

REPORT

Two-year-olds grasp the intentional structure of pretense acts

Hannes Rakoczy and Michael Tomasello

Max Planck Institute for Evolutionary Anthropology, Leipzig, Germany

Abstract

Twenty-two- and 27-month-old children were tested for their understanding of pretending as a specific intentional action form. Pairs of superficially similar behaviors – pretending to perform an action and trying to perform that action – were demonstrated to children. The 27-month-olds, and to some degree the 22-month-olds, showed in their responses that they understood the intentional structure of both kinds of behaviors: after pretense models, they themselves performed appropriate inferential pretense acts, whereas after the trying models they properly performed the action or tried to perform it with novel means. These findings are discussed in the light of recent debates about children's developing understanding of pretense and theory of mind.

Introduction

Young children approaching their second birthday start to engage in simple pretend play actions. For example, an adult and a child would take a wooden block, make chewing movements near to it, say 'Yum. Apple, delicious'. From their second birthday on they are proficient in keeping track of simple extended pretense stipulations and transformations, and even in talking about events in the pretense scenarios (Harris & Kavanaugh, 1993; Walker-Andrews & Harris, 1993; Walker-Andrews & Kahana-Kalman, 1999).

In the theory of mind literature, however, there is a longstanding dispute over the question of how sophisticated children's early understanding of pretense actions really is (see e.g. Gopnik, 1998; Harris, Lillard & Perner, 1994; Leslie, 1987; Joseph, 1998). The most prominent theory, the so-called 'behaving-as-if' theory (Harris, 1994; Jarrold, Carruthers, Smith & Boucher, 1994; Lillard, 1994; Nichols & Stich, 2000; Perner, Baker & Hutton, 1994) warns against over-interpreting young children's cognitive sophistication in participating competently in pretense scenarios. Competent participation in simple pretense scenarios, the theory argues, can be achieved without understanding pretense actions in anything like an adult way. On our adult concept pretending is intentionally, non-seriously, and knowingly acting as if something was the case or as if performing an action, intentionally stopping short of really and seriously acting so (Austin, 1979). A certain instance of 'behaving-

as-if' thus at least has to fulfill two criteria for it to count as pretending: first, a pretender must have relevant background knowledge (e.g. must know what apples are, must know that the wooden block is not an apple, etc.) to be able to pretend (e.g. that the wooden block is an apple). Second, the pretender has to act intentionally in specific ways. Making chewing-like movements unintentionally (e.g. because one shudders) does not count as pretending to eat.

The contention of the 'behaving-as-if' theory, however, is that young children (up to the age of 4 or 5) do not understand either of these two criteria. Rather, it claims, young children have a superficial understanding of pretense as behaving-as-if only, with no reference to the actor's cognitive or intentional attitudes in the act. That is, young children's concept of pretense is much more coarse-grained than the mature one and has a much bigger extension than the class of pretense actions. Accordingly, it does not allow for distinguishing pretending from other kinds of as-if-behaviors, for example, mistakes such as biting into the wooden block because one thinks it is really an apple (or biting into it by accident). The 'behaving-as-if' theory thus predicts that young children should make over-extension mistakes, applying their concept of pretending both to behaving-as-if unknowingly and to behaving-as-if unintentionally. Evidence for this prediction comes from verbal studies (Lillard, 1993, 1998; Richert & Lillard, 2002) in which children are told stories about a character (Moe) with two premises: (1) Moe is showing some as-if-behavior (e.g. is hopping like

Address for correspondence: Hannes Rakoczy, Max Planck Institute for Evolutionary Anthropology, Department of Developmental and Comparative Psychology, Deutscher Platz 6, D-04103 Leipzig, Germany; e-mail: rakoczy@eva.mpg.de

a rabbit); (2) but Moe does not fulfill either of the two criteria (e.g. does not know what rabbits are, or does not want to hop like a rabbit). The test question was then whether Moe is pretending to be a rabbit. The vast majority of 4-year-olds and even many 5-year-olds wrongly answer 'Yes'. That is, children up to 5 years of age seem not to understand that pretense has to be done knowingly and intentionally.

