

Children's Conceptions of Dreams

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Children's conceptions of dreams are an important component of their developing understanding of the mind. Although there is much that even adults do not understand about the nature of dreams, most adults in Western society believe that: Dream entities are not real in the sense that they are nonphysical; they are private in the sense that they are not available to public perception, and are not directly shared with other dreamers; and, dreams are typically fictional in content. Thus, children in our society must confront several dualisms with respect to dreams, such as their physical versus nonphysical, perceptually-public versus perceptually-private, and shared versus individuated nature. Thirty-two children, aged 3- and 4-years-old, were told stories about children who were dreaming about an object, playing with an object, or looking at a photograph of an object, and then were asked questions about the status of these entities with regard to these three dualisms. All children judged dream entities, photographs, and physical objects to be appropriately different in terms of physical versus nonphysical properties and in terms of perceptually-public versus private status. They also understood the fictional nature of dreams. However, whereas most 4-year-olds understood that dreams are individuated, many 3-year-olds believed that dreams are directly shared by more than one person. These findings contrast with earlier research characterizing children's understanding of dreams as realistic. We reconcile these contrasting findings by discussing methodological differences, and we situate our findings regarding children's understanding of dreams within the context of contemporary research on children's theory of mind.

Children's conceptions of dreams are a component of their developing understanding of the mind, and have traditionally been used as an index of this more general understanding. Dreams are salient mental experiences for most adults, and may be especially so for young children. Certainly bad dreams or nightmares are a commonly reported childhood experience even among preschoolers. The

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traditional view of young children, however, is that they are conceptually confused or ignorant about the subjective nature of dreams. This characterization was proposed by Piaget (1929), and reiterated by Laurendeau and Pinard (1962), and more recently by Broughton (1978), among others. These researchers used children's concepts of dreams specifically as important evidence about their conception of the mind in general. Thus, Piaget claimed that preschool children are realists, that is, they believe that dreams (and other mental phenomena) are external and objective phenomena, and they do not distinguish dream events and entities from objective perceptual events and objects. As he said, "the child is a realist and a realist because he has not yet grasped the distinction between subject and object and the internal nature of thought. Obviously, therefore, he will be confronted by grave difficulties when he attempts to explain the most subjective of all phenomena—dreams" (Piaget, 1929, p. 88). Piaget claimed that children achieve a mentalistic understanding of dreams and other mental states beginning only at about age six or seven and only fully understand their nonphysical, private, internal nature by age 12.

Recent studies of children's understanding of the mind paint a very different picture of young children's understanding of mental states and mental entities. Preschool children have been shown to be knowledgeable about beliefs and desires (e.g., Wellman & Bartsch, 1988; Wimmer & Perner, 1983), knowledge (e.g., Pillow, 1989; Wimmer, Hogrefe, & Perner, 1988), thoughts and mental images (Estes, Wellman, & Woolley, 1989; Wellman & Estes, 1986), and pretense (e.g., Leslie, 1987; 1988). Overall, this research has found that young children between the ages of 3 and 5 acquire a sensible, albeit initial, understanding of the nature of their own and others' minds.

What might account for this discrepancy between traditional findings and interpretations and the emerging contemporary ones? One possible explanation is that the focal topic has shifted across the years: Early investigations, such as those of Piaget (1929) and Laurendeau and Pinard (1962), focused largely on children's understanding of dreams; recent studies focus on children's understanding of a broader spectrum of mental states such as knowledge, imagination, desires, and pretense, but interestingly, very little on dreams. One possibility therefore is that children's conceptions of dreams may lag behind their conceptions of these other sorts of mental states.

Indeed, there are both empirical and conceptual reasons to believe that dreams may be a specially troubling topic for children. Empirically, in a longitudinal study of children's dreams, Foulkes (1982) reports that dreams were relatively rare in his 3- to 5-year-old subjects. When awakened from REM sleep, these young children rarely reported any dream content. Regardless of whether these children really did not dream, or rather, actually had dreams that they were unable to remember or articulate, this research suggests that the experience of thinking about dreams, even one's own dreams, may not be a common or simple one for young children. Conceptually, consider a crude division of representa-

tional mental states into those that are reality-oriented (e.g., knowledge and percepts) and those that are decidedly fictional (e.g., imagination). Percepts and knowledge, on the one hand, are cases in which there is often a fairly straightforward relationship between the world and the mind. On the other hand, fictional imaginings do not involve such a straightforward relationship between world and mind. I can see an empty chair, know that it is empty, and yet imagine that someone is sitting in it. Where do dreams fit into this dichotomy? At times, dreams can seem quite real when they are occurring, and may seem to mimic our perceptual contact with the physical world, even replaying perceptual experiences. However, at other times they seem to be entirely fantasy-driven, and we are mystified as to their origin. Moreover, dreams seem to come to us involuntarily, while we are in a very special state, namely sleeping. In short, in comparison to other mental entities and states, dreams may represent a confusing case, and may be especially difficult for children to understand.

