class, predominantly Jewish neighborhoods.

The public school system in Israel includes a Hebrew sector serving the majority Jewish population and an Arabic sector serving the minority Moslem, Christian, and Druze populations. The Hebrew sector is further subdivided into two main streams. General schools are nominally secular, provide no explicit religious instruction, and are targeted at the majority "nonreligious" and "traditional" segments of the Jewish Israeli population. Religious schools are targeted specifically at the "Religious Zionist" or "Modern Orthodox" community, which constitutes approximately 20% of Israel's Jewish population. Religious schools combine the subjects taught at General schools (using the same textbooks and following the same mandatory national curriculum) with an extensive religious education program. Pupils from Religious schools thus differ from pupils at General schools with respect to both their family religious backgrounds and their exposure to organized religious instruction (see, e.g., Leslau & Bar-Lev, 1993; Leslau & Schwarzwald, 1985). Participants were divided into three age groups, with mean ages (years, months) as follows: 5th graders ($M = 11, 1$), 8th graders ($M = 14, 0$), and 12th graders ($M = 17, 6$).

Procedure

Interview. Participants' epistemological beliefs were elicited in individual, semi-structured interviews using a combination of direct and indirect questioning. The interview protocol was similar to that used by Kuhn (1991) and King and Kitchener (1994). However, the wording of prompts was more open ended and participants' epistemological beliefs were diagnosed on the basis of their overall patterns of response over the course of the interview rather than on the basis of their responses to one or two specific questions. In particular, attention was paid

not only to participants' explicit statements about such things as expertise and certainty, but also to the epistemological assumptions implicit in the strategies they employed in practice to defend, attack, and evaluate the claims under consideration (see Appendix B and examples that follow).

Participants were presented with two scenarios in which two people holding opposing views are engaged in an argument. In one scenario, the topic under discussion is whether to believe in God; in the other, it is whether children should be punished when they misbehave. After being presented with the scenario, participants were asked which of the opposing points of view they most agreed with and why. They were then asked how they would attempt to persuade someone holding a point of view opposed to their own, what counterarguments such a person might present against their own point of view, and how they would rebut these counterarguments. As participants elaborated on these justifications, persuasive strategies, counterarguments, and rebuttals, they were prompted to reflect on the epistemological status of claims they had made or mentioned (e.g., "Would that prove that you're right? Why not?"). In addition, many participants expressed implicit epistemological assumptions in their choices of argumentative strategies (e.g., "I wouldn't try and persuade her, because it's not something you can prove or disprove; it's a personal matter"). These indirect, in-process elicitations were complemented with more direct questioning over the course of the interview. These latter, direct questions focused on the certainty and provability of the knowledge claims under consideration (e.g., "Could your opponent be right? How certain are you that you're right? Is it possible to prove who's right?"). Interviews lasted between 30 and 80 min, and presentation of the controversies was counterbalanced to control for any sequence effect.

The punishment controversy was chosen for its structural similarity to the God controversy in three key respects. It is an ill-structured problem (see King & Kitchener, 1994; Kuhn, 1991) that can be framed as a choice between two opposed beliefs, which participants may endorse or reject with varying degrees of intensity. It is a controversy that children and adolescents are familiar with and that they feel able to argue about without any specialized knowledge. And it is a controversy with respect to which people's beliefs may be justified on either empirical or nonempirical grounds.

It is important to emphasize, however, that any two topics will differ from each other in a variety of idiosyncratic ways, and that undoubtedly the God and punishment controversies differ from each other in more ways than that one is about a religious question and the other about a nonreligious question. One should bear in mind, therefore, that the aim of cross-topic comparisons in this study is not to prove that children's religious thinking differs "in general" from their nonreligious thinking. Rather, it is to provide a control measure against which to evaluate group differences in epistemological beliefs about the nature of religious claims (i.e., to ensure that group differences in religious epistemology are not due simply to disparities in the general epistemological sophistication of General and Religious pupils).

Questionnaire. Immediately after the interview, each participant completed a short questionnaire about his or her religious background (see Appendix C). All items were adapted from instruments used in previous studies of the religious beliefs, values, and practices of Israeli Jews (Leslau & Bar-Lev, 1993; Levy, Levinsohn, & Katz, 1993).

Coding and Reliability

Interviews were audiotaped and transcribed verbatim. Coding categories were derived inductively, using an iterative procedure similar to that used by Kuhn (1991). Twelve interview transcripts were selected at random, all notes identifying the age and background of the interviewees removed, and copies distributed to a pair of coders. Each coder was required to analyze the transcripts independently and devise a set of categories sufficient to account for the epistemological beliefs contained therein. After completing their initial coding, the coders met to compare categories and construct a coding scheme on which they could both agree. Each then employed this new coding scheme to code independently a new set of 20 randomly selected transcripts. They then met again to compare their results and further refine the coding scheme. After a third iteration with an additional 20 randomly selected transcripts, the coding scheme was tested formally for intercoder reliability.

This iterative, inductive procedure was employed to address difficulties experienced in initial attempts to code the interview data using categories employed in previous studies of epistemic development. These studies tend to characterize middle to late adolescence as a period during which individuals begin the move from objectivism to subjectivism. It was expected, therefore, that the responses of participants in this study would be classifiable using some such categories of epistemological belief. This expectation was not met. The epistemological beliefs that participants expressed at different points in the interview were surprisingly eclectic. Participants combined apparently objectivist responses to some questions with apparently subjectivist or evaluativist responses to others. Moreover, this eclecticism was not attributable to any particular subset of interview questions but was a general feature of responses to all of the epistemological questions included in the interview.

Consider, for example, the following excerpt from an interview with Yoni, a 12th-grade boy at a Religious school. (Here, and in all subsequent interview excerpts, the participant's alias appears next to the excerpt and the interviewer's prompts and questions appear in italics within the excerpt):

Yoni: No one can prove that there is a God and no one can prove that there isn't there's no way to prove it, because it's always possible to provide an alternative explanation. Even if there were some voice that you couldn't explain, then perhaps it's the Messiah or maybe it's a bunch of aliens playing

a joke. It's always possible. It could be God or it could be something else. *Could [people who deny the existence of God] be right?* In principle: yes. No one can prove that they're right, but at the end of the day, either there is a God or there isn't. The problem is that it's impossible ever to know.

On one hand, Yoni insists that the question has a single, correct answer. As he puts it, "at the end of the day, either there is a God or there isn't." On the other hand, he denies that God's existence can ever be proved or disproved, because all evidence is subject to alternative interpretations. Does Yoni's assumption that the question has a single, correct answer make him an objectivist? Or does his insistence on the relativity of evidence to interpretative frameworks make him a subjectivist? There does not appear to be any way to include him straightforwardly in either category without seriously distorting his overall epistemological orientation.