Recently, Rakoczy, Tomasello and Striano (2004) have challenged the behaving-as-if theory, at least with regard to the claim that children under 4 do not understand pretending as an intentional action form. They argued that younger children already understand pretending as a specific intentional action form – acting as if – different from other forms of behaving-as-if, though they do not yet understand the epistemic structure of pretending, and though they find it difficult to bring to bear this understanding in such complex tasks as the Moe test. Children in this study were tested, therefore, with a non-verbal action paradigm. An experimenter demonstrated to the children pairs of superficially matched as-if-behaviors, pretending to perform an action and trying to perform the same action. For example, in one such pair the experimenter made pouring movements with a full but closed container over a cup. In both cases the superficial pouring movements were matched, no water came out, so there was no real pouring. In the pretense case the behavior was additionally marked by signs of fun and playfulness, a pretending to pour only. In the trying case, the behavior was marked by signs of effort and frustration as trying to really pour. The child was then given the objects and could act with them herself. In the first two experiments with 26- and 36-month-olds, the test trials were embedded in a general imitation game. Responses by the child were scored as pretense when she herself clearly pretended to perform the action, making use of appropriate sound effects, non-serious language, etc. A response was scored as trying, in contrast, if the child performed the action properly, or if she clearly tried to, commenting on her failure, asking for help, etc. Responses fulfilling neither of these criteria, for example, because the child only performed pouring movements without any further comments or sounds effects, fell into the 'other' category.

The 36-month-olds very clearly showed that they understood pretending and trying as such: after trying models, they really performed the action themselves or tried to really perform it, often commenting on their failure (e.g. 'I cannot do it either'), but after pretense models they only pretended themselves and did not care about the real effects of their acts (e.g. whether there was water coming out of the container). The 26-month-olds showed the same clear pattern after trying models: they

mostly performed the real action or tried to, and hardly ever pretended themselves. After pretense models, in contrast, they equally often performed pretense and trying responses. However, they did show more pretense responses after pretense models than after trying models, which points to the possibility that trying might be the default action tendency for children at this age. Another important point is that after pretense models the 26-month-olds showed many 'other' responses (almost 50%) that failed to fulfill both the pretending and the trying criteria.

In the third study of Rakoczy *et al.*, the same kinds of models were presented to 3-year-old children, but now not in a strict imitation game. Rather, the pragmatics of the situation was set up to encourage more productive inferential responses by introducing additional objects, both tools and toys, that could be used in serious and pretense actions. The rationale for this was to validate the results of the first two studies by ruling out that the 3-year-olds who were successful in the first two studies might have just been mimicking superficial behavior. Stricter coding criteria were therefore used, and only appropriate inferential pretense and trying responses were scored. Again, the 3-year-olds performed significantly more correct than incorrect inferential responses after each kind of model. For example, when the children now saw an actor try to pour they themselves really did the action or tried to, but with different means, e.g. by making use of a tool to open the container first. When the actor had pretended to pour, in contrast, children themselves pretended to pour and then went on to pretend to drink and give a Teddy bear a drink.

In sum, these studies provide clear evidence that 3-year-olds grasp the intentional structure of pretending as a specific non-serious action form, different from other forms of behaving-as-if. Contra the behaving-as-if theory, this shows that even younger children do have an at least implicit understanding of the intentional elements in pretense acts. The data for the 2-year-olds, in contrast, remain ambiguous. In the imitation studies, they failed to show more correct pretense than incorrect trying responses after pretense models. This might be due to a conceptual problem such that children did not really grasp the intentional structure of the pretense acts. Alternatively, it might be due to false negatives. One possibility is that executive problems account for the 2-year-olds' bad performance after pretense models; although they perceived the model action as pretending, they saw that the object could be used to perform the action really and were unable to overcome the pre-potent tendency to do so. Another source of false negatives might be that children misunderstood the pragmatics of the situation: though they understood the modeled act as

pretense, they misinterpreted the model as intended pedagogically (as when a football trainer pretends to hit a ball in order to seriously teach a new technique to a player).

