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What is to be done? Children's ascriptions of conventional obligations

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Abstract:

It often not apparent what people ought to do. Three experiments explored cues children and adults may use to identify conventional obligations. Experiment 1 addressed the hypothesis that young children identify obligations with expected outcomes. Although preschool-aged (4- to 5-years) children often expected consistency, school-aged (7- to 8-years) and adult participants indicated that obligations may be at odds with costs and benefits. In Experiment 2, all participants realized that people may have obligations they are unaware of. Preschool-aged children often used information about obligations to identify characters' beliefs. In Experiment 3, preschool but not school-aged children reliably identified obligations with the desires of authorities. Results are discussed in terms of expectations about canonical relations between mental states, outcomes, and obligations.

What is to be done? Children's ascriptions of conventional obligations

Social life involves a complex web of obligations and permissions. To function successfully social actors must be able to identify and keep track of deontic states of their environments: what is allowed, prohibited and obligatory. Although there are many different deontic states, the concept of obligation is often taken as the central principle (and other deontic states defined in terms of obligations, von Wright, 1968). Thus, learning to identify and keep track of obligations is a critical developmental task. The task is difficult in part because obligations are invisible, not readily apparent in the environment. Moreover, the conditions under which obligations become established are themselves complex and non-obvious. Keeping track of obligations involves identifying various agents' mental states (e.g., their beliefs, desires, and intentions) and various states of the environment (e.g., the consequences of different behaviors). Yet, at least from an adult perspective, what one ought to do cannot be identified with any simple combination of other elements. The focus of the current study is how young children identify and keep track of conventional social obligations. How do children identify what someone is supposed to do?

Most research on children's thinking about social conventions has focused on the question of justification. What makes a conventional act the right thing to do? Why ought one obey conventions? Turiel (1983) describes a developmental progression in justifications. In early childhood the regularity of conventional behavior is its own justification. One ought to follow the convention in the future because everyone has done so in the past. Alternatively, conventions are binding because they reflect the interests of authorities. One ought to follow the teacher's directive because the teacher is the authority in a school. In later stages of development conventions are justified with respect to social coordination. It is right to obey conventions because doing so helps people get along and accomplish their goals cooperatively.

The focus of the current study is not the justification of conventional obligations but rather their identification. How do people figure out just what their conventional obligations are? This problem is not independent of the justification of a convention, but they are distinct considerations. For example, one might decide that a teacher is justified in setting the due date for an assignment. Whether in light of the teacher's authority or her role in coordinating social activity we recognize a legitimate obligation to turn in the assignment on the day it is due. But how does one identify the due date? What is it that establishes the obligation to hand in the assignment on one date rather than another? The question is not, "Why should I turn it in?" but "When should I turn it in?"

Research by Turiel and colleagues (Turiel, 1983, 1994) has demonstrated that quite young children use general moral principles (e.g., justice, harm) to identify obligations. Because they are general, moral principles identify obligations even in novel situations. For example, a child visiting a museum for the first time would appreciate that stealing and hurting others are not allowed. However, there are other obligations, other things one may or may not do, that are not derivable from general principles. Is the child allowed to touch the exhibits in the museum? The obligation not to touch in a museum is conventional. Examples of conventional obligations are contracts, promises, and stipulations by authorities. The distinctive feature of conventional obligations (relative to moral obligations) is that they depend on, and are created by, certain kinds of social acts (Searle, 1969). As a consequence, conventional obligations vary by context (in some museums touching is allowed), are not universally applicable (curators are allowed to touch the exhibits), and may change (the museum could introduce "hands on" exhibits).

Identifying and keeping track of conventional obligations is a more complex, or at least a different, problem than identifying and keeping track of moral obligations. One's moral obligations can be inferred from information about what is fair and what is harmful. But what features of the environment are informative about conventional obligations?

Outcomes as cues to obligations

One way children may identify conventional obligations is by attending to the expected or observed consequences of actions. Young children, six- and seven-year olds, often judge that an action is wrong it violates expectations, if it is not the way it is usually done (Turiel, 1983). Alternatively, if some action has a negative outcome it may be forbidden; if some action is the best alternative, it may be obligatory. As adults we appreciate that this is an heuristic cue; doing what is right does not always turn out for the best. There are several suggestions in the literature that young children identify obligations with the outcomes of behaviors. According to Astington (1988a, 1988b), five to six-year-old children do not distinguish between a promise and the behavior that is the subject of the promise. Before age nine, children use outcome information to decide whether a statement was a promise (Maas & Abbeduto, 2001). Mant & Perner (1988) find the converse assumption. Young children take a prediction or statement than an action will occur as a commitment to the action. One interpretation is that young children look to objective conditions (did or will the event occur) when judging whether an obligation exists. For example, children judge that characters are naughty if their actions have adverse consequences, even if the characters did not explicitly commit themselves to some alternative (Mant & Perner, 1988). A person who says, "I think I'll go swimming after school." is understood to have an obligation to go, and naughty if she does not go. Similarly, young children often focus on whether a statement is true or false when identifying lies, ignoring speaker's intentions (Wimmer, Gruber, & Perner, 1984). The suggestion is that children use their understanding of what did or will occur to decide what someone is or is not obligated to do.

A long tradition of research in moral development highlights the significance of consequences in young children's reasoning. Whether an act leads to good or bad outcomes is a major influence on judgments of punishment and blame (Nelson, 1980). Especially for young children, outcome is the most important factor for judgments that an act is acceptable ("OK" or "not OK" Helwig, Zelazo, & Wilson, 2001; Wainryb & Ford, 1998). The focus on outcomes may be most characteristic of preschool-aged children; young school-aged children do reliably consider other factors, such as intention, when making moral evaluations (Dixon & Moore, 1990). Existing research has focused on morally significant outcomes (harm, justice). It is not clear how such considerations would transfer to questions of conventional obligations. Nonetheless, a hypothesis consistent with the literature on the acceptability of actions is that preschool-aged children will use information about the expected costs and benefits of behaviors to identify and track conventional obligations. The intuition is that people are supposed to do what is best. School-aged children may be expected to consider other factors besides outcomes. Actors' mental states, their intentions, are critical for making ascriptions of blame. Are mental states also used to identify obligations?

Psychological cues to obligations: Actor Intention

From an adult perspective, focusing on expected outcomes is insufficient to identify obligations because intentions matter as well. The difference between a prediction and a promise or commitment is the intention of the speaker. For example, adults do not think the speaker in the

Mant and Perner (1988) example is obligated because the speaker did not intend to create an obligation. Consent of the obligated party is characteristic of many cases of conventional obligations. It is part of the felicity conditions (Searle, 1969) of agreements, deals, contracts, and promises, that the bound party know and consent to the obligation incurred. Classic theories (e.g., Hobbes, Locke) locate the source of political obligation and legitimacy in consent of the governed.

Young children do understand obligations created through mutual agreements (Harris & Nuñez, 1996; Harris, Nuñez, & Brett, 2001). Such voluntary agreements may provide a compelling model for conventional obligation. Relative to older children, young children more frequently endorse consent-based means for establishing rules and norms (Helwig & Kim, 1999; Kinoshita, 1989). Perhaps agreements are a default or prototypical model for conventional obligation. Although agreements are social acts, the beliefs and intentions of the actors are critical. Thus one way to identify obligations is to keep track of people's intentions: If someone has intended to incur an obligation then he or she is obligated, if there was no intention, there is no obligation. From an adult perspective, this is true of explicit agreements (like promises) but it is not a general feature of conventional obligation. That actors know and consent to their obligations is characteristic, but it is not definitive. Young children may rely on simpler heuristics, such as attending to actors' intentions, effectively treating all conventional obligations as like agreements.

A potential complicating factor is that the actor's mental state is a critical cue or determinant for ascriptions of blame. We do not generally blame an ignorant actor for violating an obligation. Although early research held that young children ignore mental states when assigning blame, more recent work suggests that intent does matter (Dixon & Moore, 1990; Karniol, 1978). Perhaps by age three (Nelson, 1980), but at least by four or five, children consider an actor's beliefs and intentions when deciding whether an action merits punishment (Helwig et al., 2001; Wainryb & Ford, 1998). However, whether a person is obligated to do something, and whether they can be blamed for failing to do so, are different judgments, the latter depending more on intention than the former. Perhaps young children do not clearly distinguish the two judgments and use the same mental state cues to identify obligations as to assign blame. If older children attend to an actor's intentions when judging whether the person deserves punishment, they may also use the actor's intention to judge whether the person has an obligation. If preschool-aged children do not attend to intentions, they may, paradoxically, be more likely to show the adultlike pattern of judging that actors' intentions do not determine their obligations.