An alternative explanation for the discrepancy between the older and the newer findings is that methods have evolved. There are two reasons to suspect that earlier studies, based more on openended clinical interviews, may not have adequately captured young children's conceptions. First, in studies like Piaget's, the questions asked of children seem imprecise and even misleading. For example, in replicating Piaget, Laurendeau and Pinard (1962) asked, "Where are dreams made; where do they come from?" and "When you dream that you are playing in the street, where is your dream?" Questions such as these are unclear and seem to presuppose that dreams actually are substantial entities, made of something, and occupying some definite physical location. Similarly, in Shweder and Levine's (1975) study of dream concepts in the Hausa tribe of Nigeria, children were asked to describe one of their dreams, and then asked such questions as: (a) Did that (described action or event) really happen?, and (b) Was the dream inside your room or inside you? These sorts of questions are ambiguous or even anomalous. A "yes" response to the first question was taken by Shweder and Levine to mean that the child was a realist. However, a child could answer yes to that question because he or she actually dreamed about a real object or event (as opposed to a fantastical one). The second question also is confusing because neither answer is literally correct; in common conception dreams do not really happen in any particular place—as mental events they are not literally spatially localizable. Requiring children to choose between these two alternatives may provide misleading information about their conceptions.

Second, studies like these seem to include only half the necessary design. Children were asked questions only about the mental phenomena of interest, for example, dreams. To determine whether children confuse such mental phenomena with physical ones requires asking them about both and comparing their responses. More recent studies of children's understanding of mental phenomena have used precise yes/no judgments of mental entities or events in direct contrast with various foils. Thus, for example, children may be asked a set of differentiating

questions about items such as a thought about a dog, a real dog, a shadow of a dog, and a photograph of a dog (Estes et al., 1989; Wellman & Estes, 1986). This sort of procedure allows investigators to test whether children's answers differ appropriately across mental and nonmental entities, and hence, whether children conceptually distinguish such items.

Our goal in the present study was to apply improved methods for investigating children's understanding of the mind to their understanding of dreams specifically. Because of the salient and provocative nature of dreams, children's understanding of dreams is an intriguing topic. What might children know about dreams? Even adults in our society do not typically claim to know exactly where dreams come from, or what they might mean if anything. Moreover, different cultures interpret the origins and meanings of dreams very differently (Kohlberg, 1969; Shweder & Levine, 1975). However, there are some beliefs about dreams that can safely be said to be held by the majority of adults within Western society; we use these beliefs as a starting point for our own investigation. Specifically, adults know that dream entities (e.g., a dream of a dog) like all mental entities (e.g., a thought about a dog) differ in several ways from concrete physical objects (e.g., a dog). For most Western adults dream entities are nonphysical, that is, not available to the dreamer's senses or to action in the same way as real physical objects. Additionally, dreams are private occurrences, both in the sense that they are not available to public perception, and in the sense that they are not shared with other dreamers, that is they are individuated. Finally, unlike other physical entities that may lack certain behavioral-sensory properties (e.g., shadows), dreams often have no real-world referent or origin, that is, they can be completely fictional.

In coming to a mature understanding of dreams, children must determine that dream entities are nonphysical, perceptually private and individuated, and additionally that dream contents can be fictional. Young children's earliest conceptions of dreams may lack any similarity to those of adults on any of these dimensions. For example, children might first think that dream entities and events are both physical and public, as portrayed by the term "realism." Alternatively, children's conceptions may be similar to those of adults in some respects, but different in others. For example, they might first think that dreams are mental and fictional, as do adults, but at the same time believe that they are shared communally by dreamers, that is, they might believe everyone has the same dreams. Research by Shweder and Levine (1975) lends some credence to such an intriguing possibility. They claim that some children of the Hausa tribe in Nigeria go through a period in which they believe dreams to be shared fantasies experienced in common by sleeping partners.