A complementary possibility is that children might have understood what the pretender did in his model actions, but failed to show clear enough signs in their responses to obtain a pretense score. This possibility gains some plausibility from the fact, mentioned above, that after pretense models the 2-year-olds gave many responses that did not fulfill either of the pretending and trying criteria. It gains further plausibility from other findings in the area of pretense development: Harris and Kavanaugh (1993), for example, consistently found in several experiments that at around 2 years of age children start to become proficient in understanding and following extended pretense acts unfolding in a pretense scenario.

The aim of the current study, therefore, was to explore the understanding of the intentional structure of pretending and trying by children younger than 3 years with an improved methodology. The method and coding scheme – inferential responses were encouraged, and only inferential responses were scored – of Study 3 in Rakoczy *et al.* was used with 22- and 27-month-old children.

Method

Participants

Eighteen 27-month-olds (25–30 months; mean = 27 months; 9 boys/9 girls) and 30 22-month-olds (20–24 months; mean = 22 months; 16 boys/14 girls) were included in the final sample. Children were recruited in urban daycare centers. Children came from mixed socio-economic backgrounds and were all native German speakers.

Each child was tested by one of two experimenters (E1 and E2) in a separate quiet room of the children's daycare. E1 tested 18 22-month-olds and 18 27-month-olds, E2 tested an additional 12 22-month-olds. The experimenters had been trained to present the models in exactly the same way.¹ Sessions were videotaped for subsequent analysis. Three further 22-month-old child were

tested but had to be excluded from the study because they were uncooperative.

Materials and design

The materials and design were exactly the same as in Rakoczy *et al.* (2004), Study 3. Children were presented with two model action pairs: pretending/trying to eat and pretending/trying to pour. The objects used for the pretending/trying to pour models were two unusual containers, one of which was used together with a cup, the other one of which was used with a glass. Both contained water, visible to the child. From the containers the experimenter (E) tried/pretended to pour water into a cup/glass by making repeated pouring movements over the cup/glass for about 15 seconds, with some breaks where he looked at the container. The pretending case was marked by a general playful expression with corresponding sound effects ('Shhh' – like the sound of water flowing into the container). The trying models, in contrast, were marked again with a puzzled, disappointed expression while looking at the object ('Hm?' in the sense of 'why is there no water?').

The objects for the pretending/trying to eat models were a real orange and a real nut. E put both the orange and the nut to his mouth and bit on them, with short pauses to look at the object, for about 15 seconds. Trying was marked by surprised and disappointed looks at the object and corresponding sound effects; pretending was marked by a playful expression and eating sound effects ('Yam!').

In the warm-up several actions and props were introduced to give children the opportunity to show creative pretense and trying responses in the test phase. Three of these props were placed on a piece of cardboard and stayed on the table throughout the session, reachable for the child: a Teddy (that one could pretend to feed or give a drink), a bowl with a toy fork (that could be used to pretend to eat with or to pretend to feed Teddy – the fork could alternatively also be used to open or cut objects) and a wrench (that could be used to open containers and cut things). The pretending and trying warm-up actions were not done in blocks in order to avoid simple priming of one action type in the children.

¹ To test for experimenter effects, we compared the 22-month-olds ($n = 18$) tested by E1 – the experimenter who tested all the 27-month-olds – to those tested by E2 ($n = 12$). The general pattern of responses of these two samples was the same: In the pretense condition there were more inferential pretense responses (E1: $M = .89$ /E2: $M = .67$) than inferential trying responses (E1: $M = .61$ /E2: $M = .33$). Analogously, in the trying model condition there were more inferential trying responses (E1: $M = .83$ /E2: $M = 1.17$) than inferential pretense

responses (E1: $M = .44$ /E2: $M = .08$). For the inferential responses in both conditions, there were no differences between the two groups of children apart from one: children tested by E2 performed less inferential pretense responses in the trying model condition than those children tested by E1. However, as this is a harmless effect because generally all age groups performed few pretense responses in the trying condition, the children tested by the two experimenters were subsequently analyzed together.