The following excerpt, from an interview with Tal, a 12th-grade girl at a Religious school, poses even more of a challenge for categorization:

Tal: *How sure are you?* I'm fairly sure. Sure, but not 100%. *Why not 100%?* Because there's always the possibility that I'll change my mind, that someone will come with a proof that I've never heard of. Perhaps she's right. Perhaps she's right and there is another way if people arrive at different conclusions, then apparently there is no absolute truth. Something that is clear to one person, others can understand in different ways *Could they be right?* From my perspective, they're not right. In their own eyes, they're right.

Tal's suggestion that there is no absolute truth seems to mark her out as a subjectivist. And yet, her admission that someone with an opposed point of view might be right appears to commit her to the objectivist belief that there is ultimately a single, correct answer. But then as if things were not complicated enough, her declared readiness to change her mind in the face of new evidence appears to contain within it key features of evaluativism. So what is Tal? An objectivist? A subjectivist? An evaluativist? Just as with Yoni, there does not seem to be any way to confine her to any one of these categories without seriously distorting her overall epistemological orientation.

In successive iterations, therefore, the coders sought to derive categories of epistemological belief that distinguished reliably between different epistemological orientations but avoided distortions of the kind noted previously. In retrospect, the approach adopted by the coders had much in common with diSessa's (1988) "knowledge in pieces" approach to parsing intuitive epistemologies, and with Hammer and Elby's (2003) application of this approach to students' epistemologies of physics. In this study, coders sought to reconcile the apparent inconsistencies within participants' overall epistemological orientations by analyzing them into smaller "pieces" of epistemological belief that could be combined into a vari-

ety of contextually coherent configurations. In other words, instead of trying to force people such as Yoni and Tal into objectivist, subjectivist, or evaluativist orientations, coders sought in successive iterations to break down the orientations of objectivism, subjectivism, and evaluativism into smaller pieces from which these orientations, and others more appropriate to Yoni and Tal, could be constructed. The iterative process that led to the final coding scheme thus involved a playoff between fidelity and parsimony, with coders seeking, on one hand, to represent as accurately as possible participants' overall epistemological orientations, and on the other hand, to minimize the number of distinct epistemological pieces from which these orientations were configured.

The third iteration resulted in the coding scheme described in the next section. This coding scheme was tested formally for intercoder reliability by two coders. One of the coders had participated in the previous iterations; the other had not and was blind to the hypotheses of the study. Each coder received an identical set of 50 randomly selected transcripts with identifying information removed and coded them independently. Disagreements were resolved by discussion and the remaining transcripts coded by a single coder. Intercoder agreement was 91% ($\kappa = 0.80$).

Categories

Three dimensions of epistemological belief were found to distinguish reliably between participants' overall epistemological orientations. *Ontology* describes whether the participant believed the question under discussion to have a single, correct answer. Those who believed the question to have a single, correct answer were categorized as realists; those who did not were categorized as perspectivists. *Fallibility* describes whether the participant considered it possible that his or her belief might be mistaken. Participants who admitted they might be mistaken were categorized as fallibilists; those who denied this possibility were categorized as infallibilists. *Decidability* describes whether the participant believed the question to be decidable by rational procedures. Those who believed there to be some rational procedure by which to decide the question were categorized as rationalists; those who believed no such rational procedure to exist were categorized as nonrationalists. Definitions of each epistemic orientation are summarized, with examples, in Table 1. (A philosophical justification of the logical coherence of each of the eight orientations summarized in Table 1, including examples of each orientation from the scholarly writings of philosophers, scientists, and social theorists, is provided in Gottlieb, 2002, pp. 256–275.)

To demonstrate how these categories were employed in practice, let us return to Yoni quoted previously. Yoni insists that there is a single correct answer to the question of God's existence ("at the end of the day, either there is a God or there isn't"). However, he admits that neither he nor anybody else can know for certain what this answer is ("it's impossible ever to know"), because it is impossible in principle to prove the matter one way or the other ("because it's always possible to provide an al-

TABLE 1
Definitions of Epistemic Orientations

<i>Dimension</i>	<i>Criterion</i>	<i>Answer</i>	<i>Orientation</i>	<i>Example</i>
Ontology	Is there a single, correct answer?	Yes	Realist	“At the end of the day, either there is a God or there isn’t.”
		No	Perspectivist	“I don’t think there’s any right or wrong here ... they’re both right.”
Fallibility	Could I be wrong?	Yes	Fallibilist	“My powers of understanding are so limited. So, yes, anything’s possible.”
		No	Infallibilist	“No. I don’t think there is any possibility at all that God doesn’t exist.”
Decidability	Can this be resolved by rational procedures?	Yes	Rationalist	“Yes, you could do an experiment to prove it.”
		No	Nonrationalist	“There’s no way you can prove it. It depends on your faith.”

ternative explanation”). Yoni is thus a realist with respect to ontology, a fallibilist with respect to fallibility, and a nonrationalist with respect to decidability.

RESULTS

Results are organized into three sections. The first section addresses the question of how epistemological beliefs about the God controversy vary with age and school. The second section explores the extent to which this variation is attributable to educational practices at Religious schools and General schools, respectively, as opposed to underlying group differences in religious commitment and epistemological sophistication. The third section investigates possible sources of the school differences observed in the preceding two sections.

In each of the first two sections, the relations between age, school, and epistemological belief are first explored qualitatively and then investigated quantitatively. The analyses in the third section are more tentative and exclusively qualitative.

Overview and Rationale of Quantitative Analyses

Because the statistical techniques employed in this study may be unfamiliar to some readers, I present here a brief description of these techniques and a rationale for their use. The effects of age and school on epistemology in the God controversy were inves-

tigated quantitatively using binomial logistic regression. The statistical principles underlying this analytic technique are similar to those that underlie linear regression. The effects of predictor variables on a target variable are evaluated by hypothesizing an initial statistical model containing none of the predictors and then entering predictors successively into the model and assessing to what extent the fit of the model to the data is improved with each new entry. The key difference between logistic regression and linear regression is their data assumptions. Whereas linear regression assumes a normal distribution, binomial logistic regression assumes a binomial distribution. Because the target variables in this study (i.e., the epistemology variables) are dichotomous, the data assumptions of binomial logistic regression are the most appropriate.

The choice of regression analysis, as opposed to some simpler measure of association, was motivated by the recognition that variables other than school and age are likely to influence pupil's epistemological beliefs regarding the God controversy and that, to assess the unique effects of age and school, it is therefore necessary to account for the effects of these other variables. For example, pupils are not distributed randomly across Religious schools and General schools. On the contrary, these school populations are self-selecting, such that Religious pupils differ from General pupils not only with respect to the schools they attend but also with respect to their families' religious backgrounds (see, e.g., Leslau & Schwarzwald, 1985). To assess the unique effect of schooling on participants' epistemological beliefs, therefore, it is necessary to control for underlying group differences in family religiosity.

