Development of Deceptive Behavior in Children With Autism Spectrum Disorder

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This study investigated the development of deceptive behavior in children with autism spectrum disorder (ASD) and typically developing children. We used a modified version of the game context and the temptation resistance paradigm. We tested two types of deception: concealing (simply hiding certain information from another person) and strategic (not only hiding information but also providing wrong information). Results showed that typically developing children started to engage in concealing deception at four years of age in the temptation resistance paradigm and at five years of age in the game context paradigm. On the other hand, children with ASD started to engage in concealing deception at a verbal mental age of seven years in both the temptation resistance and game context paradigms. Difficulty in spontaneously applying theory of mind in children with ASD was discussed.

Key Words: autism spectrum disorder, typically developing children, concealing deception, strategic deception, theory of mind

Introduction

The ability to deceive involves hiding information known to oneself from another person. Successful deception requires the ability of theory of mind that involves taking into account the knowledge available to another person, appreciation of another’s mental state, and the ability to predict their behavior based on their mental state (Yirmiya, Solomonica-Levi, & Shulman, 1996). Although there are previous studies on deception (Evans, Xu, & Lee, 2011; Lewis, Stanger, & Sullivan, 1989; Sodian & Frith, 1992), the results regarding the age at which typically developing children start to deceive intentionally is not consistent. In the early onset view, Chandler, Fritz, and Hala (1989) found that even children as young as 2 years and 6 months old to 3 years old were able to use deceptive strategies such as giving false information regarding a hidden object. In the late-onset view, Sodian, Taylor, Hallis, and Perner (1991), applying a more natural setting in which vehicles left tracks in the sand, showed that 2- and 3-year-olds deceived less often than 4-year-olds, were usually unable to predict the outcome of their behavior, and did not use deception selectively.

These contradictory findings regarding onset are derived from different types of deception and experimental settings among studies. We categorized deception into two types: concealing and strategic. Concealing deception is defined as simply hiding certain information from another person, including denial, concealment, omission of information. Strategic deception is defined as not only hiding information, but also providing wrong information that another person accepts as true when the liar knows it to be false. The precise ability to infer another person’s intention or behavior is required in strategic deception. To reveal the developmental process of deception, it is important to examine both concealing and strategic types.

In experimental settings, game context and temptation resistance paradigms are often used. In the game context paradigm, participants take part in a game (e.g., object hiding) and then practice deception to beat the experimenter, and in this paradigm, children are explicitly instructed by the experimenter to mis-
lead (Baron-Cohen, 1992; Chandler et al., 1989; Peshkin, 1992). In the temptation resistance paradigm, participants are typically left alone in a room with an exciting toy. Before leaving the participant alone, the experimenter explicitly asks the participant to neither touch nor peek at the toy while the experimenter is out of the room. Many participants do not comply with the request because of the temptation of the toy. The experimenter returns to the room and asks participants whether they touched or peeked at the toy while the experimenter was gone. In this paradigm, a request to deceive is not an instruction explicitly given by the experimenter. In order to deceive the experimenter, participants spontaneously infer another person’s intention or behavior. Moreover, the decision about deceiving is influenced by prediction of the consequence of telling the truth (e.g., they might be scolded or lose the game). Therefore, this paradigm allows researchers to observe children in a naturalistic situation in which deception may occur (Evans et al., 2011).

The ability to deceive is of interest in forming theories about autism spectrum disorder (ASD). Previous studies have suggested that factors underlying the cognitive deficit in ASD involve an impaired understanding of the theory of mind and the ability to apply it spontaneously (Senju, Southgate, Maura, Mitsui, Hasegawa, Tojo, Osanai, & Csibra, 2010). The ability to understand theory of mind is typically assessed by testing for an understanding of false beliefs that requires attribution of another person’s wrong belief and prediction of that person’s behavior on the basis of that wrong belief. Although children with ASD have difficulty understanding theory of mind, some children with this disorder, especially those with high cognitive function, have passed tasks examining the ability of theory of mind (Baron-Cohen, Leslie, & Frith, 1985). However, they still have social and communication abnormalities in daily life (Happé, 1994). Considering these results, a deficit in theory of mind skills is not enough to explain the cognitive deficit in ASD. Yirmiya et al. (1996) suggested that children with ASD have difficulty manipulating beliefs of others, which is not a focus of theory of mind tasks. Therefore, we assumed that the ability to understand another person’s mental state as well as manipulate another’s beliefs were deficits in children with ASD. Furthermore, in daily life, not being able to use such abilities spontaneously represents an additional difficulty (Klin, Jones, Schultz, & Volkmar, 2003).

