

The Theory of Mind's role in pronoun acquisition: The phenomenon of pronoun reversal in typically developing children.

Greta Mazzaggio
Università degli Studi di Trento
greta.mazzaggio@unitn.it

This study's aim is to understand how children learn first- and second-person singular pronouns. Many researchers tried to find possible connection between Theory of Mind (ToM) and the acquisition of pronouns. The ability to produce and comprehend first- and second-person singular pronouns seems closely linked with the ability to appreciate other people's mental states: a lack or non-mature development of ToM may thus affect their competence in using pronouns. To strengthen this hypothesis we focused on the phenomenon of pronoun reversal, which mainly consists in the substitution of *I* for *you*, and *you* for *I*, testing a group of 17 typically developing children - 38 to 70 months of age. Due to its pro-drop classification, Italian is the focus language of this study. The outcome showed a correlation between the phenomena of ToM and pronoun reversal. Further research should focus on the directionality of this correlation and better our understanding of its meaning.

1. Introduction

The childhood acquisition and usage of the first person singular pronoun *I* and the second person singular pronoun *you* is commonly believed to be effortless. In order to acquire a pronoun, however, a child must take into account both their grammatical intrinsic properties (person, gender, case) and their speech roles (speaker, addressee, non-participant). Indeed, pronouns are expressions that identify specific individuals in a given speech context, but the individuals they identify shift according to audience or discourse situation, and this is the main difference between nouns and pronouns (Chiat 1986). One object might have different names, or one name might lead to multiple meanings, but the reference of the name does not change depending on who is speaking (Clark 1978). For a child who is acquiring a language this means that when the grandmother is around, s/he will hear the title of "grandmother" several times until connecting the word "grandmother" with its

referent. On the other hand, the same child will hear the pronoun *I* with a variety of referents and this can lead to misunderstandings.

As the pronoun system is difficult, children can experience a myriad of errors in the acquisition process. By the age of three, children will typically have acquired first- and second-person singular pronouns in full (Rozendaal & Baker 2010), following a pattern that is not clear-cut but seems quite predictable: at the beginning they acquire first-person singular and inanimate third-person singular pronouns, and then the second-person singular pronoun (Chiat 1986). On the other hand, these pronouns are acquired and used in specific contexts, rather than in a full adult distribution; sometimes they are produced in unanalyzed phrases, like frozen sentences or formulaic speech. For example, the use of the first-person pronoun has been noticed in verb forms of *want* or *need*, like in the formula “*I wanna*” (Pérez-Pereira 1999:656). All the other pronouns emerge in a non-rigid and unestablished order (Chiat 1986).

Before children can use pronouns at the same level as adults, two varieties of errors have been observed in literature: pronoun avoidance and pronoun reversal. In pronoun avoidance children, tend to avoid using pronouns and use proper names instead (Lee, Hobson & Chiat 1994). Pronoun reversal is the use of a second-person pronoun for self-reference, and/or a first-person pronoun for an addressee (Chiat 1986). In other words, it is the substitution of *I* for *you*, and *you* for *I*, together with a more unusual inversion of other deictic terms and locatives (Dale & Crain 1993:574). The study of these errors began in 1908 (Cooley 1908) but it had regularly been studied in relation with Autism Spectrum Disorder (ASD: Kanner 1943; Lee et al. 1994; Naigles, Cheng, Rattanasone, Tek, Khetrupal, Fein, & Demuth 2016; Perovic, Modyanova & Wexler 2013; Shield, Meier & Tager-Flusberg 2015).

Even if the phenomenon of pronoun reversal has been studied mainly with a focus on impaired populations, recent studies have shown that difficulties in mastering pronouns also occur in typically developing (TD) children and even in premature talkers (Cheng 2012; Dale & Crain 1993; Evans & Demuth 2012; Naigles et al. 2016; Ricard, Girouard & Decarie 1999). In particular, a 2012 longitudinal study by Cheng, came to the conclusion that children in the autistic spectrum do not reverse much more than TD children, contrary to what had been previously claimed. However, a difference between TD children and ASD children exists. ASD children continuously reversed their pronouns until the end of the period of the longitudinal study, while the former showed a gradual decline in the reversal. Cheng’s study presented a methodological improvement because she selected participants randomly. Whereas in other literature, scholars often examined children who had previously been known to reverse pronouns.