Each child saw four action models, a block of two pretense models and another block of two thematically matched trying models. For example, a given child would see the experimenter try to eat with the orange and pretend to eat with the nut. The order of the two blocks, the within-block order and the assignment of the two object sets with the same topic to the conditions pretending versus trying, were all systematically varied across children. The order of the topics within both blocks was the same (e.g. when a child would have in her pretense block 'eating' first, she would also have 'eating' first in her trying block).

Procedure

In the beginning E and the child freely played, and E did some simple actions (e.g. building a tower with building-blocks), two pretense actions (pretending to make a phone call and pretending to dig a hole) with a novel object (a doorstopper), one trying action (trying to make music with a small piano, pushing a wrong button) and asked the child to do the same after each action. E reacted with laughter and amusement to children's pretense and with surprise and appreciation when children performed successfully with the piano.

Then came the warm-up period where the three additional props were introduced. First, E put Teddy on a piece of cardboard on the table, saying 'Look! This is Teddy. I am going to show you some things I can do, then it's your turn and we can do something with Teddy as well.' E demonstrated three pretense actions (pretending to brush his teeth, pretending to take a shower and pretending to drink) with novel objects and handed the objects to the child. Pretense imitations by the child and the corresponding pretense actions with Teddy (brushing Teddy's teeth, giving Teddy a shower, giving Teddy a drink) were reinforced by E. If the child did not spontaneously do the pretense actions with Teddy, E pushed the cardboard with Teddy towards the child, saying 'And now?' If the child did not react, E finally explicitly asked the child to do the pretense action with Teddy.

Second, E brought out a novel container, announced 'I am going to open it' and tried unsuccessfully to open it. He then said 'Hm. It does not work. Ah, then we can take the wrench', and brought out a children's wrench, saying 'With the wrench we can open things' and opened the container. The child was given the wrench ('Now you may do it as well') and E helped the child to open the container with it if necessary. The wrench was placed on the cardboard, beside Teddy, and E brought out another novel container and unsuccessfully tried to open it. The child was then given the container ('It's your turn'). If the child spontaneously used the wrench to try to open

the container, E reacted with appreciation ('Ah! That's how we can do it!'), and helped the child if necessary. If the child tried to open the container without the wrench, E pushed the cardboard towards the child, saying 'What do we do then?' If the child still did not take the wrench, E said 'Hm. Or we could use the wrench!' To introduce the wrench as a multi-functional tool, E in addition showed the child that the wrench could be used 'to cut things', cutting apart a piece of play-dough and the child was given the chance to do the same. (Actually, the three actions with Teddy and the three actions with the wrench were not done in blocks, but – to avoid simple priming of one action type – temporally interspersed: two actions with Teddy, then two actions with the wrench, then one action with Teddy, then one action with the wrench. See the Appendix for details.)

Finally, the bowl with the fork was introduced. E brought out a cardboard box and a replica carrot, said, 'Let's cook something' and pretended to cook the carrot in the cardboard box. He then pretended 'Now it's cooked', brought out the bowl with the fork, put the carrot in the bowl and gave it to the child. If the child did not spontaneously pretend to feed Teddy, E pushed the cardboard with Teddy and the wrench on it towards the child and asked 'And now?' If the child did not pretend to feed Teddy, E explicitly asked 'What can you do with Teddy?', and if that did not help finally 'Can you give Teddy something to eat?' E reinforced appropriate pretense actions (pretending to eat, pretending to feed Teddy). (The same procedure was repeated with a replica sausage that E pretended to cook.) The bowl with the fork was then placed on the cardboard and the cardboard stayed on the table throughout the rest of the session, reachable for the child (approximately 40 cm in front of the child).

Then came the first test block, consisting of two model actions (pretending to eat and pretending to pour for half of the children, trying to eat and trying to pour for the other half). E presented the actions in exactly the same way as in Rakoczy *et al.* (2004), Study 3, with a verbal announcement 'I am going to . . . (action) now' before the action. After performing the model action, E gave the object(s) to the child. He did not reinforce specific responses but reacted equally positively to all responses. If the child did not spontaneously make use of one of the props E pushed the cardboard with the three props on it a bit closer to the child.