In this study we investigate children's developing conceptions of dreams. In particular we have assessed when children understand the three primary distinctions discussed above: physical versus nonphysical, perceptually-public versus private, and shared versus individuated. In addition, we have probed children's

understanding of both the potentially fictional nature of dream contents and the fact that dreams are not spatially localizable.

METHOD

Subjects

Thirty-two children participated; sixteen 3-year-olds ($M = 3;7$, range = 3;1–3;11) and sixteen 4-year-olds ($M = 4;4$, range = 4;0–4;11). There were 17 boys and 15 girls, all from a preschool program serving an ethnically mixed but predominantly white middle-class clientele in a small Midwestern city. Two 3-year-olds were dropped from the analysis because they answered yes to every question and one 4-year-old was dropped because she was unwilling to complete the task. This resulted in a final sample of fourteen 3-year-olds ($M = 3;7$, range = 3;1–3;11) and fifteen 4-year-olds ($M = 4;5$, range = 4;0–4;11).

Tasks

The basic design involves asking a series of similar questions about a set of contrasting items, an item by question design, where the pattern of answers across items reveals children's conceptions. We used four items—Physical Object, Photograph, Dream (one character dreaming), and Both Dream (two characters dreaming)—embedded in short stories. There were two instances of each item. The following list gives an example of each type of item.

1. Physical Object: "Here's Sarah. It's a sunny day. Right now Sarah's outside and she's riding her bike."
2. Photograph: "This is Sam. One time when Sam went to the circus he had his camera and he took a picture of a funny clown. Right now Sam's in his room, and he's looking at the picture of the clown."
3. Dream: "Here's Jimmy. His favorite toy is a ball. Right now Jimmy's asleep and he's dreaming about a ball."
4. Both Dream: "Here's Steve. Here's his sister Beth. They sleep in the same bedroom. They both are asleep and they're both dreaming. Steve's dreaming about a fish."

The core of our design focuses on children's contrasting conceptions of three of the items: Physical Object, Photograph, and Dream. As shown in the top of Figure 1 (p. 370), three key questions were asked for each of these items: (a) whether the focal story character could see the item with his or her eyes (See question), (b) if someone else came into the room, whether they could see the item with their eyes (Other See question), and (c) whether the focal character could act upon the item in a specific way (Action question). With respect to these items and features we reasoned that correct responding should look essentially like the ideal pattern depicted at the top of the figure. Correct responding should reflect an

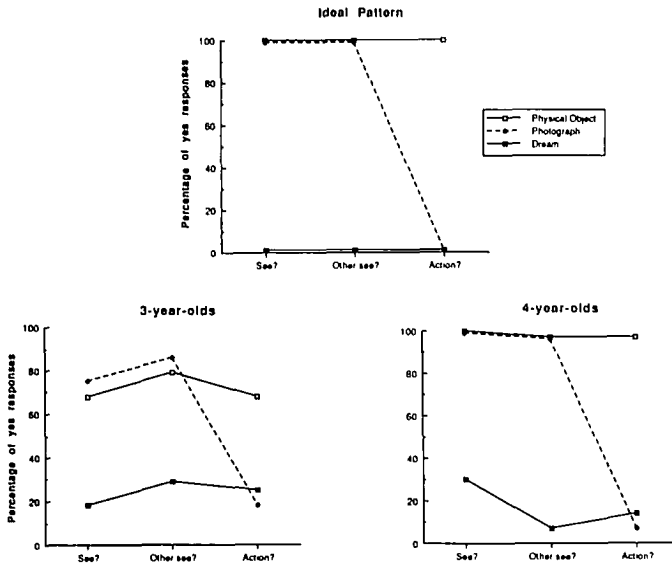


Figure 1. Ideal and observed patterns of responses to questions about behavioral-sensory properties.

understanding of the physical and perceptually-public nature of concrete physical entities and objects in photographs, and, in contrast, the nonphysical and private nature of dreams. Additionally, correct responding should reflect the knowledge that whereas concrete physical objects are directly tangible, objects in photographs and entities in dreams are not. These items and questions could detect several alternative conceptions. For example, if children incorrectly believed dream entities to be like concrete physical objects, they would answer the questions for the physical object and the dream items similarly. If children incorrectly believed dream entities to be like photographs or pictures displayed in their rooms (as Piaget claimed), the patterns across the three questions for dreams and photographs would be identical, essentially the one depicted in Figure 1 for photographs. Only if children correctly understood the behavioral-sensory properties of each of the items would their responses approximate the ideal pattern.