Previous studies on deception in children with ASD robustly revealed that they performed worse than age- and IQ-matched typically developing children in deceiving others (Li, Kelly, Evans, & Lee, 2011; Sodian & Frith, 1992; Yirmiya et al., 1996). Sodian and Frith (1992), who matched ASD children’s verbal mental age (VMA) with normally developing children’s chronological age (CA), suggested that children with ASD whose verbal mental age was above that of a 7-year-old could deceive more frequently than younger children with ASD. Li et al. (2011) investigated the ability to deceive using a temptation resistance paradigm and clarified that children with ASD perform more poorly than typically developing children. From these studies, it is said that understanding and manipulating another person’s intention and behavior spontaneously is a deficit in these children. However, little is known about when children with ASD start to deceive. Therefore, it is important to clarify their ability to deceive using the temptation resistance paradigm.

The aim of the current study was to examine the ability to engage in concealing and strategic deception in children with ASD and compare the developmental trajectories of deception with typically developing children using both the game context and temptation resistance paradigms. We revised the procedure of the two boxes task (Sodian & Frith, 1992) for the game context paradigm, and revised that of the penny-hiding game (Baron-Cohen, 1992) for the temptation resistance paradigm. The task used by Sodian and Frith is a type of object hiding. This task allowed us to easily examine the ability to deceive. In Sodian and Frith’s sabotage task, participants were instructed to prevent the opponent from getting a reward by telling the opponent which box was locked. To deceive successfully, participants simply denied that the box with a reward was open. Because there were only two boxes, if the participants said “This box is locked,” it also meant “The other box is open.” Therefore, this task can assess the ability of concealing deception.

In the game context paradigm used in the current study, we used three boxes to assess the abilities of both concealing and strategic deception in the same task. In our procedure, the opponent first pointed to the box that contained the reward and asked participants whether the reward was in the box (concealing
deception question). If participants engaged in concealing deception successfully, they were asked where the reward was (strategic deception question). In the temptation resistance paradigm, participants took part in a modified penny-hiding game with a puppet. We used this game for several reasons. The penny-hiding game is one that occurs often in parent-child and child-child interactions (Baron-Cohen, 1992). Thus, children can easily understand the rules. In addition, participants want to win the game, so it is easy to induce them to disobey the experimenter’s instructions that they should not peek. Studies have shown that the rate of participants who disobeyed the instructions was higher when children took part in a guessing game (Polak & Harris, 1999) or trivia game (Talwar, Gordon, & Lee, 2007) than when in a play session (Lewis et al., 1989; Polak & Harris, 1999).

We therefore assessed participants’ ability to make a spontaneous deceptive reply, using a modified version of the penny-hiding game.

We developed the following three hypotheses. First, while typically developing children would deceive in both the game context and temptation resistance paradigms, children with ASD would not (e.g., Sodian & Frith, 1992; Yirmiya et al., 1996). Second, because children with ASD have deficits in the ability to spontaneously understand and manipulate another’s mental state (Klin et al., 2003), children with ASD would not deceive another person compared with same-aged typically developing children especially in the temptation resistance paradigm. Third, in the temptation resistance paradigm, if children replied honestly, they think that they might be scolded because they disobeys the request that they must not peek. The motivation of avoiding this predictable penalty seemed to be one of the reasons that children are driven to deceive. Especially, planning is related to sequencing the action in time (Zelazo, Carter, Reznick, & Frye, 1997), and this skill is related to deceptive behavior (Evans & Lee, 2011). Because typically developing children might predict the consequence, they might reply deceptively to avoid it. Thus, we predicted that typically developing children might deceive earlier in the temptation resistance paradigm than in the game context because of the effect of prediction. However, given that children with ASD have a deficit in planning ability (Hughes, Russell, & Robbins, 1994; Ozonoff & Jensen, 1999), they might not be able to predict the consequence. Therefore, their performance could be the same in both the game context and temptation resistance paradigms.