The first test block was followed by another warm-up block, consisting of two pretense and two trying actions in alternating order (see the Appendix), and finally came the second test block consisting of two model actions (trying for the children that had seen pretense first and vice versa). The whole session lasted approximately 15 minutes.

Observational and coding procedure

All sessions were videotaped. Two independent coders each coded 50% of the tapes, with an additional overlap of 20% of the children which both coded for determining interrater reliability. Each response of a child to the four test models was coded. There were five categories into which a given reaction could be classified (per test model a given child could show several responses after each other, and these responses could be from different categories): A reaction was coded as *'inferential pretense'* when the child performed a thematically appropriate pretense action that went beyond what E did in his pretense model actions. Criterion for this code was that the child revealed by an action or by a non-serious speech act an appreciation of the pretense scenario in question. For the eating topic these were: speech acts like 'I have eaten up' or 'Hm, delicious' (after the child has obviously not really eaten but just put the orange/nut in front of the mouth, making chewing movements) and actions like 'feeding' Teddy (putting the orange/nut to Teddy's mouth, making chewing movements and corresponding sound effects) and putting the orange/nut into the bowl, moving the fork to the bowl and then before the mouth, making chewing movements and appropriate sound effects. For the drinking topic these were above all speech acts like 'Hm! Some tea in there!' and actions like pretending to drink and pretending to give Teddy a drink. A reaction was coded as *'simple pretense'* when the child performed what looked like a clear pretense action (with playfulness, exaggerated movements, appropriate sound effects, etc.) but without any elements that went beyond what E did in his corresponding model action. When the child first performed a merely simple pretense action and then immediately went on to do pretense that went beyond E's model (e.g. first pretended to pour and then pretended to drink; first pretended to eat and then pretended to feed Teddy) in a thematically appropriate way, this whole episode was given the code *'inferential pretense'*.

Analogously, responses were coded as *'inferential trying'* when the child revealed by an action or by a speech act an appreciation that her goal was to perform the action in question really and successfully. This code was given when the child really performed the action successfully, or tried to perform it with means other than that used by E in his corresponding model action (above all, using the wrench to open containers, crack the nut or peel the orange), or said something that made reference to the goal (like 'we have to open it first') or the malfunctioning of the objects (like 'It does not work', 'It's broken'). Responses were coded as *'simple trying'* when the child performed what looked like a clear instance of trying behavior (extended examination of the object,

obvious execution of effort, expression of frustration, etc.), but without any elements that went beyond what E had done in his corresponding model action. When a child first performed a merely simple trying behavior and then immediately went on to try with different means (e.g. first tried to eat by biting on the nut and then took the wrench to crack it; tried to pour by shaking the container and then made use of the wrench to open it), this whole episode was coded as *'inferential trying'*. Finally, there was a rest category *'unclear'* of responses that fulfilled neither of the criteria for the four categories mentioned above. In this category were mainly responses where the child did some different action with the object, or nothing at all or an ambiguous action (e.g. bringing the orange to the mouth, but without signs of either pretending or trying to eat).

Interrater reliability – computed over the 20% of cases both coders analyzed – was 88%, Cohen's *Kappa* = .83.

Results

Only the children's first responses to a given model action were entered into the analyses, because only the first reaction was considered an indicator of how children understood the action they had seen E perform. Figure 1 shows the mean number of simple and inferential trying and pretending responses (that children gave as a first response) as a function of model action. As the main purpose in this study was to test for children's understanding of pretending and trying rather stringently, and to rule out simple mimicking as an alternative explanation (which could be applied to *simple* pretending and trying), the focus of analysis was children's inferential pretending and trying responses. After pretense models

