



The conceptual underpinnings of pretense: Pretending is not ‘behaving-as-if’ ☆

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Abstract

The ability to engage in and recognize pretend play begins around 18 months. A major challenge for theories of pretense is explaining how children are able to engage in pretense, and how they are able to recognize pretense in others. According to one major account, the metarepresentational theory, young children possess both production and recognition abilities because they possess the mental state concept, *PRETEND*. According to a more recent rival account, the Behavioral theory, young children are behaviorists about pretense, and only produce and recognize pretense as a sort of behavior – namely, behaving ‘as-if’. We review both the metarepresentational and Behavioral accounts and argue that the Behavioral theory fails to characterize very young children’s abilities to produce and to recognize pretense. Among other problems, the Behavioral theory implies that children should frequently mis-recognize regular behavior as pretense, while certain regular forms of pretend play should neither be produced nor recognized. Like other mental states, pretense eludes purely behavioral description. The metarepresentational theory does not suffer these problems and provides a better account of children’s pretense.

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1. Introduction

In recent years psychologists and philosophers have debated the basis of children's early ability to engage in and recognize pretense. This debate emerged in response to an influential account of children's pretense offered by Leslie (1983, 1987, 1994a, 2002), which he termed the metarepresentational theory. The metarepresentational theory claims that children's twin abilities to engage in solitary pretense and to recognize pretense in other people both depend upon the same innately given mental state concept, *PRETEND*.¹ Early possession of the concept *PRETEND* would link pretense to the emergence of 'theory of mind'. Indeed, Baron-Cohen, Leslie, and Frith (1985) used this model of pretense to predict the 'theory of mind' impairment in childhood autism. A recent neuroimaging study supports the link between pretense and theory of mind by showing that brain regions typically associated with 'theory of mind' reasoning are activated when adults watch pretend scenarios (German, Niehaus, Roarty, Giesbrecht, & Miller, 2004).

More recently a number of rival accounts have been developed. Many of these accounts share the claim that children recognize pretense in a more limited way, as a kind of behavior, namely, 'as-if behavior' (e.g., Lillard, 1993a, 2001; Lillard & Flavell, 1992; Nichols & Stich, 2000, 2003; Perner, 1991). These accounts hold that the young child is a behaviorist about pretense, and so we refer to these views collectively as the Behavioral theory of pretense. Although different theorists have varying motivations for developing a Behavioral account, they share a sense that it is somehow more attractive for the theorist and simpler for the child to be a behaviorist about pretense than to be a mentalist.

In this paper, we show that the Behavioral theory is unable to account for children's pretense. In Section 1, we review some basic facts about children's pretense. We then briefly review some of the problems with traditional approaches to pretense which led to the development of the metarepresentational theory, and then briefly review the metarepresentational and the Behavioral theories. Section 2 describes some general problems with the Behavioral theory. In Section 3, we consider examples of pretense for which the Behavioral theory either has no account or gives the wrong account. We also show that attempts to modify the Behavioral theory so that it does a better job with these forms of pretense only exacerbate the problems discussed in Section 2. In Section 4, we consider a variant of Behavioral theory that allows the child to recognize a person's intention to behave-as-if and argue that it suffers many of the same difficulties as stronger Behavioral positions.

We argue that metarepresentational theory suffers none of these difficulties, and provides a better and simpler account of the development of human pretense. We conclude that, from the onset of pretending, children are mentalists about pretense in just the sense that the metarepresentational account originally suggested. In particular, older infants and very young children represent *pretending* as such. Pretending

¹ We use small capitals to indicate concepts that the child possesses and thoughts the child has. We do not assume any of these are conscious, though they may be.

happens to be a mental state and not a mere form of behavior. However, the meta-representational account does not entail that children have the concept, MENTAL STATE. Nor does it entail that they consciously reflect upon the mentalistic nature of pretense or pretenders. Instead, the account claims that they possess the concept, PRE-TEND, and use it in generating and interpreting instances of pretending.

Before we begin a word on the dialectic of this paper. Currently cognitive science has two main theories of pretense in play, the metarepresentational and the Behavioral, with the second developed largely to avoid the wider implications of the first. We defend the metarepresentational theory by showing that the Behavioral theory does not and, as far as we can see, will not provide a viable alternative. The wider issues raised by the metarepresentational theory of pretense are of great interest to cognitive scientists; these issues include the nature of concepts, innateness and learning, modularity and non-modularity, the neural systems underlying ‘theory of mind’, and the neuropsychology of autism. To pursue such issues here in any detail would take us too far afield and we or colleagues have written on these topics elsewhere (e.g., Baron-Cohen et al., 1985; Frith & Frith, 1999; German & Leslie, 2001; German et al., 2004; Leslie, 1987, 1994a, 2000a, 2000b; Leslie, Friedman, & German, 2004; Leslie & Frith, 1990; Leslie, German, & Polizzi, 2005; Leslie & Roth, 1993; Leslie & Thaiss, 1992; Roth & Leslie, 1998; Scholl & Leslie, 1999). So we shall not discuss these issues here. In any case, the problems we raise for the Behavioral theory would still arise if the Behavioral theory were recast, for example, as a set of innate concepts underpinned by a module.

1.1. Children’s pretense

The ability to engage in and recognize pretense emerges in play between 18 and 24 months (Leslie, 1987; Piaget, 1962), or younger (e.g., Bosco, Friedman, & Leslie, 2006; Fenson & Ramsay, 1981; Onishi, Baillargeon, & Leslie, in press; Walker-Andrews & Kahana-Kalman, 1999). An enormous amount of research has addressed children’s pretend play (see Lillard, 2002, for an excellent overview of research on children’s pretense). For current purposes, one fact about children’s pretense is worth highlighting: Young children do not just engage in pretense, but also recognize pretense carried out by others, and share in it.

Experimental evidence that young children recognize and share in pretense is provided by investigations in which children observe an experimenter enact a pretend scenario. After observing the scenario, children are either: (1) asked to imitate the experimenter’s pretense (Rakoczy, Tomasello, & Striano, 2004; Watson & Fischer, 1977); (2) given questions to answer about the pretend scenario (Harris & Kavanaugh, 1993; Harris, Kavanaugh, & Meredith, 1994; Leslie, 1988a, 1994a); (3) asked to select a picture showing the outcome of the pretend scenario over similar distractor pictures (Harris, Kavanaugh, & Dowson, 1997; Kavanaugh & Harris, 1994); (4) asked to indicate which of two objects a pretend action should be directed towards (e.g., Bosco et al., 2006; Walker-Andrews & Harris, 1993); or (5) allowed to look while their looking times are recorded (Onishi et al., in press).