Method

Participants

Twenty-nine children with ASD whose VMA was that of 3- to 12-year-olds and 47 typically developing children whose CA was age 3 to 6 years participated in the present study. They carried out a clinical diagnosis of Autistic disorder or Asperger’s syndrome. All participants were diagnosed by a pediatrician with the DSM-IV-TR. ASD children’s VMA was measured by the Picture Vocabulary Test-R, (PVT-R; Ueno, Nogoshi, & Konuki, 2008). According to the results of Sodian and Frith (1992), we assigned 11 children with ASD whose VMA was 3- to 7-year-old (10 boys, 1 girl; mean VMA = 66.4 months, SD = 28.3) and 21 3- to 4-year-old typically developing children (13 boys, 8 girls; mean CA = 49.6 months, SD = 4.1) to the younger group, and 18 children with ASD whose VMA was 7- to 12-year old (14 boys, 4 girls; mean VMA =119.9 months, SD =18.5) and 26 5- to 6-year old typically developing children (13 boys, 13 girls; mean CA =70.6 months, SD =5.8) to the older group.

Table 1 shows the details of participants. Children with ASD were recruited through a parent organization of children with developmental disorders, and the typically developing children were recruited from local kindergartens. All participants were Japanese. Informed consent was obtained from all parents prior to beginning the study, and oral assent was obtained from all participants.

Materials

The game context paradigm. Three boxes colored red, yellow, or green (15.5 cm × 10 cm × 15.5 cm) were used as hiding places. A toy apple (diameter 12 cm) was used as the target item in this task. A large hand puppet of a witch (60 cm) was used as an opponent, and a girl puppet was used as a partner.

The temptation resistance paradigm. Four cards (15 cm × 10.5 cm) were used in this task. A star was drawn on two of the four cards. Two of the four cards were specifically selected each time (star/white, star/star, white/white) to control the results of the game. The large hand puppet of a witch was used as an opponent.
Design and Procedure

The game context paradigm. The order of the game context paradigm and the temptation resistance paradigm were counterbalanced among participants. We adopted a modified version of Sodian and Frith's (1992) two boxes task. Experimenter 1 (E1) started by introducing the puppets. The witch was introduced as an evil character who should be prevented from getting the apple. The girl was introduced as a good character who the participant should help to get the apple. To demonstrate the puppets' behaviors, the boxes were placed on the table, an apple was put into one of the three boxes, and the girl appeared. She went up to the box, opened it, and discovered the apple. E1 explained that the girl will give the participants a sticker whenever she finds the apple. Next the witch appeared, went up to the box, opened it, took the apple out, and ate it. E1 explained that the witch takes the apple when she finds it and eats it. Participants were then asked to identify the girl and the witch, and E1 introduced the task as a game in which they could win many stickers. E1 said “To win, you have to help the girl find the apple, but prevent the witch from getting it.”

Then E1 left the room with the puppets, and Experimenter 2 (E2) told participants to hide the apple in one of the three boxes. After hiding the apple, E2 stated the following: “The witch and the girl don’t know which box the apple is in. Now the witch or girl will return to find the apple.” There were three trials with the witch and two trials with the girl. The order was counterbalanced among participants. In trials with the girl, E1 returned with the girl puppet and asked “Which box is the apple in?” If participants told the truth to the girl, they got a sticker from her; if they did not, they got nothing from her. In the trials with the witch, E1 returned with the witch puppet and pointed to the box that contained the apple (E2 signaled to E1 where the apple was) and asked “Is the apple in this box?” (Concealing deception question). If participants deceived the witch successfully, they were asked an additional question: “Which box is the apple in?” (Strategic deception question). If they said or pointed to a box that did not contain the apple, they kept the apple, but if they told the witch the truth, she ate the apple. The ability to make concealing and strategic deceptions was scored on a scale from zero to three: three marking the ability to make a deceptive reply on all witch trials.