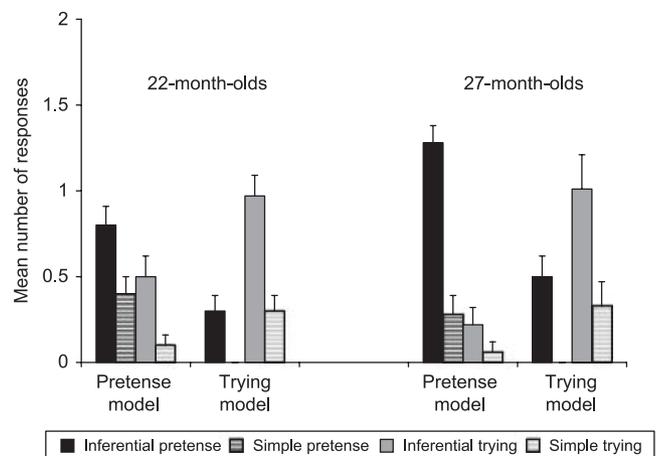


Figure 1 Mean number of inferential and simple pretense and trying responses after both kinds of models.

only inferential pretending responses were considered 'correct', and only inferential trying responses counted as 'incorrect', analogously after trying models. As in Rakoczy *et al.* (2004), for each child, for the two model action conditions a difference score correct minus incorrect responses was computed, ranging from -2 to 2.

A 2(age groups) \times 2(model action: pretense versus trying) \times 2(order of model blocks) ANOVA on these difference scores yielded no significant effects. Next, for both age groups these difference scores were tested against zero (with one-tailed *t*-tests, as the hypothesis was directed such that the difference scores were expected to be positive). For both age groups, the difference scores in the trying model condition were significantly higher than zero (27-month-olds: $t(17) = 1.97$, $p < .04$; 22-month-olds: $t(29) = 3.67$, $p < .01$). In the pretense model conditions, the difference score was significantly higher than zero for the 27-month-olds ($t(17) = 5.13$, $p < .01$), and approached significance for the 22-month-olds ($t(29) = 1.47$, $p < .08$).

Arguably, however, this way of analyzing the data poses a very strict criterion for successful perception of pretending and trying as such: it requires children in each model condition to respond significantly more often with the correct than with the incorrect response. Against this it can be argued that such an analysis neglects performance factors, such as prepotency of one reaction type, in this case trying responses. In an alternative approach, then, we analyzed each type of inferential response as a function of model condition. That is, for inferential pretense responses a difference score was computed for each child by subtracting the number of her inferential pretense responses in the trying model condition from the corresponding number in the pretense model condition. A positive difference score would indicate success such that children showed a given response more often in a situation where it was appropriate than in a situation where it was inappropriate. An analogous difference score was computed for the inferential trying responses (note that this is in fact the standard way of analyzing responses as a function of model type in imitation research). For both age groups these two difference scores were significantly higher than zero (22-month-olds: inferential pretense: $t(29) = 4.35$, $p < .01$; inferential trying: $t(29) = 2.84$, $p < .01$. 27-month-olds: inferential pretense: $t(17) = 4.08$, $p < .01$; inferential trying: $t(17) = 4.50$, $p < .01$).

Discussion

Children in this study were tested for their understanding of the intentional structure of pretending –

acting as if intentionally – and trying – acting-as-if with the aim of really performing the action but failing. The results show clear competence in the 27-month-olds who performed as did the 3-year-olds in Rakoczy *et al.*'s Study 3: after pretense models they mostly imitated the pretense act and went beyond this by performing appropriate inferential pretense acts. After superficially analogous trying models, however, they really performed the action properly or tried to perform it with novel means. Not only did they distinguish between the two kinds of model, but their systematic inferential responses show that they grasped the basic intentional structure of the two kinds of behavior: in pretending to X an actor wants to act as if Xing only, whereas in trying to X she wants to really perform X but fails. This pattern of results confirms the suspicion that Rakoczy *et al.*'s Study 1 might have produced false negatives and underestimated the competence of the 2-year-olds. In that study the situation was set up as an imitation game, and the 2-year-olds' responses after pretense models might have been an attempt to imitate the pretense though not clearly enough (with appropriate signs) to be counted as the relevant pretense. In the present study, when given the chance to show more creative and inferential pretense acts with additional props, the 27-month-olds now produced clear instances of appropriate pretense acts as a response to pretense models.

The 22-month-olds in the present study showed the same general pattern of responses, though in a slightly less robust way: Generally these children did respond differentially to the two kinds of models, as revealed by the fact that each type of inferential response was performed significantly more often in the condition where it was appropriate than in the opposite condition. On the more stringent comparison between correct and incorrect responses after each kind of model, they produced more correct than incorrect responses after trying models, and almost significantly more correct than incorrect responses after pretense models.