Similarly, just as age and school might influence a participant's epistemological belief about the God controversy, so too might the intensity of that participant's own belief in God. For example, it seems reasonable (indeed, almost tautological) to assume that committed theists tend less than agnostics to admit that their belief might be mistaken. Accordingly, to investigate the unique effects of age and school on religious epistemology, it is necessary to control for underlying differences in levels of belief in God across age and school groups.

The variable used to represent participants' family religious backgrounds in the regression analyses was parents' religiosity. Values for this variable were calculated by combining responses to the questionnaire items asking the participant to rate each parent's level of religiosity on a 6-point scale ranging from 1 (*very irreligious*) to 6 (*religious*; see Appendix C). As in previous studies among Israeli children and adolescents, this variable was found to be a strong predictor of family religious beliefs, values, and practices (see Table C1).¹

¹In contemporary Jewish Israeli society, one's level of religiosity is a highly salient and well-defined social category. In this context, therefore, participants' evaluations of their parents' religiosity can be assumed to be made relative to the Jewish Israeli population as a whole, and not simply to adults the participant knows. The successful use of this measure as a differential in previous studies among Israeli children and adolescents (e.g., those cited previously) and the high correlations reported in Table C1 between the parents' religiosity variable and other measures of religiosity provide further support for this assumption.

Belief intensity (in God or punishment) was measured on a 5-point scale ranging from 1 (*unqualified disbelief*), to 2 (*qualified disbelief*), to 3 (*neutrality*), to 4 (*qualified belief*), through 5 (*unqualified belief*). Values for this variable were assigned on the basis of participants' responses to the first interview question posed to them in each controversy, which asked them to state with whom they most agreed (see Appendix B). Preliminary analyses reveal significant differences in belief across age and school groups. Belief in both God and punishment decreased with age, and Religious pupils' belief in God was significantly higher than that of General pupils (see Table 2).

Separate regression analyses were conducted for each dimension of epistemology in each controversy. In each analysis, predictors were entered in the order: belief (in God or punishment); parents' religiosity; school; and finally, grade. The results of these analyses are summarized in Tables 3 and 4, respectively. Preliminary analyses reveal no significant gender effects with respect to any epistemology variable in either controversy. All analyses reported here therefore use collapsed gender cells for each age and school group.

How Did Epistemological Beliefs About the God Controversy Vary by Age and School?

The interview excerpts that follow illustrate age differences in epistemological beliefs about the God controversy. The first excerpt is from an interview with Naomi, a 5th-grade girl at a Religious school; the second is from an interview with Gadi, a 12th-grade boy at a Religious school:

Naomi: *How sure are you that there's a God? It's something that I know for certain. Are there really people like Haya who don't believe? Yes. Could they be right? No, because these [arguments] are proof that there's a God. They're proof ... It's true that there are people who think that there isn't [a God], and that's their opinion. But this proves it without doubt.*

TABLE 2
Mean Belief Intensity Scores by Controversy, School, and Age Group

Controversy	School							
	General				Religious			
	Grade 5	Grade 8	Grade 12	Total	Grade 5	Grade 8	Grade 12	Total
God	4.13	3.78	3.23	3.67	4.94	4.80	4.63	4.79
Punishment	4.16	3.62	3.21	3.63	4.34	3.70	3.44	3.85

Note. Numbers in italics represent mean belief intensity scores for all three grades combined.

TABLE 3
Summary of Logistic Regression Analyses in God Controversy

<i>XXheadingXX</i>	<i>B</i>	<i>W</i>	<i>OR</i>	<i>CI</i>	χ^2
Analysis 1: Predictors of perspectivism					
Belief in God	0.03	0.02	1.03	0.71–1.48	2.39
Parents' religiosity ^a	0.23	2.12	1.26	0.92–1.73	1.45
School	0.92	0.84	2.51	0.35–17.87	0.87
Grade 1 ^b	1.78	4.97	5.93	1.24–28.33	6.88*
Grade 2 ^b	0.31	0.34	1.39	0.49–3.80	—
Constant	-0.55	0.13	0.58	—	—
Analysis 2: Predictors of fallibilism					
Belief in God	-0.23	2.53	0.79	0.60–1.06	12.71***
Parents' religiosity ^a	0.07	0.48	1.07	0.89–1.29	7.52**
School	1.63	7.30	5.09	1.56–16.56	8.42**
Grade 1 ^b	-1.79	0.22	0.84	0.40–1.76	0.91
Grade 2 ^b	0.19	0.24	1.21	0.57–2.58	—
Constant	-0.027	0.67	0.77	—	—
Analysis 3: Predictors of nonrationalism					
Belief in God	0.25	2.54	1.29	0.94–1.76	16.37***
Parents' religiosity ^a	0.01	0.00	0.95	0.83–1.22	4.70*
School	-0.94	2.42	0.39	0.12–1.28	1.90
Grade 1 ^b	1.72	18.04	5.59	2.53–12.36	19.91***
Grade 2 ^b	0.70	3.04	2.01	0.92–4.39	—
Constant	-1.68	2.37	0.19	—	—

Note. B = beta coefficient; W = Wald statistic; OR = odds ratio; CI = 95% confidence interval; χ^2 = block chi-square statistics for entry of predictor into model.

^aParents' religiosity items in the questionnaire were omitted by a few participants; accordingly, sample sizes for these analyses are 196 (rather than 200). ^bIn analyses of the effects of grade, 12th grade was the designated reference category; therefore, Grade-1 analyses evaluate group differences between 12th graders and 5th graders whereas Grade-2 analyses evaluate group differences between 12th graders and 8th graders; omnibus block chi-square statistics for entry of the grade variable into the model are provided at the end of the grade-1 row.

* $p < .05$. ** $p < .01$. *** $p < .001$.

Gadi: I'm 100% certain, because I believe in it. Faith isn't 90% or 40% or 30%. I'm 100% certain, because faith is subjective belief, it's not objective truth ... *Could they be right?* Yes, to the same extent that I can be right. To the same extent that I have faith in God and I am 100% certain that He exists, they can disbelieve in God and be 100% certain that He doesn't exist. And there is no way to prove which of us is right; at least not on the basis of empirical proofs or rational proofs.