Psychological cues to obligations: Authority Desire

Although agreements are an important type of conventional obligation, they may not be the most compelling model for young children. In Turiel's (1983) analysis, not until late adolescence (age 18-25) does agreement of those bound by a convention figure in their justification. Young children are frequently in the position of being told rather than asked. An authority figure, such as a parent or teacher, establishes or indicates the obligations holding for a subordinate, such as a child or student. At an early stage of development children state that one ought to conform to a convention because it is what an authority wants or intends (Turiel, 1983). The mental states of the authority important cues regarding the obligations involved. One way to identify what someone should do is to identify what the relevant authority wants the person to do. Especially as children are frequently in subordinate positions, they may tend to identify

obligations with what an authority wants. Indeed, research on social conventions almost always presents examples as originating from an authority (and less consistently indicates consent of subordinates). For example, Smetana (1985) introduces a (possible) change in school rules as what "the teacher wants." The general finding is that preschool and school-aged children take an authority's expression of desire as indicative of an obligation. If the teacher says she wants her students to do something (within the scope of her authority), then the students ought to do it (Laupa, 1991).

In trying to identify people's obligations, what they ought to do, focusing on what an authority wants or prefers them to do is a reasonable heuristic. Again, it is a fallible heuristic from an adult perspective. Just because an authority wants something does not mean subordinates are obligated to provide it. Research in social domains has demonstrated that the content of the desire matters. Even preschool-aged children appreciate that people are not obligated to follow an authority's wicked desires (Smetana, 1981, 1985). Yet even for matters within the scope of authority, something more than a preference is required. Just like agreements, orders or commands are social acts, with their own sets of felicity conditions. Desires or intentions motivate an authority to establish some obligation, but the act of establishment is distinct from the intentions. Minimally, for example, the preference must be communicated and the obligation established in a socially recognized manner. For example, a museum director who decides that children should no longer touch the exhibits may want that to be the case, but until she acts on the desire by establishing a rule there is no obligation/prohibition.

Young children may not appreciate the distinction between an authority's desire and the acts that establish obligations. Preschool-aged children have difficulty attending to the illocutionary force of statements, the speaker's goal making an utterance (as distinct from the content of the utterance (Olson, 1993). Similarly, they do not distinguish between an expression of preference and a plan or intention to act on that preference (Astington & Gopnik, 1991). An alternative interpretation of the findings that young children attend to outcomes when judging promises and commitments is that those children are confused about the significance of the statements made by the story characters. This research suggests that preschool-aged children will not be sensitive to the distinction between an authority's desire (or expression of desire) and the action that establishes an obligation. In contrast, school-aged children do appreciate the illocutionary aspect of statements, and distinguish preferences from intentions. These children may appreciate that obligations cannot always be identified with the desires of authorities.

Developmental Hypotheses

There are many cues that people can use to identify what they or others are obligated to do. The review of the literature above considered three cues that may be both accessible and salient for young children: expected outcomes, actor's intentions, and authority's preferences. In each case there were indications of developmental differences in judgments of obligations. The remainder of this paper reports three experiments testing children's and adults' reliance on the different cues to identify and track people's obligations. Before turning to the empirical questions, we briefly consider hypotheses about developmental changes in judgments of conventional obligations.

Conventional obligations have a complex ontological status; they are neither completely objective nor completely subjective (Searle, 1995). A common finding in studies of cognitive development is that children have difficulty coordinating judgments of objectivity and subjectivity (Chandler & Lalonde, 1996; Flavell, 1988; Gopnik, 1993; Kuhn, 2000). One

developmental hypothesis is that young children preferentially attend to objective properties, or interpret subjective states more objectively than do older children. For example, young children are quite adept at keeping track of expected and actual physical consequences and transformations: how much damage was done, where objects are located, etc. When called upon to make ascriptions of less obvious mental and obligational states children draw on the physical facts they have been following. A hypothesis consistent with this perspective is that preschool-aged children will use outcome information to identify people's obligations. Unlike older children and adults the younger children will not appreciate that subjective states (intentions, desires) affect obligations.

An alternative hypothesis is that young children will have a subjective understanding of obligations. Research in theory of mind has demonstrated that quite young children attend to psychological states when predicting and explaining people's behavior (Wellman, 1992). Mental states such as beliefs, intentions, and desires are importantly related to obligations. Young children may attend to these subjective aspects and not appreciate the objective status of obligations. Only by seven- or eight-years of age do children begin to recognize constructed facts (Chandler & Lalonde, 1996; Kalish, 2000). For preschoolers things are either objective or subjective. If preschool-aged children recognize that obligations cannot be identified with outcomes alone, that intentions matter, then obligations may be treated as purely subjective. The specific hypothesis is that preschool-aged children will identify obligations with one or more subjective psychological states, for example actors' intentions or authorities' desires. Older children and adults will appreciate that obligations have some independence from psychological states.

Although young children may tend to identify obligations with objective or with subjective conditions, the developmental hypothesis we favor is more akin to a characteristic-to-defining shift (Keil & Batterman, 1984). Among the characteristic or typical features associated with the existence of an obligation are: actor consent, authority preference, and action consequence. Each of these cues reflects a plausible, but simplified, model of conventional obligation. The three cues appear together in the canonical examples of obligation. Expectations about canonical or typical relations between mental states, consequences, and obligations may guide social judgments, and perhaps introduce biases (Kalish & Shiverick, 2004; Lagattuta, 2005; Nelson, 1980). For example, people are assumed to be rational and well-behaved; their beliefs usually match the facts, they fulfill their obligations, and actions generally have positive consequences. If young children are looking for ways to identify and keep track of conventional obligations, assuming that mental states, outcomes, and obligations are consistent is a reasonable heuristic. Of course, from an adult perspective this is merely a heuristic; obligations are not always consistent with beliefs, desires, or outcomes. Yet, a consistent pattern in cognitive development is that young children adopt simplified models of complex phenomena. Young children tend to rely heavily on prototype and stereotype information (Bjorklund & Thompson, 1983; Martin, 1989; Meints, Plunkett, & Harris, 1999). For example, children often reject atypical examples, and do not distinguish merely characteristic from defining features (Keil & Batterman, 1984). The hypothesis motivating the current study is that young children will show greater reliance on heuristic cues to conventional obligation than will older children and adults. Young children will tend to identify obligations with other, associated states such as people's thoughts and preferences or the outcomes of actions. The reverse pattern is also expected: Young children will expect that consequences and mental states may be identified from people's obligations.

The three hypotheses outlined above offer distinct predictions regarding the ways information about mental states, outcomes, and obligations will be coordinated. The hypothesis that children initially attend to objective conditions suggests that they will use information about outcomes to identify obligations. Children determine whether an action will lead to a positive or negative consequence and then use that information to decide whether someone is obligated to perform the action or not. The hypothesis that children initially attend to subjective conditions suggests they will use information about characters' thoughts or preferences to assign obligations. Finally, the hypothesis that children's judgments reflect canonical expectations implies that events will be interpreted to maintain consistency between mental states, outcomes, and obligations. The characteristic prediction is that information about any state could, potentially, drive identification of any other. For example, children may use information about obligations to identify outcomes and mental states, as well as vice versa: That someone ought to do something implies it will have positive consequences and that people know and want the action to occur.

Experiment 1

It is common to characterize what people should do as what will turn out for the best. This sense of "should" may be described as prudential or evaluative. In contrast, there is a deontic sense of 'should' that is at least conceptually distinct from costs and benefits. This deontic sense is more clearly indicated by terms such as "ought to do" or "allowed to do." At least commonsense adult intuitions are that evaluative and deontic "shoulds" may diverge. More generally, expectations about positive or negative effects of actions may be reasons for establishing conventions, rules, or obligations, but once established the obligations have some independence of those motivating conditions. Consider a specific example: A teacher notices that the class is running low on paint. She tells the students not to paint during free time. A student then discovers a new supply of paint. Before the teacher becomes aware of the new paint, and actively responds, does the original rule still apply? Are students allowed to paint or not?

The question motivating Experiment 1 was whether preschool-aged children would distinguish outcomes from obligations. Would they identify an obligation to do something with information about costs and benefits of the behavior? A single instance of a distinction would be a sufficient answer the question in the affirmative. Thus the strategy was to present a wide variety of "unexpected outcome" stories. In practice there are many ways that outcomes can relate to obligations and rules. Experiment 1 focused on a class of problems in which a rule is created based on expectations about a particular outcome (that a certain behavior will have positive or negative consequences). As the story unfolds it becomes apparent that the outcomes are different than expected. The key question is whether the obligation persists or whether it changes to reflect the actual outcome. Within this general structure, there are many possible variants (e.g., is an obligation warranted by the originally expected or actual outcome, is it imposed by authority or negotiated by peers). There were no strong a priori predictions about which variants would provide the best test of possible distinctions between outcomes and obligations. Presenting a range of stories also begins to address the more complex question of when and how children distinguish obligations from outcomes.

Methods

Participants. The sample consisted of fifteen younger children (Mean Age= 4:8, range 4:2-5:7) and fifteen older children (Mean Age = 7:9, range 7:2-8:10). Children were recruited from preschool and after-school programs serving a largely white middle-class population in a mid-sized Midwestern city. Twenty-four adults also participated. Adults were college students recruited from Psychology and Educational Psychology classes at a large public university and received course-credit for participation.