There are several theories on the cause of pronoun reversals but the problem remains puzzling because a large number of children who reverse pronouns may also produce the correct form sometime. Moreover, it is a phenomenon that is not present in all children (Dale & Crain 1993).

One of these generally supported theories is the phenomenon of echolalia. The term “echolalia” refers to the repetition of words or phrases that another speaker has uttered, i.e. when echolalia is *verbatim*, pronoun reversal is very common because the sentence is repeated exactly as heard. According to this view, “personal pronouns are repeated just as heard, with no change to suit the altered situation. [...] Not only the words, but even the intonation is retained.” (Kanner 1943:249). This proposal was taken up by Bartak and Rutter (1974) as they attempted to counter to Bettelheim’s (1967) data on ASD children and their tendency to use the pronoun *you* much more than the pronoun *I*. Bartak and Rutter considered that failure to use the first personal pronominal form is due to a combination of its usual initial sentence position and the tendency of some ASD children to echo only the final part of what they’ve heard. Recent studies, however, seem to show that children produce much more easily the pronoun *I* – often productively – and if parents tend to use the pronoun *you* more often than the pronoun *I* (Smiley, Chang & Allhoff 2011), this is in contrast with a purely echolalia-centered view (Cheng 2012; Wechsler 2010). Moreover, echolalia cannot be a full explanation of pronoun-reversal since only a small proportion of the reversals occurred in imitative context (Dale & Crain 1993; Oshima-Takane 1992). Other theories of pronoun reversal argue that a child’s assumption is that pronouns refer to specific objects or persons and are treated as nouns (Charney 1980; Clark 1978). According to others, personal pronouns are problematic for all children and some of them simply avoid to use pronouns at first, opting for a more nominal style (Dale & Crain 1993).

Currently, the most debated hypothesis on pronoun reversals is the one related to a lack or deficit in the Theory of Mind (ToM: Hobson 1990; Jordan 1989; Lee et al. 1994). ToM is the cognitive ability to attribute mental states to ourselves and to others and to consider that our beliefs or knowledge can differ from the ones of others (Premack & Woodruff 1978). One of the most interesting works on the link between ToM and pronouns acquisition is Wechsler (2010). The author sets out a “*de se* theory”, based on the assumption that “first- and second-person indexical pronouns indicate reference *de se* (also called self-ascription)” (Wechsler 2010:332) instead of simply referring to “the speaker” or to “the addressee”. In a face-to-face communication, when the speaker produces the first-person singular pronoun s/he is doing an act of self-ascription whereas the listener has to reason about the speaker’s act of self-ascription, and this requires ToM. The same idea is

behind a speaker producing the second-person singular pronoun since there is the need to reason about the addressee's act of self-ascription, thus ToM is involved. According to Wechsler, self-ascription pronouns are acquired before ToM-related pronouns. This view explains why during the period before ToM has fully developed, there is more correct use of the first-person singular pronoun. Wechsler's theory has been recently confirmed by further data (Köder 2016; Markova & Smolík 2014).

The present study aims to assess the described correlation between ToM development and pronoun acquisition in TD children; on the other hand, we won't focus on a single ToM ability, like in previous studies. Research has shown how ToM doesn't develop as a unique and monolithic competence but rather it's progressively strengthened through a predictable sequence of precursor abilities, such as desires, beliefs, knowledge, intentions, emotions (e.g., Peterson, Wellman & Slaughter 2012; Wellman & Liu 2004).

In this context, a particularly relevant study is Wellman and Liu (2004), in which 75 children (aged 2 years, 11 months to 6 years, 6 months) have been administered 7 different tasks concerning various aspects of understanding people's mental states. As hypothesized by the authors, each child had a threshold of difficulty in which subsequent tasks were failed following the threshold ceiling.

2. Methodology

The goal of the present study is to show that pronoun acquisition is related with a lack or with a non-mature development of ToM (Wechsler 2010; Wellman & Liu 2004) testing a group of TD children on the level of ToM abilities and the presence of pronoun reversals. Italian is the target language of this study because the characteristic pronoun reversal phenomenon has never been examined. Italian is a pro-drop language, thus pronouns can be omitted if they are pragmatically inferable, and there is agreement between the subject pronoun and the verb. Both of these characteristics are taken into account in the present study.