Two interesting shifts can be picked out in these two examples—the first a shift from realism to perspectivism, the second a shift from rationalism to nonrationalism. Although Naomi considers the question of God's existence to have a single, correct

TABLE 4
Summary of Logistic Regression Analyses in Punishment Controversy

<i>XXheadingXX</i>	<i>B</i>	<i>W</i>	<i>OR</i>	<i>CI</i>	χ^2
Analysis 1: Predictors of perspectivism					
Belief in punishment	0.31	3.20	1.37	0.97–1.92	6.67*
Parents' religiosity ^a	0.08	0.35	1.07	0.85–1.35	0.03
School	0.52	0.47	1.68	0.38–7.50	0.57
Grade 1 ^b	1.14	4.12	3.13	1.04–9.44	4.60
Grade 2 ^b	0.44	0.92	1.55	0.64–3.76	—
Constant	-0.70	0.30	0.50	—	—
Analysis 2: Predictors of fallibilism					
Belief in punishment	0.13	0.01	1.01	0.75–1.37	0.27
Parents' religiosity ^a	-0.01	0.01	0.99	0.83–1.18	0.50
School	0.21	0.14	1.24	0.40–3.85	0.22
Grade 1 ^b	-0.56	1.81	0.57	0.25–1.29	3.33
Grade 2 ^b	0.16	0.17	1.17	0.56–2.45	—
Constant	-0.027	0.67	0.77	—	—
Analysis 3: Predictors of nonrationalism					
Belief in punishment	0.30	3.19	1.36	0.97–1.89	8.30**
Parents' religiosity ^a	0.05	0.20	1.05	0.84–1.31	0.08
School	0.39	0.27	1.47	0.35–6.28	0.50
Grade 1 ^b	1.57	8.21	4.82	1.64–14.12	11.04**
Grade 2 ^b	0.99	0.45	2.70	1.12–6.53	—
Constant	-0.90	0.51	0.41	—	—

Note. B = beta coefficient; W = Wald statistic; OR = odds ratio; CI = 95% confidence interval; χ^2 = block chi-square statistics for entry of predictor into model.

^aParents' religiosity items in the questionnaire were omitted by a few participants; accordingly, sample sizes for these analyses are 196 (rather than 200). ^bIn analyses of the effects of grade, 12th grade was the designated reference category; therefore, Grade-1 analyses evaluate group differences between 12th graders and 5th graders whereas Grade-2 analyses evaluate group differences between 12th graders and 8th graders; omnibus block chi-square statistics for entry of the grade variable into the model are provided at the end of the Grade-1 row.

p* < .05. *p* < .01.

answer, Gadi considers it to be ultimately a matter of perspective. As he puts it, "faith is subjective belief, it's not objective truth." Similarly, although Naomi believes that God's existence is provable, Gadi believes that it is impossible in principle either to prove or to disprove God's existence. In other words, for Naomi, the God controversy is rationally decidable, but for Gadi it is not.

These differences between Naomi and Gadi with respect to the ontology and decidability dimensions of epistemological belief are especially noteworthy given their identical locations on the fallibility dimension. Specifically, it is not that Gadi's belief in God is any less certain than Naomi's. It is, rather, that Gadi views religious belief as a form of subjective commitment, whereas Naomi views it as a matter of affirming or denying a testable claim about objective reality.

Naomi's and Gadi's certainty is no coincidence. As a group, Religious pupils tended to deny that their belief in God might be mistaken. Most General pupils, on the other hand, readily acknowledged the fallibility of their belief (or disbelief) in God. Osnat, a General 12th grader, exemplifies this epistemological orientation. Asked whether her belief in God might be mistaken, she replied as follows:

Osnat: Yes, it possible. I'm just one person out of all the billions of people on this tiny planet floating in infinite space. My powers of understanding are so limited. So, yes, anything's possible.

This acknowledgement by Osnat of her own fallibility stands in contrast both to Naomi's explicit insistence that God's existence is proven beyond doubt and to Gadi's implicit assumption that, although his belief might seem mistaken to nonbelievers, it could never actually be mistaken. For, insofar as it is a subjective commitment, his belief in God is simply not the kind of thing that can turn out to be objectively right or wrong.

Percentages of participants who were perspectivists, fallibilists, and nonrationalists in the God controversy are presented by school and grade in Figures 1 and 2, respectively. As can be seen in Figure 1, both perspectivism and nonrationalism increase with age in the God controversy. Specifically, 17% of

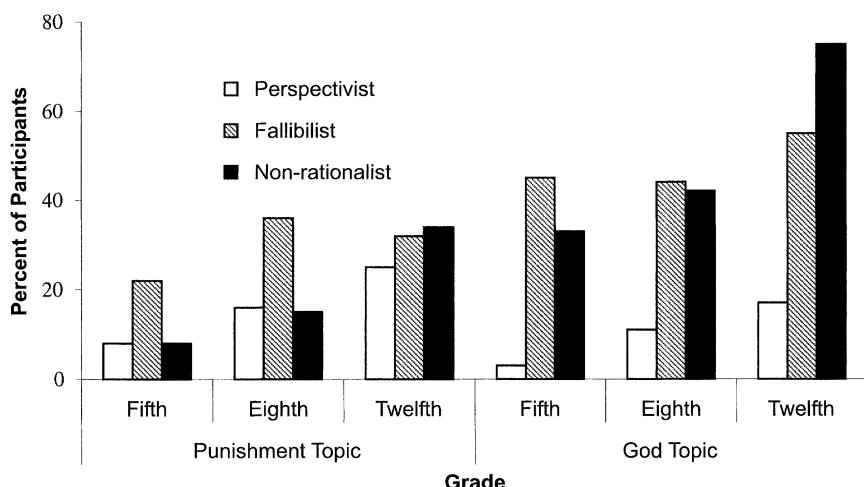


FIGURE 1 Percentage of participants who are perspectivists, fallibilists, and nonrationalists, by grade and controversy. This figure shows that perspectivism and nonrationalism increase with age, but from different baselines and to differing extents in each controversy. The steady increase in bar heights from left to right suggests that shifts in epistemological belief emerge earlier in the God controversy than in the punishment controversy.

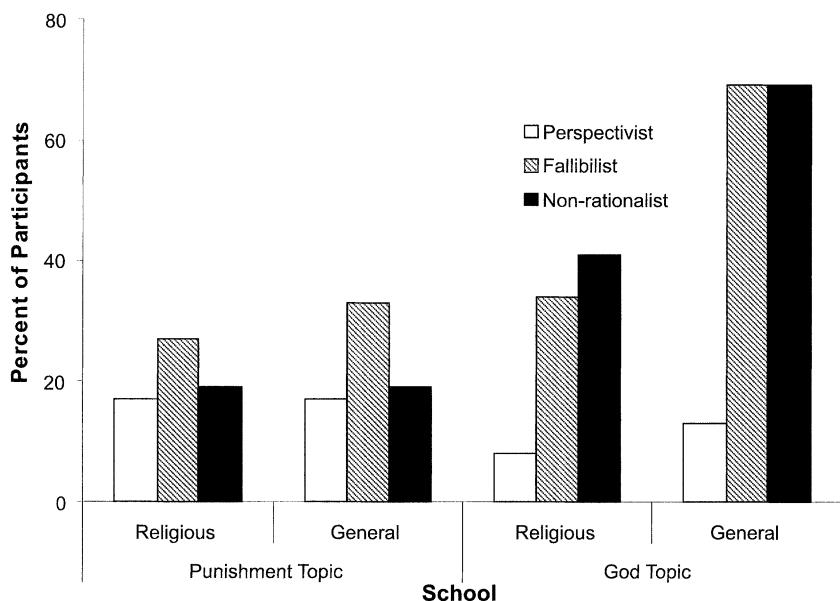


FIGURE 2 Percentage of participants who are perspectivists, fallibilists, and nonrationals, by school and controversy. This figure shows that significant school differences in epistemology are observed only in the God controversy.

the 12th graders were perspectivists in the God controversy, compared with only 3% of the 5th graders. Similarly, 75% of the 12th graders were nonrationals, compared with only 33% of the 5th graders. The results of Analyses 1 and 3 in Table 3 indicate that these age effects are significant, even after accounting for underlying age differences in belief in God.