Design. Each participant heard five stories involving establishment of an obligational state (e.g., a promise, a contract, a reward). For example, a teacher tells children they are not allowed to use any green paint. Two stories described obligations conditioned on some expected outcome: a shortage of paint leading to a prohibition, a need for a battery leading to a promise to provide one. Two stories involve actors granted permissions: to eat a treat, or to stay up late. Permissions can be understood as the absence of an obligation (e.g., not obliged to either eat or not eat the treat). One story combined permission and obligation in a contract: an actor receives permission to watch TV while incurring the obligation to do a chore. The final element in each story was information that the consequences of the behavioral options would be different than expected. The promised battery would not function; the allowed treat would cause illness, etc. Complete text of all stories is provided in the Appendix. Thus each story contains a contrast between the originally expected consequence of a behavior (that motivated establishment of an obligation) and the actual, unexpected consequence of the behavior. For convenience, these two alternatives will be referred to as the old (original, expected) and new (actual, unexpected) outcomes.

All stories finished with the character needing to make a decision about which course of action to select. Participants answered three questions about each story. The obligation question asked what a story character was obligated to do (e.g., "Is Julie allowed to use green paint?"). A second question asked about the outcome or utility of the critical behavior (e.g., "Is there enough green paint to go around?"). A final question asked about consequences (e.g., "Will Julie get in trouble if she uses green paint?"). In the cases of obligation rules, the question was whether the character would get in trouble for violating the original obligation (using paint, not bringing the battery, not doing the chore). For permission stories the question was whether the character would get in trouble for exercising the original permission (eating the cookie, staying up late).

Procedure. Children were interviewed individually in a quiet location in their school or in a research room on the university campus. The interviewer read each story to the participant and flipped the laminated color cards during each reading. Undergraduates participated in group sessions using desktop computers to present stories and record answers. Presentation of stories was randomized. Participants answered the three study questions at completion of each story. Order of questions was constant across stories.

Results & Discussion

Responses were coded as consistent with the old, expected, outcomes or as consistent with the new, unexpected, outcomes. For example, responding that: the character may use green paint, there is enough green paint to go around, and the actor would not get in trouble for using green paint were considered "new" judgments. Figure 1 shows the mean proportions of new responses. Adults reliably judged that obligations would be consistent with the old rather than new outcomes. Older children showed the same pattern: They indicated new obligations at rates significantly below chance, but indicated new outcomes at rates above chance (see Figure 1).

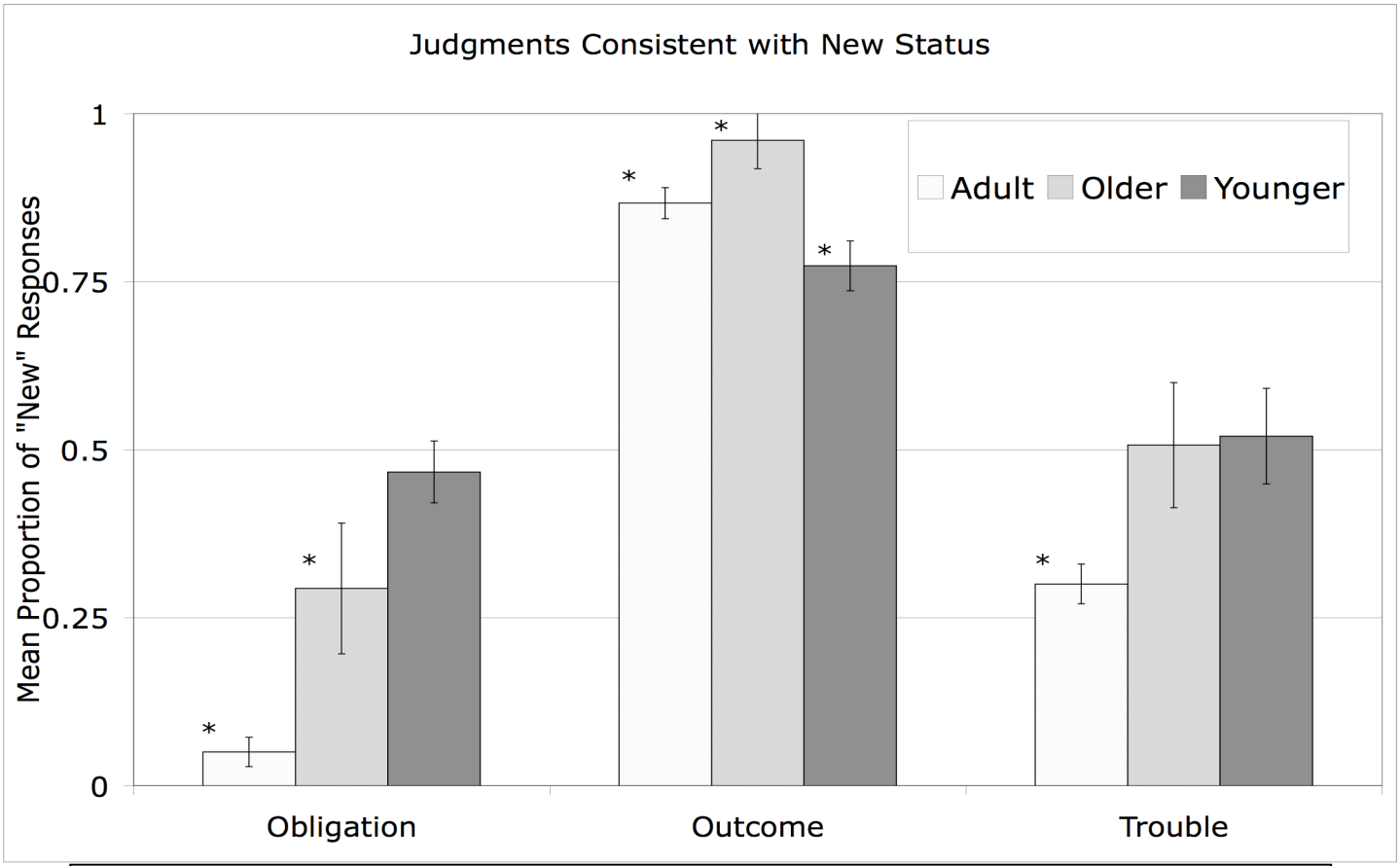

Figure 1: Results from Experiment 1. Bars indicate standard-error. * Mean different from chance (.5), 2-tailed t-test.

Younger children did not differ from chance in their judgments of obligations, but did reliably predict new outcomes. In order to compare group and judgment type differences, mean proportions of new judgments were analyzed in an ANOVA with Age as a between-subjects factor and judgment type (Obligation or Outcome) as a within-subjects factor. The largest effect was the main effect of Judgment: Participants were more likely to give new responses to the outcome than to the obligation questions, $F(1, 51) = 396.3$ $\eta^2 = .79$, $p < .001$. There was an interaction with age, though the effect size was small, $F(2, 51) = 26.2$ $\eta^2 = .10$, $p < .001$. Analyses of simple effects showed that at each age group, participants were significantly more likely to make new outcome judgments than new obligation predictions, younger: $F(1, 51) = 30.5$ $d = 1.9$, older: $F(1, 51) = 144.3$ $d = 1.6$, adult: $F(1, 51) = 346.5$ $d = 7.4$, all $p < .001$.

Younger children were the most likely to base obligation judgments on the new outcomes, adults the least likely to, with older children intermediate (all comparisons $p < .05$, Tukey's HSD). For example, 80% of younger children responded that the character was not allowed to eat the (contaminated) cookie. Younger children were also the most likely to respond that the old, rather than new, outcome would be expected (though only the comparison with older children was significantly different from chance, Tukey's HSD). At least for one item, a significant number of younger children showed this pattern. Fifty-three percent of younger children (mis-)interpreted the facts of the painting story so as to be consistent with the teacher's rule. They judged that even after discovery of additional paint there was still a shortage. These

results suggest that by age seven or eight, children are clearly distinguishing between obligations and outcomes. Younger children show the distinction somewhat less consistently. However, young children were not just judging obligations to be consistent with expected outcomes, but they often showed the opposite response of using information about obligations to predict outcomes.

There was significant variability within groups in judgments of whether the character would get in trouble. Overall, neither younger nor older children's responses differed significantly from chance levels (50%). Adults reliably based their predictions about punishment on the original, old outcomes, though trouble judgments were less consistent than judgments of obligation or outcome. Although children's predictions of punishment were not different from chance overall, they were related to judgments of obligations. Both older and younger children were more likely to predict that characters would get in trouble when obligation judgments were consistent with old rather than new state: Younger 79% vs. 34% respectively, $\underline{t}(13) = 3.1$ $\underline{d} = 1.4$, $\underline{p} < .01$, Older 78% vs 24%, $\underline{t}(11) = 5.2$ $\underline{d} = 2.2$, $\underline{p} < .001$. Children who judged that all obligations either had or had not changed were omitted from these analyses. Difference scores could not be computed for these children. Similarly, only five adults ever judged that an obligation had changed over the course of a story. Thus it was not meaningful to compare the trouble responses given changed and unchanged obligations for adults. For an individual participant's responses to an individual item, judgments about punishment were correlated with judgments about obligations. However, at least for children, there was significant variability across individuals and/or items.