Success in the above tasks requires that children recognize the experimenter's pretense. For example, in a 'drinking' task, children observe as the experimenter pretends to fill two cups with water and 'drinks' from one. When invited to have a 'drink' themselves, children must choose between the two available cups. But really, both are empty! Only by recognizing and sharing in the experimenter's pretense, can children direct their action towards the cup that (pretend-wise) still contains 'water'.

The above studies show that children can recognize pretense at least by age two, and very simple recognition tasks have been passed by children as young as 15 or 16 months of age (Bosco et al., 2006; Onishi et al., *in press*). The recognition of pretense therefore occurs as early as its first production in play. Traditional approaches to pretense focused solely on the emergence of solitary pretend play production (Piaget, 1962). As a result, the most crucial facts about children's pretending were overlooked: namely, that children have multiple abilities to engage in, to recognize, and to share pretense; and that these multiple abilities are *yoked* in development (Leslie, 1987, 1994a). Although children do sometimes engage in solitary pretense (e.g., Schwebel, Rosen, & Singer, 1999), they also recognize pretense in and share pretense with other people. And they can do this by the time they become able to produce pretend play by themselves. The yoking claim is also supported by observational studies on the emergence of children's pretense (e.g., Bezier & Howes, 1992; Haight & Miller, 1993). Such studies do *not* report that children first go through a period in which they can engage *only* in solitary pretense and which later gives way to a period in which they can also recognize and share in others' pretense. Instead, human pretense has a social and communicative nature from its inception.²

Leslie's (1987) metarepresentational account was the first account clearly to recognize that pretend play has a social nature from its onset. But, what is more important, it was the first account to provide an explanation of this fact in terms of underlying cognitive processes. According to this account, the above pretense-related abilities all employ propositional attitude representations, a feature that is characteristic of 'theory of mind' reasoning.

1.2. Traditional 'pretense-as-process' theories

Traditional approaches explained the emergence of pretense as the result of a new cognitive *process*, for example, the over-generalization of emerging representations (over-projection of schemas) (Piaget, 1962) or the process of thinking counterfactually (Walton, 1978) or as 'transformations' (Fein, 1975) or as 'simulating' or imagining (Harris, 1995). In addition to overlooking the social nature of pretending, these accounts provide no basis for explaining children's ability to recognize pretense in others. A process such as over-generalization of representations or counterfactual thinking may produce a behavioral output but it does not confer an ability to recognize that other people are engaging in that very process. To see this simple point,

² Notice that it is consistent with our model that the child's ability to recognize pretense might *predate* her ability to produce pretense actions herself. This might come about because of, for example, the performance demands of action planning.

consider the process of remembering. The mere fact that an infant can remember things in no way entails that she is able to recognize the same process – remembering – in other people. Recognition of remembering entails categorizing what someone does as remembering. Thus, the *recognizer* of remembering needs a concept of remembering, whereas the simple operation of memory does not. We might make this point more generally: one doesn't need the concept DOG to *be* a dog but one does need that concept to recognize that something *is* a dog.

In a similar vein, the process of coming to believe something does not require the concept of believing. Moreover, the mere ability to believe something does not require or bestow the ability to recognize beliefs in others. The reason is again because recognizing beliefs requires the concept of belief, whereas merely *having* beliefs does not (Leslie, 1994a). Indeed, this is a basic assumption underlying 'theory of mind' research (e.g., recognizing belief in the false belief task requires possession of the concept of belief).

Continuing this vein, the recognition of pretense in others will require a concept of pretense. However, traditional accounts discussed only the process of pretending and thus bestowed no concept on the child. The ability or tendency to over-generalize representations does not confer the ability to recognize that other people over-generalize representations. The ability to have counterfactual thoughts does not confer the ability to recognize that other people have counterfactual thoughts. Likewise the ability to simulate or to imagine (Harris, 1995) does not confer the ability to recognize that other people simulate or imagine.

These reflections may reveal why traditional theories of pretense overlooked the child's ability to recognize pretense. With the theoretical resources they allowed themselves, traditional accounts could neither explain (a) *how* children can recognize pretense in others (without the concept), nor (b) *why* the abilities to produce pretense and to recognize pretense should be yoked in development. The modern Behavioral theory is also a process theory, and, as we shall see, for it too, the problem of explaining how children recognize pretense remains a thorny problem.

1.3. ToMM theory

Leslie (1987, 1994a) proposed that the specific innate basis of our ability to learn about the mental states of others is provided by a specialized neurocognitive mechanism, the Theory of Mind Mechanism (ToMM). One of the key functions of ToMM is developmental in nature, namely, to introduce a specific representational structure, called the metarepresentation. Metarepresentations introduce and are organized around a basic set of mental state concepts, such as PRETEND, BELIEVE, and DESIRE. They allow the child to attend to these hidden mental states, and therefore to learn things about them (Leslie, 2000b).

The ToMM theory was the first account of pretense that could capture the theoretical significance of pretense recognition. According to ToMM theory, both the abilities to engage in pretense and to recognize pretense are the outcome of the child's possession of the concept PRETEND. Possession of this single concept is the basis of both abilities. Both abilities therefore appear simultaneously in development.

Pretending differs crucially from *believing* or *desiring* in this regard. Having beliefs and desires does not require possession of the concepts, BELIEF and DESIRE, respectively, though recognizing these mental states does. Therefore, the ability to *have* beliefs and to *have* desires is not developmentally yoked to the recognition of these mental states (see Leslie, 1994a for further discussion).

Leslie (1987, 1994a) argued that the content of Sally's pretense representation (e.g., THIS BANANA "IT IS A TELEPHONE") must be *decoupled* and quarantined from Sally's representations of the world. If this representation were not decoupled then Sally would represent THIS BANANA IS A TELEPHONE as just another fact about the world, and hence would really believe that the banana is a telephone. If children did not quarantine pretense representations then every instance of pretense would be an instance of confusion and ultimately pretending would alter the meaning (for example, the truth conditions) of representations in arbitrary ways.