This finding fits nicely with other work in the pretense literature, particularly Harris and Kavanaugh's (1993) and Walker-Andrews and Kahana-Kalman's (1999), that found that competence in understanding and following simple pretense scenarios becomes robust around 2 years of age.

In terms of the theories tested here, the present results show that the behaving-as-if theory is wrong in its claim that young children do not understand the intentional structure of pretending, at least with regard to implicit understanding as revealed in children's systematic and appropriate actions. An interesting question for future research in this context is what accounts for the *décalage*

between this pretense understanding in action revealed in the present study even by young 2-year-olds on the one hand, and explicit pretense understanding as revealed, for example, in the Moe task not until 4 years of age. In other words, more needs to be known about the subsequent course of pretense understanding after 2 years.

Another interesting question for future research concerns the earlier development of precursor and prerequisite abilities before 2 years of age. Several precursor abilities are of interest here: First, in order to interpret some behavior as pretense, children have to have some discriminative ability to recognize normal signs (laughing, smiling, sound effects, exaggerated movements, etc.) of non-seriousness and playfulness that normally mark pretense acts. Lillard and colleagues (Lillard & Witherington, 2004; Richert & Lillard, 2004) have recently begun to investigate which signals parents make use of to mark behavior as non-serious pretense towards their infants, and how children's experience with such markers influences their developing understanding of simple pretense acts in the second year. Second, it would be interesting to know in more detail how children's understanding of non-serious intentions in pretending develops out of understanding other more basic action forms. From 1 year, children show an understanding of the intentional structure of simple instrumental actions in their imitation of proper actions, but also of accidents and failed attempts (Carpenter, Nagell & Tomasello, 1998a; Carpenter, Akhtar & Tomasello, 1998b; Meltzoff, 1995). From 14 months, infants imitate bizarre instrumental actions and styles of performing actions of an actor only when this actor could have done otherwise, i.e. used more standard means or styles (Gergely, Bekkering & Király, 2002). This suggests that at this age infants understand some actions as ends in themselves. And children at 18 months differentially imitate superficially similar failed attempts and 'silly' behaviors – suggesting that they understand some actions as 'funny' ends in themselves (Behne, Carpenter & Tomasello, in preparation).

Understanding pretending – as a funny, non-serious form of action that is an end in itself – seems to build on these earlier forms of understanding different kinds of actions. In addition to these, however, understanding pretense requires a simple tacit grasp of the counterfactuality involved in the pretense. Future studies will hopefully discover more about how such a tacit awareness of counterfactuality and the earlier forms of understanding actions mesh exactly in development to yield a nascent competence in comprehension of and participation in pretense.

Appendix

Procedure and warm-up actions

1. Simple pretending and trying warm-up actions
 - (1) pretending to dig a hole (with a novel object)
 - (2) pretending to make a phone call (with the same novel object)
 - (3) trying to make music with a children's piano (pressing a button that does not work)
2. 1st pretending and trying warm-up with the additional props
 - (1) pretending to brush one's teeth
 - (2) pretending to take a shower
 - (3) trying to open a container (making then use of the pliers)
 - (4) trying to open a second container (then making use of the pliers)
 - (5) pretending to drink and pretending to open a bottle of juice
 - (6) cutting a piece of play-dough with the pliers
 - (7) pretending to cook something
3. 1st test block (pretending for half of the children, trying for the other half)
4. 2nd pretending and trying warm-up with the additional props
 - (1) pretending to comb one's hair
 - (2) trying to open a box
 - (3) pretending to wash oneself
 - (4) trying to write (with a pen that still has its cap on)
5. 2nd test block (pretending when trying was first and vice versa)

Acknowledgements

We would like to thank Barbara Stumper very much for help with coding, and Maxim Bannack for help in running the study. Thank you to Jana Jurkat and Angela Loose for helping to recruit children, and to all the daycare centers for their friendly cooperation.

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Received: 8 September 2004

Accepted: 18 January 2006