The specific question addressed by Experiment 1 was whether children would identify an obligation with outcome or utility. For example, is the prohibition against using green paint identified with the information that using green paint will have a negative consequence? Even the preschool-aged children did recognize that obligations were distinct from the costs or benefits related to the obligation. The disassociation of obligations and outcomes was clearest for the school-aged children and adults. The preschool-aged children showed considerable variability in their judgments of obligations. However, this variability, even if reflecting some random responding, contrasts with their judgments of expected outcomes. Young children did reliably indicate the new expected outcomes, but they did not reliably indicate that obligations would match those outcomes.

The stories in Experiment 1 were selected to represent diverse examples of conventional obligations. From a small set of instances it is difficult to draw conclusions about which features of the stories might have contributed to intuitions about obligations. It remains for future research to identify just how expected outcomes are related to judgments of obligation; outcomes may be more important for some kinds of obligations than others. Moreover, outcomes may be more influential for younger children than for older children. The primary, and limited, conclusion from Experiment 1 is negative: At no age did participants reliably identify obligations with outcomes.

Young children's obligation judgments were not significantly different from chance level responding. One interpretation is that preschool-aged children just have difficulty identifying obligations. In particular, the method in Experiment 1 did not systematically record participant's understanding of the obligations before they learned about the unexpected outcome. Perhaps young children never clearly understood obligations were involved in the stories. To address this concern, it will be important to demonstrate that, in some circumstances, young children will show reliable intuitions about story characters' obligations (see Experiments 2 and 3 below).

Our hypothesis is that it was the specific structure of the stories in Experiment 1 that produced the inconsistent responses. The stories lacked some critical information that would allow children to identify what characters were obligated to do. One kind of information that may have been absent from the stories was specifications of mental states. It may not have been clear to young children just what characters thought, desired, and intended. Experiments 2 and 3 explore how judgments of obligations are influenced by information about subjective mental states.

On possible objection to the conclusion about distinctions between outcomes and obligation is that the task in Experiment 1 might not actually assess intuitions about obligations. As noted above, there are at least two different senses of what someone should or is supposed to do, deontic and prudential. Perhaps rather than judging what characters were obligated to do by rules or agreements, children were judging what characters should do all things considered. That is, children were (often) judging what was best for the actor to do, while older participants were judging what a character was obliged to do. One piece of evidence against this interpretation is that children's judgment of punishment coincided with their judgments of what someone should do. When children judged that a character should not eat a contaminated cookie, they also judged the character would get in trouble for doing so. The consistency between judgments suggests that young children were evaluating characters' obligations.

Experiment 2

Experiment 1 demonstrated that information about expected outcomes was not sufficient to identify obligations. This result is consistent with adult intuitions that obligations are social facts, distinct from the conditions that motivated their establishment. However, the result is also consistent with alternative intuitions identifying obligations with some other features of the social environment. Among the most plausible of these alternative cues to obligations are actors' mental states. Perhaps when attempting to identify what someone ought to do children attend not (just) to what will produce the best outcome but what the actor (or other agents') believe, desire, and intend. For adults, mental states are important cues to obligations but they are not definitive or infallible. To what extent do young children rely on mental states to identify obligations? The specific focus of Experiment 2 is the role of actor belief or intention. Do children identify an actor's obligation with what that actor thinks is the right thing to do?

People may have obligations they are unaware of: What people think they should do, and what they actually are obligated to do are not always the same. Previous research has explored children's intuitions about the role of actors' mental states in conformity to rules (Kalish, 1998), assignment of punishment (Piaget, 1965), and emotional reactions to rule transgressions (Lagattuta, 2005). Just how children judge which obligations apply to which actors remains an open question. Under what conditions does someone become bound by an obligation? A plausible heuristic is to assume that knowledge of the rule or obligation is required. Even adults find it somewhat counter-intuitive to hold a person responsible for an obligation he or she is unaware of.

There are two aspects of holding someone responsible for an obligation. One aspect involves blame. "Ignorance of the law is no defense." is a basic legal principle. In part this dictum refers to a positive responsibility to seek out information about one's obligations (see Chandler, Sokol, & Wainryb, 2000 for a discussion of children's ideas of epistemic responsibility). At the same time intentions do seem to mitigate judgment of blame, and knowledge is a part of intention. The other sense of holding someone responsible is to judge that the person should or ought to behave in a particular way. At least on adult intuitions it is sensible

to hold that one is supposed to do something one does not know about. If there is a rule that patrons must not touch museum exhibits, then patrons are obligated not to touch, whether or not they know the rule. Whether an obligation applies and whether a person deserves punishment for failing to discharge the obligation are two separate judgments. The goal of Experiment 2 was to explore the significance of actors' knowledge states for both judgments of obligation and blame. Are ignorant actors supposed to follow rules, and are they to be punished for failing to do so?

The task in Experiment 2 involved short scenarios describing actors who are ignorant of changes in rules. These stories parallel the standard false-belief tasks in which an actor is unaware of an object's physical location. As in the false-belief task a critical question is what the actor thinks or knows about the situation. In the false-belief task, the reality question, "Where is the object really?" is considered a manipulation check. The assumption is that participants share adult intuitions about tracking physical states. In Experiment 2, the reality question is the central focus—What is the actor really supposed to do? Experiment 2 also asked for judgments of blame. As discussed above, it is an open question whether children will distinguish what someone is supposed to do from what someone can be punished for not doing. Assessing judgments of blame also allows for comparison with past research on children's use of intention information.

Methods

Participants. The sample consisted of fifteen younger children (Mean Age= 4:6, range 4:3-4:10) and fifteen older children (Mean Age = 7:1, range 5:9-8:0). Children were recruited from preschool and after-school programs serving a largely white middle-class population in a mid-sized Midwestern city. Twenty adults also participated. Adults were college students recruited from Psychology and Educational Psychology classes at a large public university and received course-credit for participation.

Design. The task involved predicting and evaluating characters' behavior in three short story scenarios. Each story had a common structure: A rule changes during a character's absence. The questions involve the character's return. Stories began with a description of a school rule. The rule specified a convention organizing behavior for students. An example of a rule statement was, "At Jessica's school the kids can bring toys for show-and-tell. The rule is that the show-and-tell toys go in a box by the teacher's desk." (See Appendix for complete text of all three stories). The next element of the story described a character's absence (e.g., missing school because of illness). During the character's absence the authorities and students in the school decide to change the rule. In each case, the rule changes to an alternative that is at least as plausible as the original. For example, the teacher and students decide that show-and-tell toys should be kept in students' lockers. The story ends with the absent character arriving back at school the next day. The stories emphasize that the character has been absent, has not had contact with anyone at the school, and is either the first to arrive that day, or has not spoken with any other people at school yet.

Questions asked what the character is supposed do, what the character thinks s/he is supposed do, and whether the character would get in trouble for following the original rule. An example of one set of questions is: "Where should she put the doll, in the box or the lockers?" "Where does she think the doll goes, in the box or the locker?" and "Will she get in trouble if she puts the doll in the box?" All questions were presented as forced-choices between two options (the original and changed behaviors for Obligation and Think questions and "yes" or "no" for

Trouble questions). It is the case that the language of the "think" question is more complex than the corresponding "should" question. An alternative would have been to ask, "Where will she put the doll?" Participants were asked what a character would think was the right thing to do rather than what a character would do for several reasons. First, ascriptions of mental states were the phenomena of interest. Asking what a character thinks is a more direct measure of belief ascription than asking what they will do. Second, asking what the character will do could be answered with what the character will ultimately or eventually do. That is, one might expect the character will initially perform the incorrect behavior but later be corrected. Although the complexity of the questions differed, a recent meta-analysis (Wellman, Cross, & Watson, 2001) finds that such linguistic differences do not have a large effect on false-belief performance.

Materials & Procedure. Children were interviewed individually in a quiet area of their childcare site. A single experimenter read each story aloud accompanied by simple cartoon drawings illustrating the major actions. The experimental procedure included a brief warm-up period and introduction to the task during which the child was engaged in conversation with the experimenter. Once the child was comfortable, the experimenter presented the three stories (in random order). Adults were tested in groups. Stories and instructions were presented on individual computer workstations. Adults read the stories and selected response options using the computer mouse. For all participants, the first two questions were always Obligation and Think, in counter-balanced order across stories. The Trouble question was always the third and last for a given story.

Results & Discussion.

Figure 2 presents the mean proportions of responses based on the new rule; the character should choose the new behavior, the character knows the new behavior is correct, and the character will get in trouble for choosing the old behavior. From Figure 2 it is clear that participants at all three ages recognized that the rule changes had in fact changed the characters' obligations. At each age, judgments that the character should do the new behavior were above chance (see Figure 2).