School too influenced participants' epistemological beliefs regarding the God controversy. As Figure 2 shows, fully twice as many General pupils (69%) as Religious pupils (34%) were fallibilists in the God controversy. The regression data reported in Analysis 2 in Table 3 indicate that this school effect is significant, even after underlying differences between Religious and General pupils with respect to belief in God and parents' religiosity are taken into account.

The apparent influence of school on nonrationalism in the God controversy, however, may be attributed to underlying differences between Religious pupils and General pupils with respect to belief in God and parents' religiosity. Although as Figure 1 indicates, nearly twice as many General pupils (69%) as Religious pupils (41%) were nonrationals in the God controversy, this difference turns out to be nonsignificant when the lower levels of belief in God and parents' religiosity among General pupils are taken into account (see Table 3, Analysis 3).

To What Extent is This Variation Attributable to Underlying Group Differences in General Epistemological Sophistication?

The results reported in the previous section indicate systematic variation in epistemological beliefs across age and school groups in the God controversy. However, in the absence of comparative data from another controversy, it is unclear to what extent these patterns of variation are specific to the topic of belief in God. In particular, it is unclear to what extent school differences with respect to fallibilism in the God controversy are due to a generalized deficit in epistemic development among Religious pupils or to the existence of distinctive epistemologies of religious belief that are particular to Religious and General school cultures, respectively. To address this question, analyses identical to those conducted for the God controversy were conducted for the punishment controversy.² The results of the two sets of analyses were then compared.

As in the God controversy, an age-related shift from rationalism to nonrationalism was observed. This shift can be illustrated by the following excerpts; the first from an interview with Oren, a 5th-grade boy at a Religious school, and the second from an interview with Shiri, a 12th-grade girl at a General school:

Oren: *Could you prove to Yossi that you're right? I just did! What you said before would prove it? Yes. For certain? 100%? Yes.*

Shiri: The concept of proof seems to me to be completely inappropriate to the situation we're discussing. Perhaps reaching a conclusion, but not proof. I am certain that I am right and you are certain that you are right. But there is no criterion for rightness. Each of us is entitled to our own opinion.

Although Oren believes that the punishment controversy can be (indeed, has been) decided by rational procedures, Shiri denies this possibility. As she puts it, "there is no criterion for rightness" and therefore the very notion of rationally deciding the punishment controversy is simply inappropriate.

Percentages of participants who were perspectivists, fallibilists, and nonrationalists in the punishment controversy are presented by school and grade in Figures 1 and 2, respectively. As Figure 1 indicates, age influenced epistemological

²As noted previously, the punishment controversy was chosen for its combination of structural similarity to the God controversy, on one hand, and its nonreligious content, on the other hand. However, the possibility remained that participants' religious backgrounds might nonetheless influence their beliefs about the punishment controversy. For example, participants from more traditional homes might be expected to be more pro-punishment. In fact, preliminary analyses reveal no significant school differences with respect to belief in punishment (see Table 2). Nevertheless, to rule out conclusively the possibility of such influences, parents' religiosity was included as a predictor in the regression analyses for the punishment.

belief in the punishment topic: 34% of 12th graders were nonrationalists, compared with only 8% of 5th graders. The results of Analysis 3 in Table 4 indicate that this age effect is significant, even after accounting for underlying differences between age groups with respect to belief in punishment.

The apparent influence of age on perspectivism in the punishment controversy, however, is attributable to underlying age differences in belief in punishment. Figure 2 indicates that over three times as many 12th graders (25%) as 5th graders (8%) were perspectivists in the punishment controversy, although this difference turns out to be nonsignificant when the effects of belief in punishment are taken into account (see Table 4, Analysis 1).

More striking than either of these findings, however, is the conspicuous absence of significant differences between Religious pupils and General pupils with respect to any epistemology variable in the punishment controversy (see Figure 2 and Table 4).

The topic-specificity of participants' epistemological beliefs is further underscored by the results of Wilcoxon signed-ranks tests of within-participants' differences in epistemological belief across the two controversies. Significant within-participants' differences were observed across the two controversies for each of the three dimensions of epistemological belief ($Z_s = 2.00, 4.59$, and 7.41 , and $ps < .05, <.001$, and $<.001$, for ontology, fallibility, and decidability, respectively).

Taken together, results from the two controversies provide evidence of shifts in epistemological belief over the course of adolescence. For example, in both the God controversy and the punishment controversy nonrationalism increases with age. At the same time, however, the nature and pace of these shifts appears to differ across the controversies. For example, as the steady increase in bar heights from left to right in Figure 1 indicates, age-related shifts in epistemological belief in the punishment controversy appear to lag behind those in the God controversy. Yet, even more striking than these developmental differences across the controversies was the specificity of school effects to the God controversy, which can be seen clearly by comparing the left and right sides of Figure 2. This suggests that the school differences observed in the preceding section are not attributable to a generalized deficit in epistemic development among Religious pupils but are due, rather, to the divergent beliefs of Religious pupils and General pupils about the nature of theological claims in particular.

The next excerpts illustrate the specificity of the school differences to the God controversy. Dori is a fifth grader at a General school, and Rachel is a fifth grader at a Religious school. Consider first their responses to epistemological questions about the punishment controversy:

Dori: *Do you think this is something you can prove? No. How certain are you that you should punish? 100%. You know for certain? Yes. Are there people who think you should not punish? Yes. Could they be right? No. No chance.*

Rachel: *Are there people who don't believe you should punish? Yes. Could they be right?* Each to his own. If that's what they think, then they should do what they want. Maybe they're right.

Consider, on the other hand, their responses in the God controversy:

- Dori: I'm not sure there are no proofs that there is a God and no proofs that there isn't. Everyone just goes with what they believe.
- Rachel: Someone had to have created the world. *So this is something you can prove?* Absolutely. *Are there people who don't believe in God? Yes. Could they be right?* No.