To test children's beliefs about the sharable versus individuated nature of dreams we included the Both Dream item, where two children are asleep and dreaming, with one child's dream contents specified in the story. After they were presented with this scenario children were asked the *See* and *Other See* questions described above, followed by two questions concerning sharability versus individuation. The target question asked whether another person who was sleeping in the same room would dream about that exact same object. Answers here were probed further by a follow-up question. If children responded "yes" to the target

question, they were then asked whether two people sleeping in the same room always dreamed about the same thing. If they responded “no” to the target question they were asked if there was any way two people could have the same dream at the same time.

At the end of each session we probed children’s understanding of the potentially fictional nature of dreams. To do this we asked children about two types of entities, *real* entities (a ball that bounces and an ant crawling on the ground) and *fictional* entities (a ball that sings and an ant riding a bicycle). For each item we asked (a) whether the child had ever seen one, (b) whether it existed, (c) whether the child could think about one, and (d) whether the child could dream about one. The graph at the top of Figure 2 depicts what we consider to be the ideal pattern of responses to these questions, namely that only the real entities really exist and can be seen but that both sorts can be thought or dreamed of. Children’s responses were yes or no to the various questions, and they were asked to explain their answers.

Finally, prior studies have found that children, like adults, often claim that thoughts are in the head (Estes et al., 1989; Johnson & Wellman, 1982), and in pilot testing we found that some children explained that the reason dreams were not perceptible with one’s eyes was because dream entities were inside the head. Adults, of course, typically say that mental entities are in the head or in the mind in a figurative sense, without meaning that dreams are spatial objects literally contained in the body or head. Children could be responding similarly, or

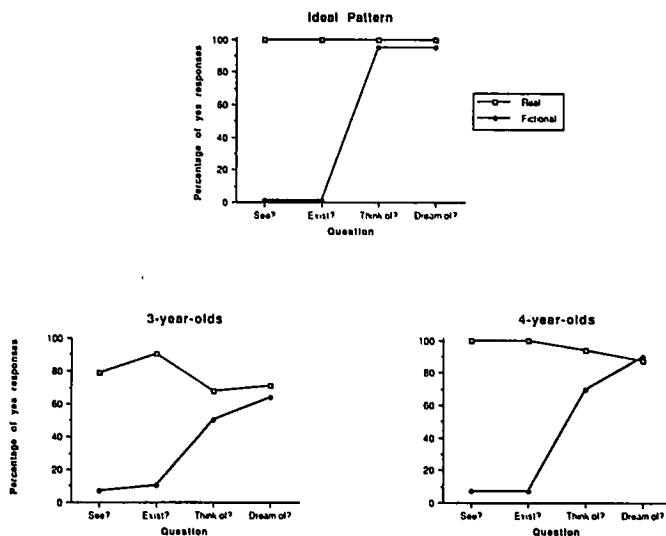


Figure 2. Ideal and observed patterns of responses to questions about real and fictional entities.

potentially could be evidencing a misconception of dreams as literally inside the body, in the same way that food once eaten is inside the stomach. As a check on this possibility therefore, on the Dream item, we asked children whether dream entities were inside the dreamer. This question is admittedly ambiguous, however if children responded positively we then asked whether the dream entity was literally inside the dreamer in the sense that it could be removed. Affirmative responses to this second focal question would clearly indicate a realistic misconception of dreams as internal entities.

Procedure

Children were seen individually in a quiet room at their preschool. Stories were presented by an experimenter who had spent considerable time in the children's classroom and hence was familiar to the children.

The two instances of each of the four items were presented orally in the form of short stories, each two to three sentences long (see list of examples, p. 369). Each story was accompanied by a simple line drawing of a face of either one or two children. The objects in the stories were not depicted in the drawings. After each story children were asked the questions described above. There were two different orders of presentation. In both orders, one of the two Physical Object items was presented first to orient the children, then followed by a Dream item. An instance of the two remaining items followed, but in one presentation order the Both Dream item came first and in the other the Photograph item came first. Children received one instance of each type of item in one of these orders and then the order was repeated for the second set of instances. After most of the questions children were asked to explain their answers.

RESULTS

Perceptibility and Publicness

Consider first the core of the design, children's understanding of the perceptibility and publicness of the three items shown in Figure 1. The graphs at the bottom of that figure present the observed patterns of responses, in comparison to the hypothetical-ideal pattern. Note that, despite some differences in overall level of response, both age groups conform to the ideal pattern. Both 3- and 4-year-olds judged concrete physical objects and objects in photographs differently from dream entities.