Suppose a child, Sally, recognizes that her mother is pretending that a banana is a telephone. Sally recognizes this pretense when her ToMM produces the metarepresentation, MOTHER PRETENDS (of) THIS BANANA (that) "IT IS A TELEPHONE" (Leslie & Frith, 1990). This metarepresentation relates an agent (Sally's mother) through an attitude (PRETEND) to the truth of a content ("it is a telephone") in regard to an object (the banana) that 'anchors' the pretense to reality. Leslie (1994a) called this an "agent-centered representation of behavior" because this is the description that the agent – in this case, Mother – has of her *own* behavior. By recovering Mother's description of her own behavior (the intention under which Mother performed the act), Sally recovers the meaning of Mother's behavior – the meaning that Mother's behavior has for Mother herself. For Sally to pretend that the banana is a telephone simply requires representing the agent of pretend as *self*, instead of Mother, or as *we* if pretense is shared, and using the resulting metarepresentation, I (WE) PRETEND THIS BANANA "IT IS A TELEPHONE", in part as a high-level command to the action planning system. Lewis and Ramsay (2004) found that, in a longitudinal sample between 15 and 24 months, mirror self-recognition was developmentally related to (preceded) both personal pronoun use and pretend play.

1.4. The behavioral theory

The Behavioral theory offers a competing account for children's pretense. We will focus on the account offered by Nichols and Stich (2000, 2003) (hereafter N&S) because, of all the Behavioral theorists, they have most closely specified their account. We note variants only when relevant.

The Behavioral theory claims that children do not possess the mental state concept PRETEND, and therefore engage in pretense, and recognize it in others, without employing this concept. The Behavioral theory claims that to the extent children are said to 'understand' or represent pretense, it is as a behaviorist might – only as a kind of *behavior*. At some much later point in development, and by an unspecified route, older children will acquire the mentalistic concept PRETEND. This contrasts with the metarepresentational theory, because, from the outset of pretend play, pretense is

represented *as such* – as pretense. Moreover, early PRETEND is a mentalistic concept, in part because *pretending* happens to be a mental state.³

According to the Behavioral theory, young children engage in pretense by a cognitive process which first stipulates a scenario P, such as, THE BANANA IS A TELEPHONE. In N&S's formulation this scenario is represented in a "possible worlds" processor. N&S borrow from ToMM theory the idea that the possible world scenario P is decoupled, so that the child does not actually believe that P is true. (Though Behavioral theories may differ in the terms used for decoupling or in their accounts of how decoupling operates, these differences are not relevant to the present discussion.) The child then *behaves as if P were true* or, in N&S's more careful formulation, *behaves in a way that would be appropriate if P were true*.

Like traditional views, the Behavioral theory ascribes the emergence of pretend play to the emergence of an ability or process, rather than to possession of a concept. For N&S, this is the ability to process 'possible worlds' representations (cf. Perner, 1991). Unlike the ToMM theory, the Behavioral theory does not require the child to represent what he or she is doing (namely *pretending*), because the child is simply behaving, albeit in a non-standard (non-belief-processor-driven) way. When Sally pretends that a banana is a telephone, Sally processes the representation THE BANANA IS A TELEPHONE in a special decoupled mode that is distinct from the normal processing mode.⁴ Sally then simply produces the behaviors that would be appropriate if the banana really were a telephone, exhibiting telephoning-behavior toward the banana, such as holding it to her ear and speaking.

But, as we noted earlier, in order to *recognize* pretense behavior in another person, the child needs more than an ability to produce that kind of behavior herself – just as the ability to recognize remembering in others needs more than the ability to remember. For this reason, the Behavioral account of solitary pretense must be supplemented by a second account which describes the representation of pretense (behavior) that the child generates when she 'recognizes pretense' in others. The supplementary account N&S offer is that the child represents situations, in which mother pretends P, as, MOTHER BEHAVES IN A WAY THAT WOULD BE APPROPRIATE IF P WERE THE CASE. Thus, when Sally recognizes that her mother is pretending that the banana is a telephone, what Sally actually represents is, MOTHER IS BEHAVING IN A WAY THAT WOULD BE APPROPRIATE IF THE BANANA WERE A TELEPHONE.

³ This is not the same as saying that a metarepresentation represents a mental state as *being a mental state* (or as *being a representation* or as *being a mental representation*). If a metarepresentation did any of these, then the earlier examples would look something like, I PRETEND THE BANANA "IT IS A TELEPHONE" AND PRETENDING IS A MENTAL STATE /MENTAL REPRESENTATION. Instead, a metarepresentation simply represents pretending as *pretending*. There has been some confusion about this following Perner's (1991) arguments that the term metarepresentation *must* be used to mean: a representation of a mental state as being a mental representation. We see no reason to accept this stricture. Throughout this paper we use the term metarepresentation in the sense introduced in Leslie (1987; Leslie and Frith, 1990). Leslie and Thaiss (1992) coined the term M-representation as a synonym for use in contexts where it is desirable to distinguish this earlier use from Perner's.

⁴ Note that, although N&S borrow the idea of decoupling from ToMM theory, in their account decoupling functions as a quarantined *process*, rather than as the quarantined part of a (meta)representation.

Note the move here from describing solitary pretense from the theorist's point of view – as *behaving in a way that would be appropriate if P were the case* – to attributing essentially the same description to the child in the form of a thought the child has when she recognizes the pretense that P in another person. In the case of accounting for recognition, what begins as the theorist's description of the child's behavior ends up as the thought the child processes when the child internally describes that behavior in someone else. The theorist ascribes to the child all of the concepts that comprise the theorist's description. We are not objecting to this in principle but we do need to keep track of the distinction. We will try, therefore, to be careful to use small capitals when describing what is supposed to be passing through the child's mind (as she thinks about someone's behavior) and italics when describing the behavioral output of the child.