2.1 Participants

Participants were 17 TD children, ranging from 38 to 70 months of age (9 males, mean age in months 50.76, d.s. = 11.9). Children were recruited in kindergarten and were tested after parents' consensus that Italian is their mother tongue.

2.2 Material and procedure

First, children were tested with the standardized Italian version of the Test for Reception of Grammar (TROG-2; Bishop 2009). This test measures the grammatical contrasts allowing assessment of the understanding of verbal language, particularly the comprehension of grammatical structures. We tested the development of grammatical abilities since previous studies have demonstrated its important role in the use of personal reference (Markova & Smolík 2014).

The experiment, then, was divided into two parts:

1. The first battery of tests was a Italian version of Wellman and Liu's seven tasks (2004) to assess the level of ToM.
2. The second battery of tests assessed the level of production of first- and second-person pronouns and the comprehension of other pronouns as a control.

2.2.1 Theory of Mind battery

To assess the level of ToM for our purposes, a single test (e.g. false belief task) might be reductive of the phenomenon complexity. For this reason, we chose an Italian translation of Wellman and Liu's seven tasks (2004, see Appendix 1). These tasks aim to analyze different aspects of understanding people's mental state; according to literature, ToM should not be considered as a single skill because it includes multiple capabilities, which grow sequentially in different phases and ages. The tasks include the following abilities, ranked by increasing degree of intensity:

1. Diverse Desires: the ability to consider that our desires can be different from other people's desires.
2. Diverse Beliefs: the ability to consider that our beliefs can be different from other people's beliefs.
3. Knowledge Access: the ability to consider that our knowledge does not imply that others share the same knowledge.
4. Contents False Belief: the ability to consider that even if we know something, other people may have false beliefs about the same thing.
5. Explicit False Belief: the ability to consider that people with beliefs – even if false – act accordingly to those beliefs, independently from our knowledge.
6. Belief – Emotion: the ability to understand, independently from our knowledge, that other people's emotions are coherent with their belief, even if the belief is false.
7. Real – Apparent Emotion: the ability to understand that people can hide emotions.

2.2.2 Pronouns battery

This second battery of tests assesses the level of production of first- and second-person singular pronouns. There are three tasks: in the first test, pronouns will be produced with the verbs to check their agreement, in the second, they will be uttered in isolation (focus position), and the third has been designed to investigate the more general competence in pronouns comprehension.

1. Pronouns-verbs task

The child and the experimenter are seated at a table, opposite one another. On the table there are two bunches of cards laid face down. There are 10 cards in one bunch, 5 cards with the name of the experimenter and 5 with the name of the child. The other bunch consists of 10 pictures of objects and things that a person would normally bring to a party (e.g. a stereo, a bottle of coke, a cake, a present, flowers etc.).

The experimenter says to the child: “Imagine that this evening we are going to a birthday party. We must bring something to help our friend. Now we decide who brings what, choosing a card from the first bunch in which there is the name of the person and one from the bunch with the object to bring. Then, say loudly who has to bring what!”. The experimenter should never produce the pronouns *you* or *I*. If needed, a teacher should help the child reading the names on the card and naming the objects.

In a situation in which the child picks up the card with his/her name and a card with a picture of a cake, we should expect that the child produces the pronoun and verb, saying something like “Io porto la torta” [I bring -1p.sg- the cake] if s/he is right or, for example, “Tu porti la torta” [You bring -2p.sg- the cake] or “Tu porto la torta” [You bring -1p.sg- the cake] if s/he reverses the pronoun. At the conclusion of the task, every child should have elicited 10 sentences, 5 with the first-person singular pronoun and 5 with the second-person singular pronoun. In every sentence there should be a verb, with or without agreement.

In this first task, the pronoun is produced in a non-focus position and it is created to verify the correlation between the pronoun and the verb. It is necessary to have such a task because in a situation in which the child produces the null pronoun, we cannot know whether that subject pronoun would agree with the verb. In other words, a child can say “sono stato al mare” (null pronoun - [have been -1p sg]- at the sea); however it is impossible to establish whether – in case he would have elicited the pronoun – he would say “io sono stato al mare” (I - [have been -1p sg]- at the sea) or “tu sono stato al mare” (You - [have been-1p sg] - at the sea).