A critical question in Experiment 2 was whether participants would distinguish a person's obligations from a person's beliefs. Older children and adults showed a clear distinction. They overwhelmingly responded that the character should do the new behavior, but would believe the old behavior was correct. Younger children were also more likely to cite the new behavior as what characters should do, but the old behavior as what they believed. This pattern of responses was tested in a 3 (Age) X 2 (Judgment Type: Obligation, Think) ANOVA. Judgment Type was a within subjects variable. Both main effects were significant, with Judgment Type showing the largest effect size, $F(1, 47) = 148.4$ $\eta^2 = .73$, $p<.001$. The interaction was significant, but of small effect size, $F(2,47) = 4.7$ $\eta^2 = .05$, $p<.05$. Analysis of simple effects showed Obligation and Think responses were different at each age, younger: $F(1, 47) = 19.1$ $d= 1.4$, older: $F(1, 47) = 58.4$ $d= 3.2$, adults $F(1, 47) = 89.5$ $d= 7.3$, all $p<.001$. At all three ages tested, participants realized that what someone thinks is right may be different than what the person actually should do. People can have obligations they do not know about.

Although they distinguished what someone should do from what someone would think, younger children showed some tendency to conflate the two questions. Over 40% of responses indicated the character would think the new behavior was correct; nine of the fifteen younger children made this mistake at least once (versus three older and no adults). Young children were more likely to judge that the character would think the new behavior was the right thing to do

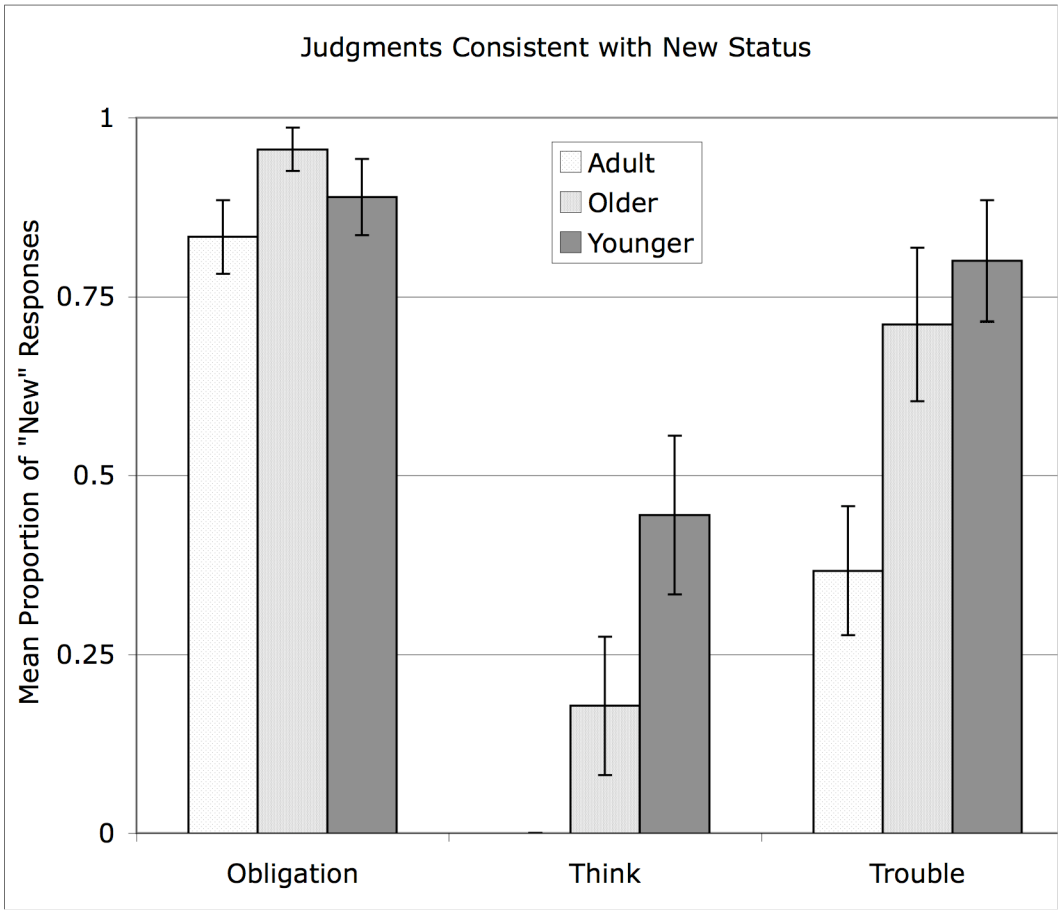

Figure 2: Results from Experiment 2. Bars indicate standard-error. * Mean different from chance (.5), 2-tailed t-test. As there was no variance in adults' judgments of thinking, statistical tests could not be computed.

than were older children or adults (who did not differ, Tukey's HSD, $p<.05$). One way to interpret this result is that young children often used a character's obligations to figure out what he or she would be thinking. This finding is consistent with other research on false-belief understanding (Wellman et al., 2001; Wimmer & Perner, 1983). Younger preschool-aged children seem to expect that people's beliefs will match reality. The current findings suggest that it is not just physical reality, brute facts, that children look to when attempting to determine the contents of someone's thoughts. A much more abstract quality of the world, its obligational structure, also seems to drive young children's attributions of mental states (see also Flavell, Flavell, Green, & Moses, 1990; Kalish, Weissman, & Bernstein, 2000).

The final question asked participants whether the characters would get into trouble for choosing the old behavior. An ANOVA with age as a between subjects variable and probability of responding "Yes," that the character would get in trouble, as the dependent variable revealed a main effect of age, $F(2, 47) = 6.3$ $\eta^2 = .21$, $p<.005$. Adults were less likely to expect the character to get in trouble than older or younger children, who did not differ (Tukey's HSD, $p<.05$). Children judged the outcome of the characters' actions based on the actual obligation or rule operative; the character violated a rule and would get in trouble. Adults judgments reflected the characters' intentions; actors were doing what they thought was right and would not get in

trouble. This result relates to Piaget's (1965) classic finding that young children do not take intentions into account when assigning punishment. One explanation of Piaget's result is that younger children may often be confused about actors' intentions. In the current experiment, based on responses to the Think question, 44% of the time young children would see the character as deliberately, knowingly, violating a rule. However, older children almost never made errors in ascribing beliefs, yet they also judged that characters would get in trouble. Moreover there was no difference in the rates of Trouble judgments when young children answered the Think questions correctly or incorrectly (both = .8). Although older children have been found to consider actors' intentions in judgments of punishment or naughtiness, they may tend believe that authority figures will not consider intentions (Dixon & Moore, 1990). Thus, the high rates of predictions of characters getting into trouble may reflect children's expectations about how authorities make decisions. Put slightly differently, past research has tended to ask whether actors deserve punishment. The question in Experiment 2 asked whether actors would actually receive punishment. Dixon and Moore's (1990) work suggests that young children recognize that actors' intentions influence whether punishment is deserved, but may not influence whether punishment is received. The current results are consistent with these previous findings.

The results of Experiment 2 indicate that young children are good at keeping track of changes in obligations and distinguishing obligations from mental states. Though adults and older children showed the pattern more consistently, younger children also reliably indicated that someone may have an obligation he or she is unaware of. Younger children were more likely than older participants to expect that a person's beliefs and obligations would be consistent. In these cases it was beliefs that were mis-identified: Preschool-aged children correctly identified what an actors should do and assumed the actors' beliefs would match their obligations. Similarly, younger children, and in this case, older children, tended to use actors' obligational status to make prediction about blame. Whether or not they knew of the obligation, actors would get in trouble for violating the rules. Relative to adults, children ascribed greater significance to the rules and obligations regulating behavior. The reliance on obligations to make predictions of mental states and consequences was greatest among the youngest children.

Experiment 3

The results of Experiment 2 suggest that even preschool-aged children appreciate that having an obligation to do X is something other than thinking that X is the right thing to do. As discussed above, Turiel and colleagues have shown this to be true for moral principles, but questions remain about children's understanding of conventional obligations. The most straightforward cases of conventional obligation involve an individual authority deciding to adopt a rule or to impose an obligation. The stories in Experiment 2 had this structure: The teacher decided where children should go or place their toys. This aspect of obligations suggests an alternative misconception or simplified model of obligation: Perhaps young children believe that obligations may be identified with the desires of an authority. If the teacher wants it, then the students are obligated to do it.

Research on moral development suggests that young children do not simply identify obligations with the desires of an authority. There are limits on the power of authorities. Even if an authority (e.g., a teacher) wants it, he/she cannot obligate someone to violate a moral principle (Laupa & Turiel, 1986) or adopt a particular preference (e.g., favorite color, Nucci & Puka, 1994). Interestingly, there are also informational limits on authority. A teacher who has not

observed some fact is not an authority on the obligations involved (Laupa, 1991). These limits concern the scope of authorities' powers and the kinds of obligations they can legitimately impose. A different question concerns how authorities actually manage to establish obligations within the scope of their authority. Given that an authority has the power to prescribe one of two options, what is it that establishes an obligation to do one rather than the other? A straightforward answer would be the authority's preference. If the authority wants subordinates to do something, then the subordinates are obligated to do it.

At least on adult intuitions, obligations cannot be identified with the desires or intentions of an authority. That an authority prefers one option to another does not, in and of itself, establish an obligation for anyone to select that option. An obligation requires some further act by the authority; the obligation must be established or stipulated. Establishing an obligation is not simply a mental process (though the cognitive process of decision is clearly involved). Typically conventional obligations are established by a speech act (Searle, 1969). An authority says, under the correct conditions, "People should do X." and the obligation is created. Just what makes "correct conditions" is a complex question. As Experiment 2 illustrates, it is not a requirement that everyone subject to the obligation be present at or aware of the act. It seems plausible, though, that some third party must be present. Minimally, though, the speech act must actually occur in some (potentially) inter-personally observable way. An intention or desire to create an obligation is not the same as the actual creation of an obligation (see Searle, 1969 on promising).