Already, then, it is far from obvious that the Behavioral theory is actually simpler or more 'warranted' than the ToMM theory, as N&S claim. Indeed, it seems more complex: there are entirely separate accounts of solitary pretense (possible worlds processor) and pretense recognition (a string of concepts); for pretense recognition the complex concept, BEHAVE IN A WAY THAT WOULD BE APPROPRIATE IF P WERE THE CASE, is required instead of the single primitive concept PRETEND; for all we know, some or all of these concepts might be innate; for all we know and strongly suspect, 'heavy machinery' might be required for the child to mount the concept, BEHAVE APPROPRIATELY; and yet, we remain in need of an account that explains how the concept PRETEND is finally acquired at some later stage of development. Despite all this, the Behavioral theory does not explain anything that the ToMM theory does not; and, as we shall see presently, it actually explains a good deal less.

2. Some general problems with the Behavioral theory

Although we believe that the ToMM theory actually provides a simpler account of pretense than the Behavioral theory, the reader may not share our intuitions about which is simpler, and in any case the 'simpler' account may not be the correct one. It would indeed be the simpler theory that organisms only have one instance of any given organ type, but it is also false.

Following Lillard (1993b), empirical work has sought to test between these two views (see Lillard, 2001 for a review). We feel that much of this work, though interesting in other ways, was based on a misinterpretation of ToMM theory and used a methodology not suited to testing between the theories. Because those issues have been aired elsewhere (German & Leslie, 2001), we will not repeat them. Here we will argue that the Behavioral theory cannot account for young children's pretense. We begin by discussing some general problems faced by the Behavioral theory.

2.1. The behavioral description is too broad

The Behavioral theory identifies the young child's understanding of pretense with the behavioral description BEHAVING IN A WAY THAT WOULD BE APPROPRIATE IF P WERE THE

CASE. One implication of the theory is that children should consider a given behavior to be an instance of pretense if and only if that behavior fits the behavioral description. Thus, the theory predicts that children will mistakenly deem non-pretend behaviors to be instances of pretense, so long as those behaviors fit the behavioral description.

It is often acknowledged that actions based on the false belief that P are instances where one behaves in a way that would be appropriate if P were the case. For example, if Sally's mother mistakenly believes that a candle is an apple then she will behave in a way that would be appropriate if the candle were an apple, and perhaps try to eat it. The Behavioral theory predicts that when Sally witnesses this mistaken action, she will incorrectly consider it to be an instance of pretense. This very conclusion has been endorsed by some proponents of the Behavioral theory, such as Lillard (Lillard, 2001, p. 505) and Perner⁵ (Perner, Baker, & Hutton, 1994), though in somewhat different ways.

But acting on the basis of a false belief is not the only non-pretend behavior that fits the behavioral description. As Lillard and Witherington (2004) recognized, the child cannot rely on the 'wrongness' of an action (e.g., banana talking) to identify pretense; the mere inappropriateness of an action to the current situation would lead to mistakes, failures and accidents (e.g., spilling juice) being misinterpreted as pretense (e.g., pretending the juice is a river). However, the problem of over-extension is far worse than Lillard and Witherington recognize because BEHAVE-AS-IF P will include virtually any action at all. For example, suppose that Sally's mother draws with a piece of charcoal, and that it strikes Sally that Mother is using the charcoal similarly to a crayon. In this case, Sally might well think, MOTHER IS BEHAVING IN A WAY THAT WOULD BE APPROPRIATE IF THE CHARCOAL WERE A CRAYON. That is, Sally will mistake her mother's behavior for pretense. This example might not be so problematic if it were unique or even rare. However, countless other examples of non-pretense behaviors will in like fashion nicely fit the behavioral description. All that is required is that the child should be able to identify a similarity between one thing and another. Now, for any arbitrary x and y , x is similar to y on some dimension. Similarity and similarity detection is so ubiquitous that Behavioral theory predicts that children should mistake virtually all behaviors for pretense. However, we know of no evidence to suggest that children do vastly over-interpret other people's behavior as pretense. So something is missing from Behavioral theory.⁶

2.1.1. *Can manner cues rescue the Behavioral theory?*

It has long been noted that pretense is marked by behavioral 'manner' cues such as exaggerated motions and 'knowing' looks and smiles (Piaget, 1962). Leslie (1988b) suggested that these cues, together with certain intonations, other aspects of social

⁵ We are referring to Perner's theory that young children possess a concept 'PRELIEF'. PRELIEF is supposed to be a concept that means indifferently both *pretense* and *belief*. Given that 'PRELIEF' is a bona fide mental state concept, this particular theory of Perner's is not an example of a Behavioral theory. Perner (1991) presents a Behavioral theory.

⁶ Notice that our point is not to ask that Behavior theory provide a general theory of similarity but that, according to current Behavior theories, a given behavior is behaving-as-if- x to the extent that the behavior is similar to x -behaving. But this seems to generate an embarrassingly broad class of 'pretend' behaviors.

context, and the form or manner of behavior, might be crucial for the very young child to recognize and share pretense (pp. 30–31; also Leslie & Happé, 1989). Lillard and colleagues (Lillard & Witherington, 2004; Richert & Lillard, 2004) are the first to actually make systematic observations and have recently provided evidence supporting the idea that behavioral cues are important for children's recognition of pretense. Young children may have to rely more on such cues because they are less able to assess solely from the content of the behavior the probability that the behavior is intended seriously.

How might one defend the Behavioral theory against the charge that it predicts that children should constantly mistake regular behavior for pretense? One might try to argue, as Lillard and Witherington (2004) have, that children are prevented from making these mistakes because they attend to the 'manner' cues. Indeed, one might argue further that, because these cues are behavioral, attending to them comports nicely with the Behavioral theory.

But curiously, the Behavioral theory actually provides no room for the 'manner' cues. According to the Behavioral theory, the child tests whether a behavior is pretense by determining whether the behavior would be appropriate if P were true. This behavioral description makes absolutely no mention of 'manner' cues. Thus, the theory predicts that behaviors matching the description will be identified as pretense even in the absence of any 'manner' cues.

Even worse for the Behavioral theory, the presence of such cues should actually *decrease* the extent to which pretense behaviors match the behavioral description. For example, suppose that Sally's mother pretends that some object, such as a stone, is a crayon. She may make exaggerated drawing motions with the stone but without contacting the paper, produce no visible drawing, wink, smile, and so forth. In this case, all these exaggerations, mannerisms, and the lack of any real drawing actually decrease the extent to which *she behaves in a way appropriate to if the stone were a crayon*. Attending to manner cues will not therefore save the Behavioral theory; instead manner cues add to its difficulties.