2. Pronouns in isolation task

The second test is thematically structured like the previous one. Following the first test, the child has a bunch of cards with pictures of the object that s/he is supposed to bring to the party. Distant from the child – but still in view – there are the cards of the experimenter. The experimenter has to simulate a phone-call saying that s/he had forgotten what s/he has to bring at the party while posing questions to the child. For example, the experimenter asks "Who should bring the cake?". The child then has to answer, saying only "I" or "you", while checking the card bunches in front of him/her.

3. Tasks on other pronouns

The last test is a Picture Selection Task. This test assesses the competence of the speaker in understanding 3rd-person singular and plural pronouns and 1st- and 2nd-plural pronouns. The child has to point at one of two pictures that better matches a sentence. For example, if there are two pictures, one with a little girl eating an ice cream and one with a little boy eating an ice cream then the sentence is "He eats an ice cream."

3. Results

First, we looked at the general production of pronouns. The correct form of the first-person singular pronouns was produced 84.12% of the times ($SD = 23.47$). The correct form of the second-person singular pronouns was produced 68.12% of the times ($SD = 37.24$). The correct form of the other pronouns was produced 84.71% of the times ($SD = 13.28$).

Then, we analyzed results from the ToM and the pronouns battery. For the first test, we coded an incorrect answer as 0 and a correct answer as 1. At the end, we had results from the seven single tasks and a final ToM score obtained by adding the points obtained during the single tasks.

For the pronouns battery, we attributed one point for every pronoun produced correctly, dividing the results for the first-person singular pronouns, the second-person singular pronouns and the other pronouns. Since there were no cases in which the pronoun mismatched the verb – even when the pronoun was reversed – for the pronouns-verbs task we did not consider the agreement but only the correctness of the produced pronoun.

We looked to see if there was a positive correlation between the verbal mental age (grammatical) and the total ToM score. We expected

a positive correlation since the verbal mental age should increase with age in TD children (this has been confirmed: $r = .854, p < .001$) and ToM abilities develop with age too; a Pearson product-moment correlation coefficient has been computed and confirmed a positive correlation between the verbal mental age ($M = 55.71, SD = 15.36$) and the total score obtained in the ToM task ($M = 3.71, SD = 1.83$), $r = .704, p = .001$. Moreover, both the chronological age (C_{age}) and the verbal mental age (VM_{Age}) for grammatical development correlates with the production of first-person singular pronoun ($C_{age}: r = .542, p = .02$; $VM_{Age}: r = .641, p = .006$) and second-person singular pronoun ($C_{age}: r = .728, p = .001$; $VM_{Age}: r = .613, p = .009$) but not with the comprehension of the other pronouns ($C_{age}: r < .001, p = .999$; $VM_{Age}: r = .117, p = .654$).

Then, we checked if the ToM total score was positively correlated with the score obtained in pronouns task. Since chronological age correlates with both pronoun-production and ToM, we conducted a Pearson partial correlation, controlling for age. ToM correlates only with second-person singular pronouns but not with the other pronouns and it approached significance with the first-person singular pronoun (1st and 2nd person plural and 3rd person singular and plural), 1st: $r = .451, p = .08$; 2nd: $r = .632, p = .009$; Others: $r = .091, p = .737$.

Since a correlation between the ToM total score and pronouns was found and ToM tasks are structured with a growing degree of complexity, we checked whether all ToM abilities correlate with first- and second-person singular pronouns production or if only the most complex ones correlate. Again, we controlled for age. As shown in Table 1, we found that a lack in understanding explicit false belief ($r = .572, p = .02$) and a lack in the comprehension that emotion can be simulated ($r = .551, p = .03$) are related to the production of the second-person singular pronoun. There are no correlations between ToM abilities and the comprehension of either the first-person singular pronoun or the other pronouns.

ToM tasks	1 st person singular pronoun	2 nd person singular pronoun	Other pronouns
ToM Diverse Desires	.384	-.045	.140
ToM Diverse Beliefs	.111	.220	.167
ToM Knowledge	-.182	-.005	.406

Access			
ToM Contents False Belief	.162	.216	.151
ToM Explicit False Belief	.371	.572*	-.283
ToM Belief Emotion	.078	.383	.026
ToM Real- Apparent Emotion	.296	.551*	-.223

Table 1. Pearson's correlation results for the ToM tasks (Wellman & Liu 2004) and pronouns tasks, * $p < 0.05$.