Statistical analyses support this graphical depiction. Preliminary analyses revealed no effects of sex or presentation order of the items. A $2(\text{Age}) \times 3(\text{Item}) \times 3(\text{Question})$ repeated measures analysis of variance (ANOVA) revealed significant main effects of item, $F(2, 54) = 107.14, p < .001$, and question, $F(2, 54) = 17.42, p < .001$, but not of age. The main effect of item was subsumed under an item \times age interaction, $F(2, 54) = 14.28, p < .001$, reflecting the difference in overall level of response for the two age groups as is apparent in the figure.

Likewise, the main effect of question was also subsumed under a question \times age interaction, $F(2, 54) = 3.40, p < .05$. The most critical finding, however, was the significant interaction between item and question, $F(4, 108) = 45.42, p < .001$, indicating that children answered the three questions appropriately differently depending upon the item queried. Importantly, the three-way interaction between item, question, and age was not significant, indicating that 3- and 4-year-olds did not differ in terms of their conformity to the ideal pattern.

Post hoc Scheffe tests ($p < .05$) further support these graphical conclusions. Children of both age groups more often reported that the physical object and the photograph could be seen (by oneself or another) than could a dream entity. Critically for our design, children of both ages treated objects in photographs and dream entities similarly on the action question. That is, they responded equally often that actions suitable to the referents themselves could not be performed on the photographic entities or the dream entities.

Children's explanations further clarify their understanding of these distinctions. Each child gave at least two explanations for their answers to these questions about each type of item. These explanations were grouped into four main categories: (a) physical/moral (e.g., "Cause it pounds down there" or "Because only grown-ups should"), (b) mental, (e.g., "Cause it's only pretend" or "Cause it's only in her dream"), (c) location (e.g., "Because it's on the wall" or "It's in the picture"), and (d) reality status (e.g., "Because it's real"). These four categories captured 74% of 3-year-olds' and 90% of 4-year-olds' explanations. The remainder fell into a residual category made up of "I don't know," "just because" and other similar expressions. All of the children's explanations were coded by two independent coders. Inter-coder reliability (calculated as agreements divided by agreements plus disagreements) was 97%.

The frequency of these four most prevalent types of explanation for each age group on each of the types of items is presented in Figure 3 (p. 374) in the form of star graphs. Each of the four arms of each star corresponds to one category of explanation. Plotted along each arm is the percentage of total explanations that fell into each particular category. The plots along each arm are then connected to form a graphical figure.

Examination of these star graphs reveals that both 3- and 4-year-olds used distinctly different patterns of explanation for the three item types. In discussing concrete physical items children of both ages most often referred to physical properties. In contrast to these physical explanations, dream entity questions elicited primarily mental explanations in 3-year-olds, and mental and reality status explanations in 4-year-olds. When discussing photographs, 3-year-olds' explanations primarily referred to location (e.g., "because it's on the picture"), and 4-year-olds' explanations referred to both location and reality status. Whereas 4-year-olds rarely responded with "don't know" or "just because," 26% of 3-year-olds' explanations were of this sort. Critically however, 3-year-olds responded with these unsure responses equally across the three item types.

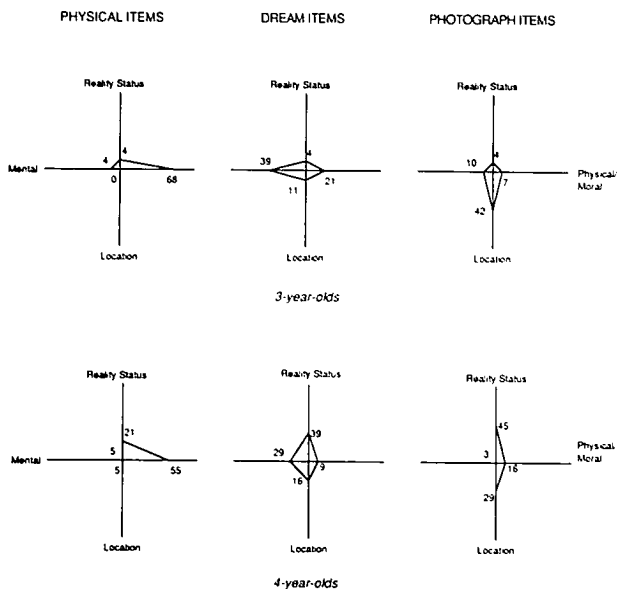


Figure 3. Star graphs of children's explanations.