How might the Behavioral theory incorporate manner cues? It should not be enough for researchers to suggest somewhat vaguely that children recognize pretending as behaving-as-if but also attend to manner cues or other 'characteristic features' of pretense (e.g., Harris, Lillard, & Perner, 1994, pp. 291–292). The Behavioral theory needs to explain how children decide that a behavior would be appropriate if P were true, while also noticing that the behavior includes manner cues which diminish the degree to which it actually would be appropriate if P were true. Perhaps the behavioral description might be modified to include manner cues, though we cannot see how this can be done.

A reviewer has suggested that the Behavioral theory might be modified to claim that children do not use the behavioral description to identify pretense, but instead rely on manner cues for recognition. The suggestion is that, although the child's behavioral description does not *actually* describe pretense behavior, in practice we need not worry about this because the child will only apply the 'description' to behavior that has the right cues. But, as we have noted, behavior with the 'right cues' for pretense actually *contradicts* the Behavioral description. Therefore, this

suggestion would entail a very strange theory of conceptual descriptions. In this vein we might propose, for example, that the child's concept of *dog* has the intension *PIECE OF FURNITURE* but, not to worry, children only apply this 'description' to things that have the 'right dog cues'. We conclude that manner cues are a headache rather than a help for Behavioral theory.

The ToMM theory does not face these problems. According to the ToMM view, the child uses cues, makes guesses, and draws inferences, all in the service of trying to recognize when someone is pretending something. According to ToMM, the child hypothesizes that someone's behavior stems from their (mental state of) pretending that P. This is very different from merely describing behavior. What cues and clues the child uses to suggest and test the hypothesis that someone is pretending P, which of these cues are innately specified and which learned, are all open empirical questions. What the theory does assert is that the child can form and test such hypotheses *because* she has the concept *PRETEND*. Indeed, the young child comes to learn about pretense precisely by forming and testing these and other hypotheses about pretenders and pretending. A child, so equipped, has the possibility of appreciating what the behavior of the pretender *means* to the pretender – by forming what Leslie (1994a) called an “*agent-centered* description of behavior”. The child, according to the Behavioral theory, could not do this; instead, she is limited to a sort of “*world-centered*” description of behavior. This forces the Behaviorist child merely to assess how “appropriate” that behavior is to “the world”.

2.1.2. “Appropriateness” of behavior

The Behavioral theory offered by N&S hangs on the notion of the *appropriateness* of behavior. Other Behavioral theorists are content simply to say that young children's pretending is “as-if behavior” and then to quickly claim that the child only needs to be a behaviorist. But such a pattern of argument is not illuminating unless one can characterize precisely the sense of “behaving as-if” required by pretense. To their credit, N&S try to say what ‘behaving as-if’ means and in doing so suggest that it means the behavior is *appropriate* to some state of affairs that may or may not be true. Unfortunately, N&S do not then go on to say anything to characterize what in this context “appropriate” means.

In the absence of guidance on this key part of the theory, we have tried to make a reasonable guess about what N&S mean by ‘appropriate’. We do not suppose that N&S intend ‘polite’ or ‘morally acceptable’. We also rule out, as we must, any *smuggling in* of the concept of pretense: the reader too must guard against silently or secretly interpreting ‘appropriate to P’ as shorthand for ‘appropriate-to-pretending P’. Although this maneuver will avoid the objections we raise here, it would do so by turning N&S's entire theory into a straightforward notational variant of the meta-representational theory.⁷

⁷ We might reflect at this point on how very hard it is for us to think strictly as Behaviorists; even when we try not to, we often slip surreptitiously into our ingrained mentalistic ways, like teaching that the rat presses the lever because it *expects* a reward!

More helpfully, we assume that in this context ‘appropriate’ is restricted to ‘appropriate to P’, so that what the child thinks is, MOTHER BEHAVES IN A WAY THAT WOULD BE APPROPRIATE TO P IF P WERE THE CASE. This restriction is required in order to rule out, as we assume N&S intend, behaving in ways that would be appropriate to Q, if P were the case. Q might, of course, be something quite arbitrary and unconnected with P. Although we assume that ‘appropriate to P’ is what N&S meant, to ease exposition we will stick to their original wording when discussing the Behavioral theory.

2.2. *The Behavioral description fails to capture a key feature of pretense*

Children do not always or typically become confused by observing pretense, and theories of pretense must explain why this is so. Earlier, we discussed the need for pretense theories to incorporate a notion of decoupled representation because theories in which the representation of the pretense situation is not decoupled predict that children will represent and react to the pretense situation as literally true. Behavioral theories typically adopt some notion of decoupling – for N&S it becomes a special processing mode, the “Possible Worlds box”. One might assume therefore that Behavioral theories are safe from predicting that pretense will lead to confusion. However, there are other reasons why Behavioral theory predicts that children observing pretense will become confused.

According to the Behavioral theory, when Sally sees her mother pretending that the banana is a telephone Sally recognizes that her mother behaves in a way that would be appropriate if the banana were a telephone. Decoupling prevents Sally from thinking that the banana really is a telephone. But confusion will still arise because Sally will think that bananas really should be treated as if they are telephones, in much the same way that she reasonably and *seriously* learns from observing people that a piece of charcoal should be treated like a crayon.

ToMM theory does not face this problem because it claims that children possess the concept PRETEND. When Sally sees her mother pretending that the banana is a telephone, Sally represents, MOTHER PRETENDS (OF) THIS BANANA “IT IS A TELEPHONE”. Because the pretend content is decoupled, Sally will not believe that the banana is a telephone. Because Sally represents that her mother PRETENDS, Sally will not believe that bananas really are to be treated like telephones. The Behavioral theory uses decoupling to prevent the first potential source of confusion. But it has no antidote for the second.

Minimally, the Behavioral theory would have to be modified to deal with this problem by introducing another concept into the behavioral description the child is supposed to generate for other people’s pretense. For example, it would need something like the idea of “non-serious” so that recognizing mother pretending P is accomplished by the child thinking, MOTHER BEHAVES IN A NON-SERIOUS WAY THAT WOULD BE NON-SERIOUSLY APPROPRIATE IF P WERE THE CASE. Of course, this modification adds further complexity to the child’s putative thoughts and posits another concept that the child must possess (innately?).