4. Discussion

Recent studies show that pronoun reversal is an error that is present in both ASD and TD children, although in the latter it disappears rapidly (Cheng 2012). The fact that TD children stop reversing earlier, led to the supposition that ToM may have a role in mastering first- and second-person singular pronouns, since it is well known that ASD children experience problems in ToM development. The present study was designed to verify whether the pronoun reversal phenomenon was present in TD children, and whether the acquisition of personal pronouns may have some correlation with the development of ToM.

First, our results confirmed that first-person singular pronouns are mastered before second-person singular pronouns (Charney 1980; Cheng 2012; Chiat 1986; Smiley et al. 2011). Second, our results also confirmed that the production of both pronouns correlates with language abilities, particularly grammatical abilities. According to Wechsler (2012), our results confirmed a stronger correlation between ToM and the mastering of second-person singular pronoun production. It seems that ToM does not have a role in the production of the pronoun *I*, whereas the production of the pronoun *you* relates to a developed ToM, with its understanding of explicit false belief and with the comprehension that emotion can be simulated.

Similar results were obtained in a recent study made by Markova and Smolik (2014) on another pro-drop language: Czech. These researchers, throughout maternal reports, found correlations both between language abilities (i.e., grammatical development) and the use of first- and second-person singular pronouns. Furthermore, they found a correlation between the use of second-person singular pronouns – but not of first-person reference – and the use of mental state verbs (sensory perception, emotion, desire, and cognition).

Finally, we confirmed that pronoun reversal also occurs in TD children. We discovered that the verb generally agrees with the reversed pronoun and indeed in our study no participants produced a verb agreement mismatched with the related pronoun. Overall, results seem to support the ToM hypothesis on pronoun reversal. On the other hand, we should consider all research on reversed pronouns in echolalic contexts. If we consider the fact that TD and ASD children invert with almost the same frequency but the latter, contrary to the former, continue to reverse also at the end of the trial period (Cheng 2012), we may ask what TD and ASD have in common during the period in which they both reverse pronouns. A possible answer is that they both have a non-mature ToM and we might thus speculate about a relation between echolalia and a non-mature ToM. For example, echolalia can be a strategy children use when ToM is not useful. If this is the case, our two hypotheses will be streamlined into one hypothesis. Future research should focus on a possible correlation between echolalia and ToM, studying both the production and comprehension of pronouns. The research could also search for similarities and differences in the mastering of pronouns between TD and ASD children in a pro-drop language, which could shed further light on the phenomenon.

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APPENDICES

Appendix 1: ToM tasks (Wellmann & Liu, 2004, pp.538-539)

1. Diverse Desires

Children see a toy figure of an adult and a sheet of paper with a carrot and a cookie drawn on it. “Here’s Mr. Jones. It’s snack time, so, Mr. Jones wants a snack to eat. Here are two different snacks: a carrot and a cookie. Which snack would you like best? Would you like a carrot or a cookie best?” This is the own-desire question. If the child chooses the carrot: “Well, that’s a good choice, but Mr. Jones really likes cookies. He doesn’t like carrots. What he likes best are cookies.” (Or, if the child chooses the cookie, he or she is told Mr. Jones likes carrots.) Then the child is asked the target question: “So, now it’s time to eat. Mr. Jones can only choose one snack, just one. Which snack will Mr. Jones choose? A carrot or a cookie?” To be scored as correct, or to pass this task, the child must answer the target question opposite from his or her answer to the own-desire question.

2. Diverse Beliefs

Children see a toy figure of a girl and a sheet of paper with bushes and a garage drawn on it. "Here's Linda. Linda wants to find her cat. Her cat might be hiding in the bushes or it might be hiding in the garage. Where do you think the cat is? In the bushes or in the garage?" This is the own-belief question. If the child chooses the bushes: "Well, that's a good idea, but Linda thinks her cat is in the garage. She thinks her cat is in the garage." (Or, if the child chooses the garage, he or she is told Linda thinks her cat is in the bushes.) Then the child is asked the target question: "So where will Linda look for her cat? In the bushes or in the garage?" To be correct the child must answer the target question opposite from his or her answer to the own-belief question.