The temptation resistance paradigm. Participants were individually tested in a quiet room with E1 who mainly conducted the task and E2 who took part as a supporter for the participants. Participants were asked to participate in a modified version of the penny-hiding game. E1 sat with participants face-to-face, hand-operated the witch puppet, and put two cards in the middle of the table. Then E1 said “Which card is a star drawn on? If you guess correctly two times, you will get a wonderful present.” Participants played the game three times. The first time, two star cards were used, so they always won the game. The second time, two white cards were used, so they always lost the game. This procedure was used to confirm the rules and increase participants’ motivation to participate in the game. The third time, a star and a white card were used. When the witch put down the cards, she said “Oh! I forgot something important! I have to go to get it.” She asked participants to wait for her in the room and said “We will continue the game when I get back. While I’m gone, don’t peek at the cards.” The witch left the room and waited outside for five minutes. While she was absent from the room, participants were free to peek at the cards. On her return, the witch asked “Did you peek at the cards while I was gone?” (Concealing deception question). The game was restarted. If participants had peeked at the cards, replied deceptively, and guessed the star card correctly, the witch asked “How did you guess correctly?” (Strategic deception question). Participants were then asked to identify the girl and the witch, and E1 introduced the task as a game in which they could win many stickers. E1 said “To win, you have to help the girl find the apple, but prevent the witch from getting it.”

Table 1 Chronological Age and Verbal Mental Age of Children with Autism Spectrum Disorder and Typically Developing Children

<table>
<thead>
<tr>
<th>Variable</th>
<th>Group</th>
<th>ASD children</th>
<th>Typically developing children</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Younger (n=11)</td>
<td>Older (n=18)</td>
<td>Younger (n=21)</td>
</tr>
<tr>
<td>CA (in months)</td>
<td>M</td>
<td>108.8</td>
<td>128.4</td>
</tr>
<tr>
<td></td>
<td>SD</td>
<td>51.5</td>
<td>28.8</td>
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<tr>
<td></td>
<td>Range</td>
<td>47–199</td>
<td>86–183</td>
</tr>
<tr>
<td>VMA (in months)</td>
<td>M</td>
<td>66</td>
<td>—</td>
</tr>
<tr>
<td></td>
<td>SD</td>
<td>28.3</td>
<td>18.5</td>
</tr>
<tr>
<td></td>
<td>Range</td>
<td>36–77</td>
<td>89–147</td>
</tr>
</tbody>
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Note. CA: chronological age, VMA: verbal mental age.
pants’ explanations were coded into two explanation categories: plausible (e.g., “My hunch proved right”) or non-plausible (e.g., “I saw it”).

Results

Reliability Analysis

The first author and a research assistant who was blind to the diagnosis and the hypotheses of the study independently coded the behaviors and responses of all of the participants on the tasks. There was high inter-coder reliability on the score of deceptive ability for the game context paradigm (concealing deception: 96.1%, $\kappa=0.90$, strategic deception: 98.7%, $\kappa=0.90$), and the temptation resistance paradigm (concealing deception: 98.7%, $\kappa=0.92$, strategic deception: 90.8%, $\kappa=0.72$).

Game Context Paradigm

One child with ASD and four typically developing children did not complete the tasks because of illness, or they declined to participate and thus were excluded. Therefore, the total number of participants was 28 in the ASD group and 43 in the typical group.

Concealing deception. In order to examine the effect of VMA (in the ASD group) or CA (in the typical group) for deceptive ability, a regression analysis was conducted with VMA (for the ASD group) and CA (for the typical group) as the predictor and the deceptive ability score as the dependent variable. The analysis revealed that VMA and CA significantly influenced deceptive ability in each groups (ASD group: $R^2=0.20$, $\beta=0.48$, $p<.01$, normal group: $R^2=0.42$, $\beta=0.65$, $p<.001$). Then to clarify when children start to deceive, we performed a t test with age groups (younger/older) as the independent variable and the deceptive ability score as the dependent variable. As a result, the older groups performed better than the younger groups (ASD group: $t(18)=2.9, p<.05$, typical group: $t(30)=2.2, p<.001$; see Fig. 1). In order to perform a group comparison, we extracted participants whose CA or VMA was 3 to 6 years from both groups (ASD group: $n=5$, typical group: $n=32$). There was no significant difference between ASD and the typical group ($t(35)=0.81, n.s.$).

Strategic deception. We performed a regression analysis using the same procedures which were used for concealing deception. Although there was no significant result in the ASD ($R^2=0.04$, $\beta=0.20$, n.s.), CA significantly influenced the score of strategic deception in the typical group ($R^2=0.24$, $\beta=0.49$, $p<.01$). In order to clarify when children start to deceive, we performed a t test. We found that the older, typical groups performed better than the younger groups (ASD group: $t(18)=2.9, n.s.$, typical group: $t(30)=2.2, p<.001$; see Fig. 1). In order to perform a group comparison, we extracted participants whose CA or VMA was 3 to 6 years from both groups (ASD group: $n=5$, typical group: $n=32$). There was no significant difference between ASD and the typical group ($t(35)=0.81, n.s.$).