A concrete example may help clarify the distinction between an authority's desires and the establishment of obligations. Consider a teacher who gives a homework assignment to her class. She tells the students to do the assignment in ink. This act establishes the obligation. After school, say over the weekend, the teacher realizes that students will likely cross-out errors resulting in messy papers. The teacher decides she really would prefer the assignments to be done in pencil. What are the students supposed to do? What the authority actually wants is pencil. What the students are obligated to do, the rule they are to follow, is ink—not what the teacher now wants. This analysis is based on the intuition that the teacher's actions after school do not meet the conditions for establishment of an obligation. However, if an obligation just is what the authority (teacher) prefers, then the weekend events do establish a new obligation. In this case the intuition would be that the students are supposed to complete the assignment in pencil.

Method

Participants. The sample consisted of fifteen younger children (Mean Age= 5:0, range 4:0-5:5) and fifteen older children (Mean Age = 7:4, range 7:0-8:3). Children were recruited from preschool and after-school programs serving a largely white middle-class population in a mid-sized Midwestern city. Fifteen adults also participated. Adults were college students recruited from Psychology and Educational Psychology classes at a large public university and received course-credit for participation.

Design. Each participant heard seven stories involving characters acting under obligations established by authorities. All stories involved stipulation of an obligation by an authority figure. For example, a teacher tells children to complete a homework assignment using markers. In five Change stories the authority later reconsiders the stipulation and decides that an alternative would be preferred. For example, the teacher comes to realize she would prefer assignments completed in pencil. Critically, the new preference is never communicated to any of

the actors under the obligation. In the example, the teacher forms the preference at home over the weekend with no students around. In two stories designed as Controls, the authority considers but rejects an alternative. For example, the teacher thinks about whether she would prefer assignments in pencil, but decides she was right originally and prefers marker. In Control stories the authority's preference and the original obligation coincide; in Change stories, the preference and original obligation conflict.

Stories involved two different kinds of authorities. All Control and three of the Change stories described teachers establishing obligations for students. This is likely a familiar context for reasoning about obligations for young children. However, the authority of teachers (and adults) over children is especially wide ranging and powerful, and perhaps not representative. Two stories involved more egalitarian relations, people forming contracts. In one story a young girl arranges for a dress-maker to make some doll clothes (she later changes her mind about the color of the clothes). In a second story an adult directs some furniture movers (and later changes his mind about preferred locations). Complete text of all stories is provided in the Appendix.

All stories ended with the obligated character needing to make a decision about which course of action to select. Participants answered three questions about each story. The obligation question asked what a story character was supposed to do (e.g., "What color dress is the dressmaker supposed to make?"). A second question asked about the authority's mental state (e.g., "What color dress does the customer want?"). A final question asked about consequences if the character performed the old action, the content of the original obligation. In the cases of teacher authority, the consequence was whether the story character would get in trouble. For non-teacher stories the question was whether the authority would get mad at the character.

Procedure. Children were interviewed individually in a quiet location in their school or in a research room on a university campus. The interviewer read each story to the participant and presented laminated color cards during each reading. Undergraduates participated in group sessions using desktop computers to present stories and record answers. Presentation of stories was randomized. Participants answered the three questions at completion of each story. Order of questions was constant across stories.

Results & Discussion

Figure 3 presents the data for Change stories. Shown are the mean proportions of judgments based on the new options: How often did people state that the authority now wants the new option, the character should choose that option, and the there would be negative consequences (trouble/anger) if the character did not choose the new option? All participants were generally correct in identifying that the authorities' desires had changed in the stories (all means greater than chance, see Figure 3). Older children and adults reliably judged that the characters' obligations had not changed; they should choose the old option. Younger children consistently gave the opposite response.

To compare responses to the obligation and desire questions across ages, mean proportions of new option judgments were analyzed in a 3 (Age) X 2 (Judgment Type: Obligation or Desire) ANOVA. In this analysis, Judgment Type was a within-subjects factor. There were main effects of both Age and Judgment Type, but most critically, a significant interaction, $F(2, 43) = 37.6$ $\eta^2 = .27$, $p<.001$. Analyses of simple effects showed that there were no age differences for Desire questions, $F(2, 43) = 1.0$ $\eta^2= 0.0$, ns. There was a significant effect of age for Obligation questions, $F(2, 43) = 54.6$ $\eta^2=.24$, $p<.001$. Young children were more likely to endorse the new option for Obligation questions than were adults or older children

Figure 3: Results from Experiment 3. Bars indicate standard-error. All means different from chance (.5), 2-tailed t-test. As there was no variability in adults' judgments of trouble, statistical tests could not be computed.

(Tukey's HSD, p<.01). Consistent with predictions, adults and older children were more likely to endorse the new option for the Desire question than for the Obligation question, F(1,43) = 150.0 d= 18.9, F(1,43) = 79.0 d= 2.6, respectively, both p<.001. These participants recognized that the original obligation remained in place, despite the change in preference. In contrast, younger children answered both questions the same way, F(1, 43) = .24 d= .3, ns; characters were obligated to do what the authority presently desired.

Control stories were designed to present stories in which the authorities preferences did not change. The expectation was that participants would recognize that obligations and authorities' preferences would be consistent. However, the manipulation in the control stories was not effective. Participants generally responded that the authorities' preferences had changed in control stories; 40% of adults', 66% of older children's, and 73% of younger children's responses reflected a change. In both stories authorities express some positive judgment of an alternative action. In Control stories the authorities eventually decide the original option was indeed the best. The Control stories may have been too similar to the Change stories. The pattern established by the more numerous Change stories may have carried over to the few Control stories; participants may have assumed that all stories involved a change in the authority's preference.

Participants' predictions about reactions generally followed their judgments of the obligations involved. The questions asked about the consequences of character's choosing the originally specified action-- following the original rule. Younger children were significantly more likely to predict negative outcomes (anger, trouble) than were older children, $t(29) = 4.8$ $d= 1.7$, $p<.001$. Older children were more likely to predict negative outcomes than were adults, $t(28) = 3.0$ $d= 1.6$, $p<.01$. There was a strong correlation between judgments of obligations and predictions of reactions. When children judged the obligation had changed, they were much more likely to predict a negative reaction than when they judged obligations had not changed: for older children, 71% to 17%, for younger children 90% to 34%. These comparisons are based on very small numbers of responses, so cannot be statistically evaluated: Young children rarely (correctly) stated obligations had not changed (only 9 out of 75 responses), and older children rarely (incorrectly) stated that obligations had changed (only 17 out of 75 responses). Adults were even more consistent in denying that obligations had changed (1 out of 75).

Change stories varied in the type of authority and reaction probed; trouble for the teacher/student stories and anger for the customer/employee stories. The type of authority did not affect judgments of obligations (proportion of judgments consistent with authority's desire in teacher vs. customer stories: Younger, .80/.76; Older, .11/.14; Adult, .03/.02. Neither did the type of authority affect predictions of reactions. Young children were just as likely to predict that customers would get angry with employees who followed the old rule as they were to predict that students would get in trouble for following the old rule, M=.79 and .77, respectively. Older children predicted anger and trouble infrequently: M= .33 and .27, respectively. No adult predicted either negative outcome.

A final set of analyses explored individual patterns of responding. A priori we identified two types of responses: judgments reflecting changed obligations and judgments reflecting unchanged obligations. The changed obligation pattern is characterized by stating the character should select the new option and that a negative reaction would result if the old option was chosen. The unchanged pattern is just the opposite. Judgments of the authorities' desires do not distinguish the two patterns. The random probability of showing a pattern on a single story is .25 (two two-option choices). The chance of consistently showing the same pattern on at least five of the seven items is .01 (Binomial probability). Eleven of the 16 younger children consistently showed the change pattern. Two older children and no adults fit this pattern. Ten older children and all 15 adults showed the unchanged pattern.

In summary, younger children tended to identify a character's obligation with the desire of an authority, at least for the kinds of stipulated conventional rules under investigation. In contrast, older children and adults made a distinction between what an authority wants and what a subordinate is obligated to do. That the person who established an obligation comes to change his or her mind (prefer something else) does not, in itself, change the conditions of obligation. Among the two groups of children there was a sharp age difference in interpretation of the relation between authorities' desires and obligation. Almost all preschool-aged children reliably identified obligation with authorities' desires; almost no school-aged children did.

It is interesting to compare the results of Experiment 3 with those of Experiment 2. In both cases, younger children expected mental states and obligations to coincide. In Experiment 2, younger children often used information about the obligation to predict a character's belief. In Experiment 3, information about authorities' desires was used to predict the obligation (and consequences of behaviors). By the early elementary years (7- to 8-years old), children are showing the adult pattern of dissociating mental states and obligations.