3. Knowledge Access

Children see a nondescript plastic box with a drawer containing a small plastic toy dog inside the closed drawer. "Here's a drawer. What do you think is inside the drawer?" (The child can give any answer he or she likes or indicate that he or she does not know). Next, the drawer is opened and the child is shown the content of the drawer: "Let's see...it's really a dog inside!" Close the drawer: "Okay, what is in the drawer?" Then a toy figure of a girl is produced: "Polly has never ever seen inside this drawer. Now here comes Polly. So, does Polly know what is in the drawer? (the target question) "Did Polly see inside this drawer?" (the memory question). To be correct the child must answer the target question "no" and answer the memory control question "no."

4. Contents False Belief

The child sees a clearly identifiable Band-Aid box with a plastic toy pig inside the closed Band-Aid box. "Here's a Band-Aid box. What do you think is inside the Band-Aid box?" Next, the Band-Aid box is opened: "Let's see ... it's really a pig inside!" The Band-Aid box is closed: "Okay, what is in the Band Aid box?" Then a toy figure of a boy is produced: "Peter has never ever seen inside this Band-Aid box. Now here comes Peter. So, what does Peter think is in the box? Band-Aids or a pig? (the target question) "Did Peter see inside this box?" (the memory question). To be correct the child must answer the target question "Band-Aids" and answer the memory question "no".

5. Explicit False Belief

Children see a toy figure of a boy and a sheet of paper with a backpack and a closet drawn on it. "Here's Scott. Scott wants to find his mittens. His mittens might be in his backpack or they might be in the closet.

Really, Scott's mittens are in his backpack. But Scott thinks his mittens are in the closet." "So, where will Scott look for his mittens? In his backpack or in the closet?" (the target question) "Where are Scott's mittens really? In his backpack or in the closet?" (the reality question). To be correct the child must answer the target question "closet" and answer the reality question "backpack".

6. Belief – Emotion

Children see a toy figure of a boy and a clearly identifiable individual-size Cheerios box with rocks inside the closed box. "Here is a Cheerios box and here is Teddy. What do you think is inside the Cheerios box?" (Cheerios) Then the adult makes Teddy speak: "Teddy says, 'Oh good, because I love Cheerios. Cheerios are my favorite snack. Now I'll go play.'" Teddy is then put away and out of sight. Next, the Cheerios box is opened and the contents are shown to the child: "Let's see, there are really rocks inside and no Cheerios! There's nothing but rocks." The Cheerios box is closed: "Okay, what is Teddy's favorite snack?" (Cheerios). Then Teddy comes back: "Teddy has never ever seen inside this box. Now here comes Teddy. Teddy's back and it's snack time. Let's give Teddy this box. So, how does Teddy feel when he gets this box? Happy or sad?" (the target question) The adult opens the Cheerios box and lets the toy figure look inside: "How does Teddy feel after he looks inside the box? Happy or sad?" (the emotion-control question). To be correct, the child must answer the target question "happy" and answer the emotion-control question "sad".

7. Real – Apparent Emotion

Initially, children see a sheet of paper with three faces drawn on it - a happy, a neutral, and a sad face - to check that the child knows these emotional expressions. Then that paper is put aside, and the task begins with the child being shown a cardboard cutout figure of a boy drawn from the back so that the boy's facial expression cannot be seen. "This story is about a boy. I'm going to ask you about how the boy really feels inside and how he looks on his face. He might really feel one way inside but look a different way on his face. Or, he might really feel the same way inside as he looks on his face. I want you to tell me how he really feels inside and how he looks on his face." "This story is about Matt. Matt's friends were playing together and telling jokes. One of the older children, Rosie, told a mean joke about Matt and everyone laughed. Everyone thought it was very funny, but not Matt. But, Matt didn't want the other children to see how he felt about the joke, because they would call him a baby. So, Matt tried to hide how he felt." Then the child gets two memory checks: "What did the other children do when Rosie told a mean joke about Matt?" (Laughed or thought it was funny.) "In the story, what would the other children do if they knew

how Matt felt?" (Call Matt a baby or tease him.) Pointing to the three emotion pictures: "So, how did Matt really feel, when everyone laughed? Did he feel happy, sad, or okay?" (the target-feel question) "How did Matt try to look on his face, when everyone laughed? Did he look happy, sad, or okay? (the target-look question). To be correct the child's answer to the target-feel question must be more negative than his or her answer to the target-look question (i.e., sad for target-feel and happy or okay for target-look, or okay for target-feel and happy for target-look).