Fictional Nature of Dream Contents

From these data it seems that children conceive of dreams as mental entities. Thus the pattern of responses parallels that found for thoughts and memories (Wellman & Estes, 1986) and for mental images (Estes et al., 1989). Most adults however consider dreams to be more fantasy-like or fictional than memories or mental images of objects, although we understand that dreams can potentially be about real-life objects and events, too. The questions about real and fictional entities depicted in Figure 2 probed children's understanding of the potentially fictional nature of dream contents. The ideal pattern—an understanding that mental states like thoughts and dreams can encompass fictional items that seeing cannot—is presented at the top of Figure 2, and the observed patterns of response are presented at the bottom. Note the similarity in basic form of the responses for 3- and 4-year-olds; both age groups conform in essence to the ideal pattern. Overall, children were 93% correct on the questions about whether the real and fictional objects existed, and were 91% correct on whether they had seen each type of object. Thus, both 3- and 4-year-olds knew which of the objects were real and which were fictional. The critical question then becomes whether children also understand that both fictional and real objects can occur in their dreams. Both 3- and 4-year-olds were equally correct on the questions about whether they could dream about a fantasy object and whether they could dream about a real object (64% and 71% respectively for 3-year-olds, and 90% and 87% for 4-year-olds). A 2(Entity: Fictional, Real) × 2(Question: Exist, Dream) ANOVA confirmed this finding. There were significant main effects of both

entity and question, both subsumed under the Entity \times Question interaction as shown in Figure 2, $F(1, 27) = 120.13, p < .001$.

These data, showing that children understand that dream entities are not only intangible and perceptually private, but also potentially fictional, make it unlikely that children conceive of them as real objects occupying physical space. It remains remotely possible, however, that at times children conceive of some dream entities as something like physical objects inside the body—something like swallowed food—and hence, something that could be seen once removed. We asked children therefore whether the dream entity was inside the dreamer and more focally, if so, whether it could be removed. Of 3-year-olds, 71% said that the dream entity was not inside the character. Of the 29% who said that it was inside, 100% said that it was not something that could be taken out. Of the 4-year-olds, 41% said that a dream entity was not inside a person and 59% said that it was. However, of the 4-year-olds claiming that a dream entity was inside the character, 88% said that it was not something that could be removed. In conjunction with children's other responses we take these data to indicate little, if any, conception of dreams as literally internal objects, coupled with an increasing tendency with age to adopt the adult-like figurative expression that dreams are "inside" the dreamer.

Individuation versus Sharability

The data thus far show that these children's conceptions parallel those of Western adults in conceiving of dreams as distinctly mental experiences that are not necessarily connected to reality in status, content, or location; something we can loosely term mental fantasies. The question remains however whether children conceive of dreams as private fantasies, as adults do, or as shared fantasies, in which dreaming individuals experience the same dream content. We addressed this issue with the Both Dream item. First we asked, in a target question, whether another character would be dreaming about the object in the focal character's dream. Based on their responses to the two instances of this target question, children were initially classified as having a shared fantasy conception (when a child answered yes to both instances of this question), or a private fantasy conception (when a child answered no to both instances), or as being inconsistent. According to this initial classification, the predominant conception of 4-year-olds was that dreams are nonshared or individuated. Ten of fifteen 4-year-olds judged that two people would not share the same dream on both instances of this question. Two 4-year-olds believed that dreams were shared fantasies, consistently judging that dreams were shared between dreamers, and three 4-year-olds were inconsistent. In contrast, six 3-year-olds evidenced a consistent shared-fantasy conception. Only three of the fourteen 3-year-olds held the private fantasy conception, and the five remaining 3-year-olds were inconsistent across item instances. Thus, this initial coding revealed that more 3-year-olds held the shared fantasy conception than the private fantasy conception, whereas the reverse was true for 4-year-olds— $\chi^2(1) = 5.5, p < .02$.

This scoring system, based only on children's responses to the target question, conceals some indications that shared fantasy notions were more widespread and more variable. Hence we developed a more inclusive classification system based not only on yes/no judgments on the target question, but including responses to the follow-up question, and the content of children's explanations. From these data we grouped children into three categories: confident shared fantasy, confident private fantasy, and transitional. To be classified as having a confident shared-fantasy conception children had to answer affirmatively across both instances of the target question that two children sleeping in the same room would be dreaming about the same thing, respond positively to the follow-up questions that two people sleeping in the same room always dream about the same thing, and give justifications that were consistent with their responses to these questions. Seven children, five 3-year-olds and two 4-year-olds, were classified as being confident about their shared fantasy conception. To be classified as having a confident private-fantasy conception, children had to respond negatively to both instances of the target question and the follow-up question and provide justifications that were consistent with their responses. Twelve children, ten 4-year-olds and three 3-year-olds were classified as being confident in their private-fantasy conception. The differences between these two types of conceptions is made even clearer by children's actual explanations, which can be seen in the Appendix.