General Discussion

The goal of the three experiments reported above was to assess children's strategies for identifying conventional obligations. The central questions concerned whether children would distinguish obligations from mental states and outcomes. By age 7 or 8, children were quite adept at tracking obligations; their judgments of what someone was supposed to do in a given situation generally matched those of adults'. The school-aged children in the study recognized that people may have obligations they are unaware of. What people think is right, and what they should do may differ. Similarly, people's obligations are not always co-extensive with the wishes of authority figures. Just because an authority wants something does not mean people are obligated to provide it (even if the behavior is within the authority's jurisdiction). Finally, the older children, like the adults in the experiments, distinguished what someone ought to do from the benefit or consequence resulting from the action. An obligation may persist despite a mismatch between the expected consequences that led to its establishment and the actual outcome of adhering to the obligation. In sum, the results suggest that young school-aged children are able to keep track of (at least) three features of social situations. Separate from identifying consequences and expected outcomes and separate from identifying people's mental states children are also identifying obligations and permissions.

Although school-aged children identified obligations as distinct from mental states and outcomes, younger children, preschoolers, often conflated various aspects of the stories. The most consistent pattern was shown in Experiment 3: Young children almost always judged that a person's obligations would follow the desires of an authority. The preschool-aged children did distinguish between a character's beliefs and his or her obligations, albeit not as consistently as the older participants. Younger children recognized that people could have obligations they were unaware of, though the younger children often interpreted stories in ways to make actors' beliefs consistent with obligations (see below).

Previous research suggests that young children would tend to focus on outcomes when identifying obligations. Children were more likely than adults to use information about an unexpected outcome to identify people's obligations. However, even the preschool-aged children did reliably distinguish between outcomes and obligations. Moreover, children's responses differed from adults' in other ways that did not reflect over-attention to outcomes. In particular, preschool-aged children sometimes used information about obligations to keep track of outcomes; that some activity was prohibited implied that the outcome will be bad. The pattern of using obligations to identify other states was most apparent in Experiment 2. Preschool-aged children were less likely than older participants to indicate that a person's obligations could be different than their beliefs. In this instance it was the beliefs that were "mis-tracked," with preschool-aged children often expecting that people would somehow know what they were supposed to do. Although this mistake does replicated the classic error of imputing to a person a true rather than false belief, in this case the truth of the belief depends on abstract social facts (about obligation) rather than on observable physical reality (see also Flavell et al., 1990; Kalish et al., 2000).

Conceptual Confusion?

The general conclusion from the three experiments reported above is that preschool-aged children tend to conflate conventional obligations with a particular mental state (authority desire). A strong interpretation of these results is that young children lack some key concepts. Where adults have two concepts (desire and obligation) children may have only one. This kind of

conceptual confusion represents a strong claim about developmental differences (Carey, 1985). Indeed, there is some reason to expect that conventional obligation may be a difficult concept for young children because it involves a unique combination of objectivity and subjectivity.

Research on the development of epistemology suggests that coordinating between objective and subjective states is a major challenge for young children (Chandler & Lalonde, 1996; Kuhn, 2000; Wellman, 1992). Conventional obligations are social facts. As facts, they are objective. We can be right or wrong about the obligations in force. Information about people's subjective mental states (e.g., beliefs, desires, intentions) is not sufficient to identify obligations. At the same time, as social facts, conventional obligations lack the "brute" reality of physical states (Searle, 1995). Conventions exist only as a result of human action and intention; they are invented, not discovered. Young children do not appreciate that facts may be constructed (Chandler & Lalonde, 1996). For example, before age seven or eight, children treat stipulations of intellectual conventions as akin to pretending; conventions are interpreted as subjective (Kalish et al., 2000). This previous research is consistent with the current findings that young children seem to identify conventional obligations with subjective mental states (in this case, the desires of an authority).

Of course young children understand something of conventional obligations: They recognize that conventional obligations provide motives or reasons for acting. But is the reason provided by a conventional obligation any different than the reason provided by some mental state (e.g., the desire of an authority)? Theory of mind abilities will allow children to draw out the consequences of various actions given people's mental states. If the teacher prefers work done in pencil, it follows that using pencil will make the teacher happy. This mental state inference provides a reason for acting, for using a pencil. A conflation of desires and obligations implies the converse as well: An obligation to do X means people want to do X. Indeed, preschool-aged children typically expect people to want to follow rules and to do what they should (Costanzo, Grumet, & Brehm, 1974; Kalish & Shiverick, 2004).

What does the concept of "obligation" add to the inferences from mental states? For adults and older children, construing the situation in terms of obligations introduces a level of analysis separate from mental states. The social facts about obligations provide a set of reasons distinct from people's preferences (Searle, 2001). There are actions someone ought to perform that are quite independent of what the actor, or anyone else, wants, prefers, or is made happy by (e.g., stopping at a traffic signal on a deserted road may not make anyone happy). At the same time, just because an action is consistent with mental states does not, in itself, make it obligatory, or even permitted.

The current results on identification of obligations are broadly consistent with the account of justifications proposed by Turiel (1983). Turiel suggested that children initially understand conventional obligations to be warranted by the preferences of authorities or by objective conditions (e.g., regularity). Later children realize that there may be intrinsic reasons to follow conventions. One ought to follow rules because they are legitimately established rules, not (just) because authorities desire conformity or because most people do obey. Though Turiel placed the emergence of "rule-based" justifications somewhat later (age 10-11) than the current data suggest, the general developmental progression is similar.

Another difference between Turiel's (1983) account and the current paper is that Turiel described further developments beyond "rule-based" justifications of conventions. As adults we feel that we ought to follow conventional rules, not just because they are rules, but because we are willing participants is a coordinated social body and the rules actually promote the

functioning of that body. There is considerable debate in the philosophical literature as to whether or how people are obligated to follow conventional rules. For example, many argue that there is no reason to obey a law over and above prudential and moral concerns (see papers in Edmunson, 1999). There are reasons to stop at a traffic signal; it is safer and one may have a moral duty not to put others at risk. But do traffic regulations create any obligation beyond prudence and avoidance of harm? One interpretation is that social rules and laws are not prescriptions of obligations, but are rather descriptive (e.g., traffic signals are merely informative about likely outcomes). At issue is the basic question of whether society constitutes new obligations and relations, new social facts, or just reflects and codifies existing ones. The key to assessing intuitions in this regard is to explore dissociations between preferences, benefits, and judged obligations. The current study does not settle this debate, by any means. This work does, however, begin to indicate when children have the conceptual resources to recognize the issues involved. To ask whether conventional obligations exist as social facts implies the ability to represent at least the possibility that what people ought to do is distinct from what they think, want, or expect to happen.

Canonical Expectations

The results of the three experiments reported above suggest that young school-aged children do represent conventional obligations as distinct from mental states and outcomes. The data are consistent with the hypothesis that preschool-aged children lack the conceptual distinction, conflating conventional obligations and desires. However, the results are also consistent with a weaker claim: that younger children are biased toward canonical interpretations of social situations. First, it is important to note that the relevant findings are negative evidence: There may be other tasks or situations in which young children would distinguish authorities' desires from obligations. Rather than lacking the general ability to distinguish between obligations and mental states, it may be that young children just make mistakes in keeping track of instances. The mistakes reflect expectations about typical relations between mental states, outcomes, and obligations. Although people of all ages have intuitions about canonical relations between these aspects of social events, young children may depend more heavily on these intuitions, and be less fluent at making principled interpretations of atypical situations. This hypothesis is akin to the classic suggestion that young children over-simplify by focusing on outcomes and ignoring other features of social situations. The current suggestion, though, is that biases are not results of a general propensity to attend to concrete, objective outcomes, but rather reflect reliance on simplified or canonical models of social situations.

For the most part, mental states, outcomes, and obligations are consistent. Usually people know what they ought to do, the obligated actions are the ones the authorities prefer, and the factual assumptions underlying the establishment of the obligations are correct. In the absence of evidence to the contrary we rely on these consistencies when interpreting social situations. If we hear, "Teacher Jones hates assignments done in crayon." we assume there is some classroom rule consistent with this preference. There may not be, but that would be a surprising or unusual consequence. The expectation of consistency is very much akin to the assumption of rationality that supports belief/desire reasoning. Philosophers have noted that it is only possible to infer what someone wants or thinks under the assumption that the person is rational (Stich, 1990). The inference, that, "John thinks his cat is under the bed." given that John saw the cat run under the bed, is only warranted if John is rational. In practical terms, we should expect that people's beliefs are generally true and their desires generally beneficial as the

background against which to make sense of those rare and interesting exceptions. The same kind of principle holds for interpretations of obligations. In the canonical cases of social behavior mental states, outcomes, and obligations coincide, and each kind of state is predictable from the other. If one outcome is the best, that is probably what the authority wants, and what the actor knows he or she is supposed to do.