In the punishment controversy, Dori's epistemological orientation is realist and infallibilist, whereas Rachel's is perspectivist and fallibilist. In the God controversy, on the other hand, it is Rachel's epistemological orientation that is realist and infallibilist, whereas Dori's is perspectivist and fallibilist.

What Practices in Religious Schools and General Schools Might Account for the Divergent Trajectories of Epistemic Development Observed in the God Controversy?

This was an interview study rather than an observational one, and explicit questions about discourse practices were not included in the original interview schedule. Nevertheless, the rich data generated by in-depth conversations with 200 children and adolescents about their religious beliefs include numerous explicit references to such practices, as well as evidence of differences in participants' implicit assumptions about the kind of conversation in which they were engaged.

The first hint of such differences was provided by the divergent ways in which pupils from religious and secular schools framed their initial responses. Although pupils at Religious schools tended to state immediately with which side they agreed, pupils at General schools would often preface their remarks by referring in some way to their religious background or level of religious observance. Typical of this tendency is the response by Michal, an eighth grader at a General school, in which she agrees with neither side in the God controversy, "because I'm both; at home we eat kosher and stuff, I'm both."

This tendency among General pupils to embed their religious argumentation within attempts to place themselves in social context was accompanied by a complementary tendency to avoid describing nonbelievers as wrong or mistaken. An example of this "nonjudgmental" tendency is provided by the following response by Aryeh, a General 12th grader:

Aryeh: Who do I agree with? It's a question, it's not an argument, it's not a question of agreeing or not here. There's no one who's right here. They're both [pause], I don't understand what the argument is here, because each one, there are people who believe and there are people who don't believe. There's no mistake here or a right thing to do. Each person goes according to his education, according to his faith. And that's that. In my opinion, the guy has to respect the other guy. The person himself didn't decide if he believes in God or not. It doesn't say anything about the person.

Such responses suggest that, for at least some General pupils, theological discourse is an activity in which people engage to compare social backgrounds and to articulate lifestyle preferences, and within which it is inappropriate to judge a person for his or her beliefs.

In addition to local practices within General schools, this approach to theological discourse is likely related to broader conventions regarding public discussion of religious issues in contemporary Israeli society. Israel is a society with a history of religious–secular tension and within which religious affiliations are highly salient social categories (see, e.g., Sagiv, Orr, & Bar On, 1999; Tabory, 1992). Especially since the assassination of Prime Minister Yitzhak Rabin by a Jewish extremist in 1995, numerous government agencies, philanthropic foundations, and media organizations in Israel have sought self-consciously to encourage civilized debate about religious matters and greater tolerance for religious differences. These broad societal trends may account to some extent for the tendency toward “political correctness” in General pupils’ responses in the God controversy.

Nevertheless, Religious pupils—in contrast to General pupils—tended to view the question of God’s existence less as a question of taste than as question of what is or is not objectively the case. This form of theological realism can be observed in their tendencies to consider their belief in God to be susceptible to conclusive proof and to dismiss as implausible or ridiculous lines of reasoning that seek to disprove God’s existence. Both these tendencies can be seen in the following excerpt from an interview with Tehiyah, a Religious 12th grader:

Tehiyah: I don’t have a shadow of a doubt, especially as someone who has studied biology, that this whole world must have been created by someone ... not from monkeys, not from colliding rocks, not from any of those things ... if secular people would just learn biology, then they wouldn’t be able to come out with all that Stephen Hawking nonsense, that it’s rocks and all that stuff.

Another striking difference between the discourse practices at Religious schools and General schools is evidenced by the phenomenon of “preinterview coaching.” At two of the participating Religious elementary schools, my suspi-

cions of such coaching were aroused after encountering almost identical lines of argumentation in my interviews with pupils from a particular class. These suspicions were later confirmed by pupils' explicit admissions at a later point in the interview that they had indeed been "prepared" for my visit. In one school, pupils had been told a story about Rabbi Akiva (the 1st century Palestinian sage, although in one version Akiva had mutated into Maimonides, the 12th century legalist and philosopher), who convinces a skeptic (in some versions a gentile and in others a Jewish heretic) by showing him a beautiful painting and telling him that his cat (in almost all versions: "Mitzi") had painted it by accident by upsetting a box of paints on a canvas. When the skeptic objects that a cat could not have produced such a magnificent work of art, the rabbi points out the much greater complexity and beauty of the natural world, showing that it too must be the result of design. In another school, pupils were told a story about an inspector who comes to school and goads the children by insisting that, because he cannot see God, God must not exist. One of the pupils in the story then responds that the inspector must have no intelligence because he cannot see that either.

My initial reaction to discovering these instances of coaching was to consider excluding the transcripts from the study, due to them being "contaminated" by the explicit instruction that preceded the interview. However, on reflection, I realized that this would be a mistake, for at least three reasons. First, it would exclude from the study precisely those data most pertinent to the key questions driving the investigation. It would be paradoxical indeed to exclude data from a study of the effects of cultural practices on the grounds that the data had been affected by cultural practices. Second, it would distinguish arbitrarily and unjustifiably between those instances of prior instruction of which I was aware and those of which I was not. Each participant entered the interview with his or her own unique epistemological baggage, accumulated over the course of his or her entire life prior to that moment, and from an indefinite variety of sources. Who is to say, and on what grounds, which of that person's epistemological statements were "real" and which "merely parroted"? Third, viewing these instances as "contaminated" makes sense only if one assumes that "genuine" epistemological beliefs are things that one constructs in one's head without outside assistance. The premise of this study, however, is that epistemological beliefs are cultural products that are shaped not only by individual cognition but also by local sociocultural practices.

Although no such instances of explicit coaching were observed in Religious high schools, Religious pupils often referred in their responses to seminars or classes they had attended in the past, in which theological questions were dealt with by teachers, rabbis, or counselors in similarly summary fashion. As Hannah, a Religious 8th grader, commented, "Every seminar they bring up the whole thing; that God exists, proving to us that God exists." The following excerpts from interviews with Sarah and Rivkah, both 12th graders at a Religious school, describe in some detail the kinds of discourse that characterize such seminars:

Sarah: My faith has become stronger in the last few years. *What caused it to become stronger?* All kinds of lectures and seminars. *How did the seminars help?* They focused more on our faith, on our inner selves. And also on our outer selves, how we ought to behave. They were also about faith. I can't remember exactly what we did, but I know that it strengthened my faith. *What sort of thing did you talk about?* Like, they brought us all kinds of "returnees" [i.e., formerly secular Jews]. They brought us a person who had been injured in a car accident and was saved because he was wearing his tzitizit [a ritual garment worn by Orthodox males]. And you can really see it. If you're looking for proof, that's, like, really a proof. You can't not believe it, because there he is, alive, in front of you, a medical miracle. That strengthens your faith.