Temptation Resistance Paradigm

Four children with ASD and one typically developing child did not complete the tasks because of illness, or they declined to participate and thus were excluded. Therefore, the total number of participants was 25 in the ASD group and 46 in the typical group.

Peeking behavior. Overall, 13 (52%) out of 25 children with ASD and 22 (48%) out of 46 typically developing children peeked at the cards in E1’s absence. Fisher’s exact probability test revealed no significant effect of disorder ($p=81$).

Concealing deception. In the ASD group, of the 13 participants who peeked at the cards (3 younger, 10 older), 11 (2 younger, 67%; 9 older, 90%) deceived the witch about their transgression. Of the 22 typically developing children who peeked at the cards...
(10 younger, 12 older), 19 participants (9 younger, 90%; 10 older, 83%) deceived the witch. Fisher’s exact probability test revealed that the difference between younger and older participants was not significant in either group (typical group; \( p = 1.0 \), ASD group; \( p = .42 \)). In addition, we examined results for participants whose age or VMA was 3 to 6 years from both groups for group comparison. In those participants, 19 out of 22 typically developing children (86%), and two out of two children with ASD (100%) deceived the witch. However, there was no significant difference between the groups (\( p = 1.0 \)).

**Strategic deception.** In the ASD group, of the 11 participants who passed the concealing deception question, seven (2 younger, 100%; 5 older, 55%) strategically deceived the witch. Fisher’s exact probability test revealed no significant difference between the younger and older groups (\( p = .49 \)). In the typically developing group, of the 19 participants who passed the concealing deception question, 12 (2 younger, 22%; 10 older, 100%) deceived the witch. Fisher’s exact probability test revealed that participants in the older group deceived more frequently than those in the younger group (\( p = .001 \)). A group comparison between the typical and ASD group indicated no significant difference (\( p = .515 \); see Fig. 2).

**Discussion**

**Concealing Deception**

The present study showed that typically developing children in the older group could deceive by concealing information in the game context paradigm. It was assumed that typically developing children start to deceive above 5 years old. However, this is inconsistent with a previous study on deception using the game context paradigm. Sodian et al. (1991) found that 4-year-olds could deceive in the game context. This difference might be related to different procedures in the tasks. In Sodian et al.’s task, participants were shown how to deceive (wiping out all footprints or laying a set of false footprints). Then participants chose to act deceptively or be truthful. However, in the task used in the present study, participants were not told how to deceive. Hence, they had to understand their partner’s knowledge (what the partner knew and did not know) and act based on their own decision. Thus, present findings suggest that 5-year-olds can understand another’s knowledge more precisely than do 4-year-olds.

In the ASD group, only participants in the older group whose VMA was above 7 years deceptively replied to the witch by concealing information about the position of the apple. This result is consistent with Sodian and Frith (1992). In addition, between-group comparisons revealed that it is difficult for children with ASD to engage in concealing deception compared to typically developing children when VMA is controlled. Although the difference was marginally significant, this result is robustly consistent with the previous studies on deceptive behavior comparing ASD children with typically developing children (Li et al., 2011; Sodian & Frith, 1992; Yirmiya et al., 1996). Therefore it is thought that these results show that children with ASD have difficulty deceiving, even though deception was explicitly requested in the rules. As mentioned, to deceive another person successfully, participants must infer knowledge of the recipient and imagine how the deception affects that person’s behavior. Children with ASD reportedly have a deficit in the ability of theory of mind (Baron-Cohen, 1989; Baron-Cohen et al., 1985; Leslie & Frith, 1988; Perner, Frith, Leslie, & Leekam, 1989). Therefore, we assume that the difficulty found in this study is related to that deficit.