Children who were classified as transitional either responded inconsistently across instances of the target question, answered positively to the target question and negatively to the follow-up question, or provided justifications that were inconsistent with their responses to the questions. Nine children were classified as transitional, six 3-year-olds, and three 4-year-olds. These nine children's patterns of answers and explanations revealed what appeared to be a qualified acceptance of the nature of shareability, not simply inconsistent responding. In particular, seven of the nine indicated in their explanations that there were certain conditions that governed whether or not two people would be having the same dream. For example, one child said that two people have to be in the same bed to have the same dream, another that only siblings can have the same dream, and two responded that it depended upon whether the two people wanted to dream the same thing or not (see Appendix).

Overall, with this refined coding system, whereas the majority of 4-year-olds (67%) held the private-fantasy conception, the majority of 3-year-olds (79%) either held the shared-fantasy conception or were classified as transitional— $\chi^2(1) = 6.0, p < .02$. Thus it appears that there may be considerable development between the ages of three and four in children's understanding of the individuation of dreams.¹

¹ As we had a fairly continuous distribution of ages between 3 and 4 in our sample, we expected that we might find a gradual transition between 3 and 4 from a shared- to a private-fantasy conception. Analyses of the age distributions within each conception however revealed no significant patterns. For example, the mean ages for 3-year-olds holding the shared-fantasy conception and for those holding the private-fantasy conception were equal (3;8), and for the 3-year-olds classified as transitional the mean age was 3;7.

DISCUSSION

These data on young children's understanding of dreams provide evidence of an early sophistication in understanding of a complex mental phenomenon. Arriving at a mature understanding of the nature of dreams in our society requires confrontation with several dualisms—physical-nonphysical, public-private, fictional-factual, and shared-individuated. Children as young as 3 and 4 years of age in these tasks have shown a sensible understanding of these dualisms as they apply to three distinct entities—dream entities, concrete physical objects, and photographs.

Regarding the first two dualisms, physical-nonphysical and publicly perceptible-private, young children appropriately distinguished dreams from concrete physical objects as nonphysical and private. This contradicts the traditional view of young children as realists, and supports and extends the more recent findings of Wellman and Estes (1986). Additionally, and requiring an even more sophisticated understanding of the nature of dreams, these children clearly distinguished between dream entities and objects in photographs. Children understood that photographs are similar to dreams in the inaccessibility of their depicted referents, and at the same time understood that they differ from dreams in terms of visual perceptibility both for self and for others. This finding strengthens the claim made in Estes et al. (1989) that children are not "subtle realists," confusing mental entities with close imposters, in this case, photographs.

An essential feature of mental contents is that they can be both relatively accurate reflections of objects in the world, and can also be completely fictional and have no real-world referent. The capacity to imagine something we have never seen or heard of is a powerful property of the mind. We found in this study that by 3 and 4 years of age, children understand this property of the mind; they know that we can both think and dream of nonexistent fictional things.

We also investigated the possibility that children might believe that dream entities are spatially located inside the dreamer, and are actually something like swallowed food or even an internal organ, a heart or a kidney for example. This type of conception characterizes Laurendeau and Pinard's substage of mitigated realism in which children believe dreams are internal and made of blood or bones. Most of our subjects, although they agreed that dreams are not external experiences, denied that they were literally spatially located inside the dreamer. Children appeared to understand that although dreams may be said to be inside a person rather than outside, they are not spatially located at any particular place in any more than a figurative sense.

Children's ability to make these distinctions supports the hypothesis that improved methods are responsible for the discrepancy between traditional research findings and more contemporary ones. Complementarily, these findings cast doubt on the proposal that children's conceptions of the mental nature of dreams lag behind their understanding of other mental states.