Expectations about canonical relations tend to bias information processing especially for young children just developing their intuitive theories and models. A basic principle of theories is that they are first developed to account for canonical or paradigmatic instances (Kuhn, 1963). In the early stages of theory development people tend to over-regularize or force atypical cases into the form of more standard cases (Karmiloff-Smith & Inhelder, 1974; Keil, 1989). For example, children's initial theory of mind is developed to account for intentional action based on true belief. Non-standard cases, involuntary action, false-belief, are incorporated ad hoc, often reinterpreted to fit the canonical pattern (Gopnik & Wellman, 1994). This kind of over-regularization was apparent in preschool-aged children's responses in Experiments 1-3 above. Young children frequently mis-identified mental states, outcomes, and obligations, expecting them to be more consistent with canonical instances than did adults and older children (see also (Lagattuta, 2005; Nelson, 1980). An important question for research on the development of social cognition is which kinds of deviations or atypical cases are more or less easy for children to understand. For example, by the early school years, children seem to have consistent intuitions about atypical obligations involving false beliefs and changed desires. Incorporating atypical information about outcomes into judgments of obligations seemed more challenging. Even adult judgments were inconsistent in some cases of changed outcomes.

Social situations present all the challenges of keeping track of physical states posed by non-social situations plus at least two additional sets of considerations. Social interactions involve mental states. Research in theory of mind demonstrates that quite young children attend to this distinctive feature of social environments; they identify and keep track of people's thoughts, feelings, and goals. At the same time, social interactions also involve deontic states such as obligations, prohibitions, and permissions. Research in moral development shows that very young children appreciate these qualities. Recognizing that people have both thoughts and obligations provides children the cognitive resources to make sense of social interactions. Such insight, though, poses the problem of coordinating multiple elements.

The results of the current study suggest that, though preschool-aged children often assume elements of social situations will be consistent. The younger children in the study showed an especially strong expectation that people's conventional obligations would match authorities' desires. The school-aged children in the study generally showed adult-like performance. The older children were quite skilled at keeping track of mental states, outcomes, and obligations as they changed in atypical ways. Coordinating these states is not a problem that can be solved once and for all; the possible interactions and dependencies between various elements of social environments are near infinite. The goal for future research is to provide an account of which relations are easier and more difficult for children to understand. Besides illustrating some particular challenges young children may face in coordinating social information, the more general implication of the current study is that theories of children's social cognition must account for thinking about mental states, outcomes, and obligations. Any two-factor solution will necessarily under-estimate the complexity of the problem.

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Appendix

Items used in Experiment 1-3

Experiment 1

1. Tricia has a talking Barbie Doll. One day the battery for the Barbie ran out. At school, Tricia tells her friend Alex that she needs a big red battery for the Barbie. Alex has an extra. Alex promises that he'll bring in a big red battery for Tricia's Barbie Doll. Alex says he will bring the red battery to school the next day. Tricia is pretty excited. She goes home and looks at her Barbie. She sees that the Barbie really needs a small blue battery. Tricia was wrong, a big red battery won't fit. Tricia needs a small blue one.
2. Justin was a good boy today. His mom and dad said he could stay up late and eat a big dessert. He got a special treat. Justin eats a whole lot at dinner and starts to feel really really tired. His tummy is really full and he is very sleepy.
3. Billy's dad is cleaning the house. It's a big job and he wants some help. Billy and his dad make a deal. If Billy cleans up the living room, then he can stay up a little late tonight to watch TV. Nobody knows it, but the TV is broken.
4. In Suzie's school the kids really like to paint. They have a nice teacher who lets them paint a lot. One day the teacher looks on the shelf and sees there is almost no more green paint left. She tells the kids, "We have to save the green. Kids can't use green when they paint anymore." The rule is kids can paint with other colors, just not green. Then the teacher goes out of the room to go to the bathroom. Suzie is going to paint a picture. She goes to the paint cabinet and notices a big box of green paint bottles tucked away in the back.
5. Julie had a nice big dinner where she ate all her vegetables. Mom says Julie can have some cookies for dessert. Mom gives Julie the plate of cookies. Nobody knows it, but some bugs have been crawling around on the cookies. The cookies have a lot of germs on them.

Experiment 2

1. At Jessica's school the kids can bring toys for show-and-tell. The rule is that the show-and-tell toys go in a box by the teacher's desk. Jessica was out of school for a few days. Her parents took her on a trip. While Jessica was gone, the teachers noticed that too many kids were playing with the toys in the box. They decided to change the rule – from now on, kids should keep the show-and-tell toys in the lockers in the hall, not in the box. The show-and-tell can't go in the box, it has to go in the lockers. Here comes Jessica back to school, she brought a doll for show-and-tell. There's no one else around.
2. At Sammie's school, kids have a recess when they can play on the playground. If they are thirsty during recess, they are allowed to get a drink of water by themselves, without asking permission. They do not have to ask first, they're allowed to go get a drink without asking. Sammy missed school one day (because he was sick with a cold?)While Sammy was gone, the teachers noticed that it was too hard to keep track of the kids during recess if they got drinks of water by themselves. They decided to make a new rule – from now on, kids have to ask a teacher before they get a drink of water. Here comes Sammy back to school, he is thirsty while playing a game at recess.
3. At Joey's school there is a rule that when the kids get to school in the morning, they are supposed to go to the art corner and color and paint on the paper. One day Joey missed school because he went to visit his grandma. While he was gone, the teacher noticed that the paint

made too much of a mess in the morning, so the teacher decided to change the rule. From now on, kids should go to the reading corner in the morning, not the art corner. They have to read first, they're not allowed to paint first. Here comes Joey back to school. He is the first one in the

Experiment 3

1. Sharon is getting a new dress for her doll. Sharon goes to the dress shop. Sharon asks the dressmakers to make a blue dress for the doll. The boss at the dressmakers says, "Okay, that will be $5. Come back on Monday." Sharon gets home and starts thinking about the dress. She decides a blue dress will look silly on the doll. Sharon says, "A red dress would be much better. I really want a red dress, not a blue dress," but she couldn't tell any of the dressmakers because she as at home. At the same time, the dressmakers are starting to make the dress.
2. Mr. Johnson is moving to a new house. The moving guys come in and pack up all the stuff into the truck. Mr. Johnson tells the movers where he wants all the stuff in the new house. Mr. Johnson tells them to put the TV next to the bed. The movers put everything in their truck and drive off. After they're already gone, Mr. Johnson thinks about his new house and decides he'd really rather have the TV next to the sofa. He thinks, "I'd really like to have the TV next to the sofa so I can watch in the living room, " but he couldn't tell the movers because they already left in the truck. The movers get to the new house and start unloading.
3. Billy's teacher gave the class some homework to do over the weekend. Each kid got a worksheet with spaces where they can write letters. She told the kids to practice writing their letters using crayons. She tells them, "I want you to write letters using crayons." After everyone went home, the teacher thought about the worksheets. She thought, "the letters will be hard to read in crayon, it would really be better if the kids used pencils." So the teacher changed her mind and wants the kids to use pencil for the worksheet, but she couldn't tell any of the kids because they were already at home. Here's Billy at home. He's getting ready to do the worksheet.
4. At Jessica's school the kids can bring toys for show-and-tell on Fridays. The rule is that the show-and-tell toys go in the box by the teacher's desk. The teacher tells the kids, "Remember, tomorrow is Friday, so bring in your show-and-tell and put it in the box." Everybody goes home. While the teacher is at home, she thinks about the show-and-tell. She decides that too many kids were playing with the toys in the box. She thinks, "It would really be better to keep the show-and-tell in the lockers. I really want the show-and-tell out of the box and in the lockers." The teacher is at home and doesn't call or tell anyone about the lockers. Here comes Jessica and her friends back to school, the kids brought stuff for show-and-tell. The kids are really really early. They got to school even before the teacher did. There's no one else around.
5. At Joey's school there is a rule that when the kids get to school in the morning, they are supposed to go to the art corner and color and paint on the paper. The kids are leaving for the weekend. The teacher tells them, "Remember to go to the art corner when you come back on Monday." It's the weekend now. At home, the teacher thinks about the way the class goes. She thinks that the paint makes too much of a mess in the morning, she starts thinking it would be nicer if the kids read books when they got to school. She thinks, "I really want the kids to go to the book corner, not the art corner when they get to school." But she couldn't tell anyone else because it was the weekend. Here comes Joey and his friends back to school. They are the first ones in the classroom. The teacher hasn't talked to Joey, or anyone else since she left school on Friday.

*6. Mrs. Smith has a deal with the restaurant next door. Every morning they bring her toast and orange juice and leave it outside her door for breakfast. They've been doing this for years. She gives them money at the beginning of the month and tells them to deliver toast and orange juice for the whole month. Today Mrs. Smith is just waking up. She turns on the TV and sees a commercial for waffles. She sits up and says: "Those waffles look pretty good, but I really like toast for breakfast." The cooks at the restaurant are just getting Mrs. Smith's box ready. Some cooks get the orange juice to put in the box.

*7. Sally's teacher tells the class it is music time, time for the kids to go to the music room. The kids all get their stuff together and leave the room. After they are gone, the teacher looks out the window and sees how nice it is. She thinks, "Wow, it's a really nice day. I bet the kids would like to go outside and play right now. But, it's music time for them." The kids get to the end of the hallway. On one side is the door out to the playground. On the other side is the door to the music room.

*Control Items