In the temptation resistance paradigm, we did not find a significant difference between younger and older children in either group or in the between-groups comparison. However, in the typical group, more than 80% of participants passed the task in...
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both younger and older groups. Several previous studies on concealing deception with the temptation resistance paradigm have indicated that the ability of deception is evident around age four (Evans et al., 2011; Lewis et al., 1989; Polak & Harris, 1999). Therefore, participants in the younger group might have already been ready to deceive. Thus, there was no significant difference between the younger and older groups. In the ASD group, although there was a significant difference between younger and older groups in the game context paradigm, we did not find any significant differences in the temptation resistance paradigm. However, in the older group, more than 90% of participants passed the task. This result suggests that children with ASD whose VMA is above 7 years might be able to hide their transgression compared with younger children.

In summary, typically developing children were able to deceive in the temptation resistance paradigm from 4 years of age, and in the game context paradigm from 5 years of age. On the other hand, children with ASD were able to deceive in both the temptation resistance and game context paradigms from a VMA of 7 years. In the temptation resistance paradigm, participants hid their transgression to avoid penalties (e.g., scolding from the witch or losing the game). Considering the gap between typical and ASD groups, predicting these penalties encouraged typically developing children, in particular, to deceive. We assume that typically developing children infer intention and knowledge of others involved in the context, such as advantages or disadvantages for them. On the other hand, children with ASD infer regardless of the context.

Strategic Deception

In the game context paradigm, we did not find a significant difference between younger and older groups in the ASD group. The strategic deception question was conducted only for a subsample of participants who had previously displayed the ability to engage in concealing deception. The average score was above 2.2 and SD was above 1.2 in both the younger and older groups. So we assume that the reason why there was no significant result was ceiling effect in both groups. Results suggest that participants who have the ability to engage in concealing deception also have the ability to strategically deceive. However, this result may be attributable to the relatively small number of participants in each group who demonstrated the ability to deceive in a strategic way.

We found a significant difference between the younger and older participants in the typical groups in both the temptation resistance and game context paradigms. These results are consistent with a previous study on strategic deception. Evans et al. (2011) showed that the majority of 5-year-olds in their study could deceive in a strategic way. In this study, to make a successful strategic deception in the game context paradigm, children must inhibit pointing at a box which contained an apple and should, instead, point at another box. So in order to make a strategic deception, children must produce a false response. In the temptation resistance paradigm, they had to create a plausible explanation for how they knew which card had a star drawn on it. To give a plausible explanation, children had to reply to the question “How did you guess correctly?” as if they had not peeked at the cards which requires imagination. Farrant, Fletcher, and Maybery (2006) suggested that perspective taking and language ability might play an important role in simulation of intention or behavior. Therefore, especially for typically developing children, language development might be required to give a plausible explanation by imagining not having peeked at the cards.

In the ASD group, there was no significant difference between younger and older participants. In the younger group, 100% of participants deceived strategically, but this might be due to the small sample size. Taken into account that the rate of participants passing the task in the older group was 56%, it seems that this task was difficult for even older participants. However, a high percentage of older participants in the ASD group could strategically deceive in the game context paradigm. They could infer another's intention or behavior. As mentioned, the difference between temptation resistance and game context paradigms is whether necessary deception is indicated explicitly or not. To strategically deceive, participants must infer another's intention or behavior spontaneously in the temptation resistance paradigm. Klin et al. (2003) revealed that children with ASD have difficulty inferring another's intention and perspective, especially in a spontaneous way. Hence, this difficulty may have been evidenced in this study.

A limitation of this study is its small sample size
of ASD children for analyses of concealing deception in temptation resistance paradigm. Because only 3 children with ASD in younger group (about 28%) peeked at the cards, it was difficult to reveal any significant difference between younger and older group in the ASD group. Li et al. (2011), who applied temptation resistance paradigm for children with ASD and typically developing children whose VMA was 3 to 10 years old, showed that over 80% of ASD children transgressed the request. If we get more participants who peek at the cards in younger group, results might show the significant difference between younger and older group in the ASD group.

The present study focused on the developmental process of concealing and strategic deception in typically developing children and children with ASD, using different paradigms. Results revealed that typically developing children began engaging in concealing deception at about 4 years of age in the temptation resistance paradigm and at about 5 years of age in the game context paradigm. On the other hand, children with ASD started to engage in concealing deception at a VMA of 7 years in both paradigms. Thus, avoiding penalties in the temptation resistance paradigm facilitates typically developing children to spontaneously infer and manipulate another’s intention or behavior. However, in the case of children with ASD, avoiding penalties does not promote inference and manipulation of another’s intention or behavior.

References
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