But more importantly, the above makes clear what game the Behavioral theory performer finds itself playing: namely, trying to get the child to think that someone is pretending without actually thinking *pretend* as such. If the Behavioral theory is to measure up to the phenomena of early human pretending, its success will depend on finding an exact conceptual paraphrase of PRETEND *without* using that concept. Moreover, the paraphrase must be strictly *behavioral*. Crucial in this regard is that if NON-SERIOUS is added to Behavioral theory, it must be shown convincingly that in this context it is not merely PRETEND under a disguise. Notice that the question of whether someone is serious/non-serious that P is a question about that person's *attitude* to P. Propositional attitude concepts are the heart and soul of 'theory of mind' and utterly foreign to and rejected by behaviorism (Fodor, 1981; Ryle, 1949). 'Pretend' is just the name of a specific attitude. So it seems to us that any attempt to rescue the Behavioral theory that starts down this particular road will inevitably end up either as a notational variant or as a relatively minor quibble about whether PRETEND is the *exact* attitude concept the child has, rather than as the dull deflationary alternative to metarepresentational theory that its protagonists hope it will be.

3. Pretense that does not fit even an enhanced behavioral description

We next provide a simple example of object substitution pretense that the Behavioral theory is unable to explain, even with the extensions granted above. We attempt to extend the Behavioral theory still further so that it can account for this form of pretense, but do not find a satisfactory account.

3.1. A simple example of object substitution pretense

Suppose Sally engages in object substitution pretense by pretending that a pencil is a car: she may push the pencil along a table top to pretend that the pencil/car is driving along. She may also make engine noises, such as "vroom, vroom", to pretend that the pencil as car is making these noises. According to the Behavioral theory, Sally is behaving in a way that would be appropriate if the pencil really were a car. But is she? No. If the pencil *were* a car then Sally would hardly push it across a table or make engine noises! Handling, pushing, and making "vroom" noises are not appropriate behaviors when dealing with a *real* car. Instead, appropriate behaviors for dealing with a real car include opening its doors, getting inside or, if one is very young, being placed inside, sitting still, and looking out the window.

It does not help to claim that Sally non-seriously behaves as would be non-seriously appropriate if the pencil were a car. Such 'non-serious' behavior might include sitting backwards, making funny faces, or bouncing up and down on the seats. It also might include running around in circles. Almost any behavior will fit this description so long as it is 'not serious', and so this extension helps less than one might have hoped.

How can the Behavioral theory explain this example of object substitution pretense behavior? Below we attempt to extend the Behavioral theory yet again so that it

explains why Sally pushes the pencil (substitution motion) and why she makes engine noises (sound effects pretense).

3.2. *Substitution motion*

To explain why Sally pushes the pencil (pretense production), the Behavioral theory might claim that sometimes, when pretending that x is a y , the child will *make x move as if x were a y* . But the child also needs to be able to recognize this form of pretense in others, and so the behavioral description will have to be expanded to include cases where a person **MAKES x MOVE AS IF x WERE A y** . Lillard (1993a, p. 357) offers a similar solution to the problem of pretense in which toys are made to move.

As far as we can see, this can only be incorporated into the Behavioral theory as a sort of addendum. With this new modification, the Behavioral theory (of solitary pretense) becomes *child acts in a way that would be appropriate if x were a y OR child makes x move in a way that would be appropriate if x were a y* . The Behavioral theory of Sally recognizing that her mother is pretending that the pencil is a car will have the child selecting between **MOTHER BEHAVES IN A (NON-SERIOUS) WAY THAT WOULD BE (NON-SERIOUSLY) APPROPRIATE IF THE PENCIL WERE A CAR** OR **MOTHER IS MAKING THE PENCIL MOVE AS IF THE PENCIL WERE A CAR**. In this particular case the child should select the latter possibility.

This expansion of the behavioral description, however, has the unsavory consequence of leading the Behavioral theory to predict that children will treat as the same – that is, as “pretense” – all cases where a person makes one object move as if it were another object. What this comes down to again is simply whether the child perceives some degree of similarity between the motions of the object Mother is handling and some other motion the child knows about. Therefore, such examples will be damagingly ubiquitous. For example, to return to our example of the charcoal, Sally will treat Mother (seriously) drawing with charcoal the same as Mother pretending to draw with, say, a spoon (namely, as pretending the charcoal/spoon is a crayon). Or, if Mother (seriously) throws a ball, then Sally might notice that her mother is making the ball move as if it were an airplane, and so on. The expanded Behavioral theory predicts that children will mistake for pretense almost all behaviors that handle objects.

3.3. *Sound effects pretense*

Even graver challenges for the extended Behavioral theory are posed by sound effects pretense. What we have in mind here are, for example, the “vroom, vroom” sounds made when pretending that a pencil is a car. When Sally produces these sounds she pretends that the “car” is making them. But Sally *herself* making “vroom, vroom” sounds would not be *car-appropriate behavior if the pencil were a car*. (One does not usually make “vroom” noises in the presence of cars.) Nor is it a case of making something move. For the **PRETEND** metarepresentational theory there is no problem because pretending is not merely behavior but an underlying attitude (mental state) from which endlessly varied behaviors may flow (see below). The

trouble with behaviorism is that there is not much more it can do than *list* these behaviors.

How might the Behavioral theory explain “sound effects” pretense? One possibility is that sometimes when pretending that *x* is a *y*, the child *makes x sound like a y*. For the child to recognize this sort of pretense, the behavioral description might have another addendum to include cases where MOTHER MAKES X SOUND LIKE A Y. But this cannot be right: In producing “vroom, vroom” sounds Mother does not make the *pencil* sound like a car! Producing sounds with your mouth does not make the pencil sound like anything – to make a pencil sound like something one might, for example, tap it on a table. But when Mother makes engine noises, she, not the pencil, is the one that ‘sounds like a car’. Yet Mother is not pretending *she* is a car.