Rivkah: At a certain stage, when the seminars started, and they started to explain stuff, my faith grew stronger, when I understood that what I'm doing isn't because my parents forced me to do it, but because now I really believe in it. *What do you do at these seminars?* Usually questions and answers. It starts with the rabbis asking, "Do you have any questions?" Even if everyone's heard it all 20 times before and everyone knows the answers in advance, they always ask again, because it's something uncertain, I mean, doubts always reawaken.

The picture that emerges from these descriptions is of a ritualized form of discourse in which teachers seek to "strengthen the faith" of pupils by elaborating proofs of God's existence, countering pupils' doubts, and rebutting skeptical counterarguments. In Rivkah's description especially, such discourse is described as a highly collaborative endeavor, in which the teachers' efforts to strengthen the faith of their pupils are supported by the pupils' active desire to have their faith strengthened.

In contrast, pupils in General schools reported no such instances of "official" theological discourse. Instead, when referring to previous occasions in which they had discussed the question of God's existence, they tended to cite informal conversations with peers that ended with the opposing sides agreeing to disagree. The following comment by Ron, a General 12th grader, is typical:

Ron: To tell you the truth, I had exactly the same argument with my friend. We sometimes go hiking and speak about this kind of stuff. And I didn't succeed. I'm always saying stuff to him and he's always saying stuff to me, but neither of us is ever persuaded.

Taken together, these findings suggest that some of the school differences in epistemological beliefs described previously may have their roots in the divergent cultures of theological discourse to which Religious and General pupils are ex-

posed. Specifically, by exposing their pupils to models of theological discourse in which all questions can be answered clearly and conclusively in the affirmative, Religious schools appear to foster a religious epistemology that is both realist and infallibilist. Conversely, by consigning religious beliefs implicitly to the private domain, General schools seem to promote a view of theological matters as questions of personal preference that lie beyond the pale of rational debate.

DISCUSSION

This study compared the beliefs of 5th, 8th, and 12th graders at Religious and General schools in Israel about the ontology, fallibility, and decidability of claims about God's existence and about the appropriateness of punishing children when they misbehave. Trajectories of epistemic development were found to vary systematically across communities and controversies.

In both controversies, older participants were less likely than younger participants to consider the question rationally decidable. However, this shift appears to occur at different rates in each controversy, with nonrationalism emerging in the God controversy earlier than it emerged in the punishment controversy (see Figure 1). In the God controversy, General pupils were less likely than Religious pupils to consider the question rationally decidable or their own beliefs infallible. But no such school differences were observed in the punishment controversy (see Figure 2). Religious pupils appear to treat both controversies largely as questions of brute fact (cf. Hallett et al., 2002). General pupils, on the other hand, appear to treat only the punishment controversy in this way, whereas they treat the God controversy more as a question of taste or preference.

Tellingly, the effects of age and school on epistemological beliefs in the God controversy, although significant, were not large (see the small to moderate Wald statistics—roughly equivalent to F values in linear regression—reported in Tables 3 and 4). In particular, although school was found to exert a unique effect on participants' epistemological beliefs over and above that due to underlying differences in belief in God and parents' religiosity, significant but small effects were observed also between these latter variables and participants' epistemological beliefs. This suggests that a person's epistemological belief is subject to a variety of contextual influences, many of which derive from the particular cultural settings (e.g., familial, religious, institutional) within which he or she is situated. Indeed, one way to interpret these findings is to think of epistemological beliefs as things that reside not in individual heads but in the interactions between people, activities, and contexts.

Taken together, then, these findings have important implications for contemporary models of epistemic development. In their attempts to reconcile differing accounts of the ages at which key shifts in epistemological thinking take place, such models have proposed that people's epistemological beliefs are context-dependent.

However, by attending selectively to only some kinds of context, these models have overlooked at least one crucial kind of context and underestimated the importance of interactions between others. The findings shown here indicate that trajectories of epistemic development vary not only across “domains” or “dimensions” but also across communities. They indicate also that neither dimensions nor domains alone can account for how people’s epistemological beliefs evolve over the course of adolescence. Rather, developmental trajectories may diverge across dimensions of epistemological belief, even within a given domain of epistemological judgment.

It is interesting to compare these findings with the assumptions underlying earlier, neo-Piagetian models of epistemic development. Such models rested on at least three implicit assumptions. First, they assumed that stages of epistemic development were unitary structural wholes or schemas in the sense that people’s beliefs about seemingly diverse aspects of knowledge and knowing were attributed ultimately to the same underlying cognitive structure. Thus, for example, an objectivist was assumed to be objectivistic not only in his or her belief in the infallibility of experts, but in all his or her epistemological beliefs, including beliefs about the nature of justification, the adequacy of different kinds of evidence, the possibility of proof, and so on. Second, they assumed that epistemological beliefs were domain-independent. Thus, for example, a subjectivist was assumed to consider all knowledge claims to be subjective, irrespective of whether the claims were made in the realms of art, morality, politics, history, religion, science, mathematics, and so on. Third, they assumed that epistemological beliefs could be ordered hierarchically according to their sophistication or adequacy.

In more recent, contextual models, these first two assumptions have been tempered substantially. In place of unitary epistemological schemas, relatively independent dimensions or elements of epistemological belief are proposed. Similarly, epistemological beliefs are characterized as domain-dependent, developing at different rates in different zones of epistemic judgment. The third assumption, however, has remained intact. Although dimensions differ from stages, they are conceptualized nonetheless as continua, with immature, unsophisticated, inadequate beliefs at one end and mature, sophisticated, adequate ones at the other (see, e.g., Schommer, 1990, 1993). And although different onsets and trajectories are postulated for epistemological beliefs in different domains, the existence of a normative endpoint in each domain is taken for granted (Hallet et al., 2002; Kuhn et al., 2000, although see Kuhn et al., 2000, p. 325, n.1).

However, just as there are grounds to challenge the assumptions that epistemological beliefs are unitary and domain-independent, so too are there grounds to challenge the assumption that they may be ordered straightforwardly in hierarchical sequence. These findings do not disprove that epistemological beliefs can be ordered hierarchically. Indeed, the overall direction of epistemic development reported here is reasonably consistent with that reported in previous studies. Nevertheless, by demonstrating that onsets and trajectories of epistemic development may

vary cross-culturally, these findings lead one to wonder whether the hierarchical assumptions on which contemporary models of epistemic development are based are equally applicable to all cultural settings. For if onsets and trajectories of epistemic development can vary cross-culturally, then why not endpoints too? For example, might Religious 12th graders' tendency to infallibilism in the God controversy reflect not a developmental lag relative to their peers at General schools, but rather their participation in community practices that value infallibilism above fallibilism? The qualitative data reported in the preceding section, although far from conclusive, provide tentative support for this latter possibility. At the very least, they provide evidence of at least one case in which epistemological beliefs considered sophisticated in one cultural context are considered naïve, outlandish, or heretical in another.