These are our primary conclusions. More tentatively, but strikingly, our findings suggest an early misconception and document age differences in understanding of the individuated nature of dreams. According to Shweder and Levine

(1975), some Hausa children believe that dreams are shared between sleeping individuals. Using improved methods, we also found that some children conceive of dreams as shared fantasies. Whereas most 4-year-olds believed, as adults do, that dreams are private fantasies, a substantial number of 3-year-olds exhibited this misconception. Although these children understand that dreams are not publicly perceptible in the sense that others can see them as external physical events, they believe that dreams are shared between sleeping minds. This seems a plausible misconception if children are building up a conception of dreams, in part, by examination of their own dream experiences. Because dreams occur while we are asleep, this sort of misconception would be less susceptible to active disconfirmation than would be, for example, the misconception that we all share the same percepts or beliefs. Moreover, a dream as a private experience is shared in one sense; most people have dreams generally, although not identical dreams about identical entities. We can also share the content of our dreams with others by talking to them. Additionally, young children may try to understand dreams by likening them to other sorts of fictional mental states, for example, pretense and imagination. Children's beliefs in shared dreams thus may arise by comparison to their experiences of shared pretense, for example, or to the experience of shared fantasy in hearing a fictional story. The range of conviction that we found, as evidenced by both inconsistency in responding and elaborations given in justifications of responses, suggests that preschoolers are still working out exactly what the sharable nature of dreams is.

Note that a firm shared-fantasy conception, although quite prevalent, does not characterize even the majority of 3-year-olds. Shweder and Levine hypothesize that adoption of a shared-fantasy conception depends upon sleeping arrangements. According to Shweder and Levine's proposal, although children who sleep alone may understand that dreams are nonphysical and internal events, they are more likely to develop and retain a belief that dream experiences are shared by all dreamers. For example, they may never have had the experience of waking up from a frightening, agitating dream and finding their sleeping partner peacefully asleep. To investigate the possibility that conceptions of dreams are linked to sleeping arrangements we collected data on whether each child in our study slept alone or with another person. We found that children who slept alone had the same distribution of conceptions as children who slept with others; specifically, in contrast to Shweder and Levine's proposal, they were not more likely to conceive of dreams as shared fantasies. Thus, although children's beliefs did seem to vary in this regard, no direct information as to their origins were evident in these data.

In attempting to chart the development of children's understanding of mental states, it is important to document when beliefs are neither uniformly held by children nor simple reflections of adult beliefs. Misconceptions are often a result of active attempts to understand the mind from a somewhat limited data base, and their presence suggests that children are actively trying to make sense of this complex domain. Our findings on children's understanding of dreams thus pro-

vide important information, and join a growing body of research on this topic. Telling misconceptions have also been found in young children's understanding of imagination (e.g., Woolley & Wellman, in press), and in their understanding of reality-oriented mental states such as false beliefs (e.g., Wimmer & Perner, 1983) and perceptual illusions (e.g., Flavell, 1988). These sorts of plausible, nonuniform misconceptions of the mind are an especially important source of information as to the character of young children's developing understanding.

To reiterate, however, our primary conclusion is that for children in our society, early understanding of dreams is largely sensible, and is of an internal private mental state. Any errors in conception take place against a coherent mentalistic understanding of the mind generally, and of dreams specially as one sort of mental state among others.

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APPENDIX

Sample Explanations: Responses to Follow-up Questions

Target Question. “Now that Johnny is dreaming about a fish, is Timmy dreaming about that fish too?”

Follow-up. If yes, “If two people are sleeping in the same room, are they always dreaming about the same thing?” If no, “Is there any way two people can have the same dream at the same time?”

Confident Shared Fantasy

PS (3;11) “I think that when people sleep in the same room they dream about the same thing.”

NH (3;7) “Like me and my brother Jeff, we sleep in the same room.” (E: Do you always have the same dream?) “Yup, we dream about our cat.” (E: You always have the same dream?) “Yup.”

Confident Private Fantasy

BB (3;8) “Because most of us have different dreams” and “Well, because my sister dreams about dolls and I don’t.”

BM (3;5) “Because they don’t know that the other one’s thinking about that one and the other one doesn’t know he’s thinking about that one.”

TL (4;4) “Cause um, if someone doesn’t tell you they’re dreaming about a fish or something you can’t dream about it.”

DW (4;4) “Because . . . because they aren’t the same people.”

Transitional

JB (3;10) responded affirmatively to the target question (consistent across both instances). However, when asked if two people sleeping in the same room always dreamed about the same thing, responded, “people don’t always dream about the same thing,” and “only one day they can dream about the same thing.”

LL (3;10) “Maybe they like to, maybe they don’t.”

HG (3;4) responded negatively to Question 1. Justification: “Cause she’s not sleeping in his bed to dream about it.”