A second possibility is that sometimes when pretending that *x* is a *y*, the child *produces the sounds that x would produce if x were a y*. That is, when Sally makes “vroom, vroom” sounds she produces the sounds that the pencil would produce if it were a car. With this modification, the Behavioral theory of (solitary) pretense production becomes: *child acts in a way that would be appropriate if x were a y OR child makes x move in a way that would be appropriate if x were a y OR child produces sounds that x would produce if x were a y*. We suppose that a determined Behavioral theorist of pretending might simply add new items to the list as needed, though it is unclear what insight this list would yield. Why are the above items *on* the list, whereas other ways of ‘behaving as if’ are *not* on the list (for example, drawing with charcoal)? Again, for the metarepresentational theory the answer is straightforward: because these are the things people do when they *pretend*.

The recognition of “sound effects” pretense requires a corresponding expansion of the behavioral description to include PRODUCES THE SOUNDS THAT X WOULD PRODUCE IF X WERE A Y. But this modification fails. Suppose Sally’s mother pretends that the pencil is a car and vrooms with the pencil. For Sally to *really* make sense of this pretense she has to understand that Mother is pretending that the pencil is a car and that Mother pretends, of the sounds *she* is making, that “the car is making those sounds.” But the new behavioral description only allows Sally to attribute the sounds to her mother, not to the pencil-as-car. Sally simply represents that Mother is producing sounds, albeit sounds that a car might make. Perhaps Sally could represent, MOTHER MAKES THE PENCIL MAKE THE SOUNDS THAT THE PENCIL WOULD MAKE WERE THE PENCIL A CAR. But Mother does not make the pencil make a noise! Even assuming that Mother is behaving in a way that would be appropriate if the pencil were a car (though she is not, see above), why should *Mother* make car sounds? Indeed, as far as sound effects are concerned, Mother is behaving in a way that would be more appropriate if *she* were a car. But Mother is not pretending to be a car; she is pretending the pencil is a car.

A reviewer suggested to us that sound effects pretense might be captured as *child brings about the events that would occur if x were a y*, under some suitably salient (to the child) sense of “events that occur...”. Recognition of this pretense would be accomplished by the child representing MOTHER BRINGS ABOUT THE EVENTS THAT WOULD OCCUR IF X WERE A Y, under suitable salience conditions. We see at least two problems with this suggestion. First, Sally still only attributes the events (sounds) to mother

and not to the object x because actually x makes no sound. Indeed, this problem arises over and over because in general there is no way for real behavior to be the result of circumstances which are not real – no way that is, within a behaviorist framework. The beauty of mentalism is that it provides that framework (Leslie, 1994b). Behaviorism is limited to representing the world as causes of behavior; it cannot represent the ways that the world is represented by mental states (as causes of behavior), because then it's not behaviorism. Second, the ubiquitous similarity relation between x 's and y 's again plays havoc with this formulation. Whenever Mother (or the child) is drawing, for example, with a crayon, she is bringing about (salient) events that would occur if the crayon were a pencil, yet neither Mother nor child is thereby pretending that the crayon is a pencil.

It is not obvious to us how to modify the Behavioral theory so that it allows Sally to attribute the sound effects that her mother makes to the pencil-as-car, rather than to just her mother. After all, the sound effects are Mother's behavior, not the pencil's, and Behavioral theory only allows the child to describe Mother's real behavior and not what mother is pretending as such. Mother is actually making car sounds *on behalf of* the pencil because she pretends the pencil is a car. But behaving 'on behalf of' an object is not something that can be made sense of behavioristically. It seems that the child cannot be a behaviorist about pretense and also get it right about sound effects in pretense. The trouble is again that pretend play itself manifests the peculiar semantics of mental state reports, as Leslie (1987) pointed out. Behavioral descriptions simply do not and cannot exhibit or follow the same logic. They are thus doomed to fail.

3.4. *ToMM theory and object substitution pretense*

ToMM theory provides a straightforward explanation for the motions and sounds of object substitution pretense. When Sally's mother pretends, for example, that the pencil is a car and makes "vroom, vroom" noises, Sally can represent, MOTHER PRETENDS (OF) THIS PENCIL_{*i*} "IT_{*i*} IS A CAR_{*j*}" AND (OF) THAT SOUND_{*k*} "IT_{*k*} IS MADE BY THE CAR_{*j*}". This metarepresentation captures the fact that although Sally's mother is the one producing the "vroom, vroom" sound, she is pretending that this sound is being made by the pencil under its pretended status as a car. Furthermore, it is a simple matter to turn this account into an account of solitary pretense production – substitute for MOTHER the representation I (SELF) – and equally simple to turn it into an account of shared pretense – substitute WE for MOTHER.

4. The child is not a behaviorist (not even a modified behaviorist)

The Behavioral theory fails to account for children's pretense. At first blush, it promises a straightforward account of pretend play as *behaviors* that flow simply from decoupled representations of imaginary situations or 'possible worlds.' But as Leslie (1987) argued, pretense does not flow simply from decoupled representations but from *pretending* that these represented propositions are true. Critical work is done by the agent's attitude and attitudes are *cognitive* properties of agents.

Furthermore, the ability to pretend by oneself does not develop alone but together with the ability to recognize pretense in others and to share pretense with others. This places the ability to pretend in the domain of social cognition. If the child's pretend ability at its onset consisted purely of an ability for solitary play production, as Piaget (1962) by default describes it, then the Behavioral and other 'process' theories might have hoped for more success. But like traditional 'process' theories, the Behavioral theory struggles to account for children's ability to recognize pretense. The Behavioral theory predicts that children will constantly mistake regular behavior for pretense, and be *less* likely to recognize pretense in the presence of the manner cues, which, in fact, serve to signal pretense. Conversely, it predicts that children will misconstrue acts of pretense as regular behavior appropriate to some situation or other. And certain forms of pretense, such as producing 'sound effects', should neither occur in the pretender's behavior nor be recognized appropriately in the pretending of other people. All these predictions are wrong.

4.1. Does introducing an intention rescue the Behavioral theory?

Many of these problems are also shared by a recent variant of Behavioral theory, which claims that young children represent pretense as *intentionally* behaving-as-if, that is, as *acting-as-if* (Rakoczy et al., 2004). This theory claims that children identify a behavior as pretending P if they conclude that: (a) the actor acts as if P; and that (b) the actor behaves with the specific intention to act-as-if P. As such, this 'intentional Behavioral' theory is not truly a Behavioral theory, because it allows that children are *not* behaviorists about pretense – the theory claims that in recognizing pretense children must reason in a certain way about the actor's intention, albeit about the actor's intention to *behave*.