These may seem to be bold conclusions, given the limited sampling of communities and controversies in this study. Indeed, some might argue that the groups compared here are not really cultural, and the beliefs compared not really epistemological. But cultures come in many shapes and sizes. They may be distinguished from one another not only by large-scale ethnic, linguistic, and geopolitical markers but also by more local distinctions between the beliefs, values, and practices of their respective participants (see, e.g., Rogoff, 2003). And this study shows that, despite their common ethnicity, geography, and language, Religious pupils and General pupils differ systematically in their beliefs, values, and practices, including their beliefs about the epistemological status of theological claims. Similarly, it is true that some people consider theological claims to be matters of belief or conviction rather than of knowledge. But to determine, before collecting data, that beliefs about theological claims are not really epistemological is to beg precisely the question that studies of epistemic development are conducted to answer. The point of such studies is to identify what distinctions, if any, ordinary people make between epistemic states such as knowledge, belief, opinion, and so on, and when and how these distinctions emerge. To decide in advance which kinds of claims are bona fide knowledge claims and which are merely beliefs or convictions is to substitute the researcher's epistemic judgment for the participants'.

Nevertheless, this study does have important limitations. Being both cross-sectional and interview-based, it was able to identify cultural differences in epistemic development, but only to gesture suggestively at the processes by which such differences come about. Clearly, studies of a more naturalistic and longitudinal orientation are needed. Similarly, comparisons across only two communities and two controversies are a slender empirical foundation on which to base broad conclusions about the relations between cultural practices and epistemological beliefs. To better understand these relations, it is necessary to conduct many more comparative studies, across many other kinds of community and controversy.

However, the challenge this study poses to contemporary models of epistemic development should not be underestimated. For all their acknowledgement of context-dependence, most of these models continue to take for granted that epistemic

development follows a predictable trajectory that leads inexorably from objectivism, through subjectivism, to evaluativism. The logic of this progression may be impeccable, but the reality of epistemic development appears to be much less orderly. These findings suggest that shifts in epistemological belief over the course of adolescence can stray considerably from the philosophically tidy pathways that developmental theorists have marked out for them.

Rather than global conceptions of knowledge-in-general, people's epistemological beliefs appear to be context-sensitive judgments about various kinds of knowledge-in-particular. And, as this study shows, the contexts to which such judgments are sensitive include not only the particular aspects of knowing and the particular kinds of knowledge being considered. They include also the cultural contexts within which individuals learn to treat some kinds of claims in one way and other kinds of claims in another.

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APPENDIX A
Number of Participants by School Type, Gender, and Grade

School Type	Boys			Girls		
	Grade 5	Grade 8	Grade 12	Grade 5	Grade 8	Grade 12
General	16	16	21	16	16	18
Religious	18	14	16	17	16	16

APPENDIX B
INTERVIEW PROTOCOL

Scenarios

God controversy: Danny and Yossi are arguing about belief in God. Danny says he believes in God; Yossi says he doesn't believe.

Punishment controversy: Danny and Yossi are arguing about education and punishment. Danny says that, to teach children how to behave, they should be punished when they misbehave. Yossi says they shouldn't be punished.

Prompts

Who do you agree with? Why? What would you say or do to show Yossi that you're right? Could you prove that you're right? How sure are you that you're right? Is it possible to know for certain who's right? Are there really people like Yossi? Could they be right? What do you think Yossi would say or do to show that you're wrong? How would that show that you're wrong? Could Yossi prove that you're wrong? How would you respond to Yossi to show that he's wrong? Could you prove that Yossi's wrong?

Explanatory Notes

The previous questions assume agreement with Danny; if the participant expressed agreement with Yossi, or with neither protagonist, the questions were modified accordingly. Controversy order was counterbalanced, and the names associated with each point of view randomized, to control for any sequence effect. In interviews with girls, female names (Haya and Ifat) were used for the protagonists.

APPENDIX C QUESTIONNAIRE

Following completion of the individual interview, each participant completed a written questionnaire. The questionnaire was adapted from previous studies of religious beliefs, values, and practices among Israeli Jews (e.g., Leslau & Bar-Lev, 1993; Levy, Levinsohn, & Katz, 1993). To measure differences in religious self-identification, participants were asked to rate themselves on a 6-point scale ranging from 1 (*very irreligious*), to 2 (*irreligious*), to 3 (*not all that religious*), to 4 (fairly religious), to 5 (*religious*), through 6 (*very religious*) . To measure differences in parental religiosity, they were asked also to rate, respectively, their fathers and mothers on the same scale. To measure differences in participation in religious practices, participants were asked whether they eat non-kosher meat on a 3-point scale ranging from 1 (*always*), to 2 (*sometimes*), through 3 (*never*). To measure differences in parental participation in religious practices, they were asked to rate on the same scale how often their fathers watch television on the Sabbath. Participants were asked to rate their religious beliefs on a 4-point scale, ranging from 1 (*don't believe at all*), to 2 (*generally don't believe but are sometimes unsure*), to 3 (*believe but are sometimes unsure*), through 4 (*believe wholeheartedly*), that the Jews are a chosen people. They were asked also to use the same scale to rate their belief in resurrection. To measure differences in religious values, participants were asked to rate how important it is to them to marry a Jew on a 4-point scale ranging from 1 (*not important at all*), to 2 (*not all that important*), to 3 (*important*), through 4 (*very important*). They were asked also to rate on the same scale how important it is to them to fast on Yom Kippur.

Significant differences were observed between the mean scores of General and Religious pupils on each of these items. Statistics are presented in Table C1.

TABLE C1
**Mean Scores on Questionnaire Items by School, With *t*-Test Statistics for
 Between-School Differences, and Bivariate Correlations With Parents'
 Religiosity**

<i>Item</i>	<i>Range</i>	<i>M</i>		<i>t^a</i>	<i>r^b</i>
		<i>General</i>	<i>Religious</i>		
Personal religiosity	1–6	2.05	4.68	19.46	0.86
Parents' religiosity	2–12	4.57	10.14	22.25	1.00
Non-kosher meat	1–3	2.43	2.95	7.26	0.56
Father television Sabbath	1–3	1.25	2.92	26.64	0.83
Resurrection	1–4	1.58	3.13	11.30	0.59
Chosen people	1–4	2.72	3.57	5.79	0.46
Marry a Jew	1–4	2.99	3.79	6.92	0.49
Fast on Yom Kippur	1–4	2.93	3.74	6.58	0.56

Note. A few participants omitted some questionnaire items. Therefore, sample sizes on the items for General and Religious pupils have ranges of 101 to 103 and 95 to 97, respectively.

^aAll *t*-test statistics are significant at $p < .001$. ^b*r* = Pearson bivariate correlation with parents' religiosity.