At first glance it might appear that the intentional Behavioral theory will be less prone, than the original Behavioral theory, to predict that children will mistake regular behaviors as instances of pretense. Children will only identify a behavior as pretense if they recognize that the actor acted with the specific intention to act as if P. However, one can act as if P when P is true. For example, I can (intentionally) act as if it is raining, when it *is* raining, and indeed, I typically do. So recognizing my specific intention to 'act as if' it is raining when it is raining (e.g., I put up my umbrella) will lead the observant child to suppose that I am 'pretending,' even though I'm not.

The intentional Behavioral theory also shares many other difficulties with the original theory. For example, like the original theory, it fails to account for children's recognition of sound effects pretense. When Sally's mother makes "Vroom, vroom" sounds she does not act-as-if the pencil is a car (for the reasons discussed above) and, likewise, she does not behave with the intention of acting as if the pencil is a car (again for the reasons discussed above). And again, as always, one must guard against secretly interpreting *act-as-if* as *act-as-if-pretending*. Perhaps Sally might represent, MOTHER PRODUCES THE SOUNDS THAT THE PENCIL WOULD PRODUCE IF IT WERE A CAR AND DOES SO WITH THE INTENTION OF PRODUCING THE SOUNDS THAT THE PENCIL WOULD PRODUCE IF THE PENCIL WERE A CAR. But, as with the original Behavioral theory, Sally is left attributing the sounds to her mother alone, and not to the pencil-as-car.

As long as Rakoczy's account leaves out the *attitude* that underlies pretense, including an intention will do little to rescue the Behavioral account.

The metarepresentational theory does not encounter the problems faced by the Behavioral theory (or the intentional variation). We therefore continue to favor it over these theories. According to ToMM theory, engaging in and recognizing pretense is possible because very young children possess and employ the mentalistic concept PRETEND. To be clear, we do *not* believe that children's possession of this concept implies that they know much *about* this or other mental states. In particular, it does not imply that they theorize about mental representation or that they theorize that pretense is an 'internal, subjective, mentally depictive state', as some have supposed (e.g., Hickling, Wellman, & Gottfried, 1997). Nor does it require that children can report that pretenders 'are thinking' and what they are 'thinking about' while pretending (e.g., Rosen, Schwebel, & Singer, 1997). What it does mean is that they are able, within performance limits (Bosco et al., 2006), to engage in, recognize, share with others, and reason about, simple pretend episodes. These episodes exhibit the semantics of mental state reports. One simple and minimal assumption illuminates both the reason for this and for the fact that solitary and social pretend play are yoked in development, namely, that pretend play issues from and thereby inherits the properties of PRETEND-metarepresentations.

5. Acting out pretense and learning about pretense

Pretending cannot be reduced to a behavioral description, any more than *believing* can. Yet the child can both pretend and recognize pretense in other people and does so early and productively. We argue that both abilities spring from the concept of *pretending*. How is it possible that very young children could possess such a concept? This question raises many basic and challenging issues for a general theory of concepts, and indeed for cognitive science as a whole. These issues are beyond the scope of the present article. The issue we have been concerned with here is *which* concepts the young pretender possesses. Our quarrel with the Behavioral theory has been that it attributes the wrong class of concepts to the young pretender. No matter what general theory of concepts one adopted, our disagreements would be the same. We would argue that to account empirically for the human capacity for pretense, PRETEND P is the right concept and BEHAVE AS IF P is the wrong concept.

According to the ToMM theory, the young child possesses the concept PRETEND by virtue of possessing the requisite neurocognitive mechanisms that deploy the necessary symbolic structures. These mechanisms allow other systems to plan and undertake actions under the description, I PRETEND P, and empower the child to recognize that someone else is pretending P.

A variety of mechanisms are no doubt involved in planning and executing pretense actions. Presumably, these are for the most part the same mechanisms that are involved in the planning and execution of other kinds of action, though, as we have touched on, pretend play appears to have certain characteristic 'manners'. These characteristics include exaggerations of movement and intonation, checking the attention of the partner-in-pretense, 'knowing looks and smiles', the truncating of

actions before their normal goal points are reached, demonstrating motions and sounds of objects in mime, and acting and speaking ‘on behalf of’ objects (for a study of some of these, see Lillard & Witherington, 2004).

Why does pretend play have these peculiarities? We believe that what unites them is that they are all ways of communicating (perhaps even to oneself) that one is ‘only’ pretending. At the same time, these mannerisms further the communicative aim by drawing attention to what is being pretended. Leslie and Happé (1989) argued that shared pretense actions could be considered a form of ostensive communication (see also Leslie & Frith, 1990). The suggestion was that the peculiar forms that pretend actions take can be understood as attention-demanding displays, in the sense of Sperber and Wilson (1986; see also Sperber, 2000) – displays produced with an intention to inform. Consider: how do I make it clear to someone that I am not trying to *really* drink from this cup but ‘only’ *pretending* to drink from it? Answer: I take the usual action scheme for drinking-from-a-cup and turn it into an attention getting *display* of drinking-from-a-cup. Moreover, I make it ‘only’ a display by demonstrating *ineffectual* drinking-from-a-cup: I stop the cup a distance from my lips, and for good measure, I might add some sound effects, like slurping. All of these measures enhance communicative efficiency, especially the communication of my *attitude* – ‘just pretending’.

Perceiving pretense in other people also requires the cooperation of many different kinds of social and non-social perception, as does any form of complex cooperative interaction. However, a perception of pretense *as such* can only arise if the result of the perception is a metarepresentation of pretense. To give the ToMM a crucial role in early pretending is not to deny or belittle the contribution of the entire cognitive, perceptual, action planning and language systems. It is simply to single out one part of that complex and assign it a specific functional role. By investigating the structure of this mechanism, we can begin to explain how by maturation and epigenesis during the second year of life the abstract primitive concept, PRETEND, emerges and how it forms part and parcel of unfolding ‘theory of mind’ capacities. Crucially, PRETEND will kick-start learning about pretense; it will permit attention, learning, and communication under that very heading. Such learning can pave the way for learning about the many other playful, imaginative, and humorous forms of the social life of our species, and perhaps even about some of the serious forms.

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