*Brief Note***Characteristics of Empathy for Friendship in Children With High-Functioning Autism Spectrum Disorders**Aiko MORIWAKI^{*,**}, Ryoko ITO^{***}, and Hiroshi FUJINO^{***}

The present study aimed to compare the characteristics of empathy as scaffolding for constructing friendships. Participants were 24 high-functioning children with autism spectrum disorders (ASD) and, for comparison, 24 typically developing children (TYP). The children were matched on age (7–11 years) and gender (each group included 6 girls). The empathic responses that were analyzed included Parallel Empathy (P-E), which refers to reproduction of another person's feelings, and Reactive Empathy (R-E), which refers to one's emotional reaction to another person's feelings. The children's empathic response to their closest friend was measured with the Affective Situation Test (AST). The children with autism spectrum disorders achieved the same level of Parallel Empathy scores as the typically developing children; however, the Reactive Empathy scores of more than a third of the children with autism spectrum disorders were noticeably lower than those of the typically developing children. This suggests that a weakness in Reactive Empathy in children with autism spectrum disorders may be an important factor in the difficulty that they have in constructing reciprocal relationships with friends.

Key Words: friendship, parallel empathy, reactive empathy, Affective Situation Test, children with autism spectrum disorders

Introduction

Individuals with autism spectrum disorder (ASD) have severe difficulty in social interactions with others and problems in the construction and maintenance of reciprocal relationships (Bauminger & Kasari, 2000; Carrington, Templeton, & Papicnczak, 2003; Ito, 2006). This is a common feature of

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children with high-functioning autism spectrum disorders who participate in regular classes in school. School-age children with high-functioning autism spectrum disorders are conspicuous in their difficulty in making friends with peers (Attwood, 2006).

Friendship is a social-emotional relationship based on stable reciprocal interactions and companionship which may be sustained for long periods (Fujita, 2002). Generally, friendship helps typically developing children achieve developmental tasks corresponding to their age level, which, in turn, has an important influence on the children's social adjustment and mental health (Okada, 2008). Friendship is considered to help children with autism spectrum disorders obtain appropriate social behavioral models from their friends and receive support from them. Moreover, although children with autism spectrum disorders have a greater tendency toward depression and mental illness than the general population, it has been suggested that friendships have a protective function in relation to such risk factors (Attwood, 2006). In other words, friendship plays an important role for children with autism spectrum disorders as a special social relationship with other people.

Friendships of children with autism spectrum disorders have recently been focused on as a research topic. For example, the results of research on abstract concepts using a semi-structured interview suggested that children with autism spectrum disorders were able to understand the conceptual meaning of friendship, which can protect them from loneliness, and that they preferred to select as friends people who provide them with support (Bauminger, Shulman, & Agam, 2003). Case studies using self-reports or mothers' reports have suggested that children with autism spectrum disorders could identify at least one friend with whom they felt the same closeness and intimacy as typically developing children do with their friends (Bauminger et al., 2003; Carrington et al., 2003). Similarly, in a study that used the Friendship Qualities Scale (FQS), it was revealed that children with autism spectrum disorders, like same-age typically developing children, felt close to a friend and recognized that they were receiving instrumental and emotional support from their friend (Moriwaki & Fujino, 2010).

On the other hand, in research based on behavioral observations in natural group settings or dyadic play settings, children with autism spectrum disorders demonstrated a greater frequency of parallel play (Bauminger et al., 2003; Bauminger, Solomon, Aviezer, Heung, Gazit, Brown, & Rogers, 2008). In their interactions, the frequency of positive affective expressions and sharing fun was lower than in typically developing children of the same age. In addition, the quality of interactions by children with autism spectrum disorders was low or had a simple pattern.

In short, although children with autism spectrum disorders could perceive their friends' support and kindness and experience positive affection toward them, they did not express affective reactions (e.g., by their facial expression,

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gestures, and speech) adequately toward their peers. Thus, an interactive relationship between them and other children was not constructed. In typically developing children, friendship can continue for a long time because interactions with their friends are based on mutual feelings of closeness and intimacy (Fujita, 2002). A discrepancy between surface behavior and mental state might be characteristic of the immature friendships of children with autism spectrum disorders.

Recently, this characteristic of friendship in those with autism spectrum disorders has been investigated from the standpoint of empathy. Baron-Cohen & Wheelwright (2003, 2004) demonstrated that scores on the Friendship Questionnaire (FQ) and the Empathy Quotient (EQ) were significantly lower in adults with autism spectrum disorders than in adults who had developed typically.

Thus, the results of past research suggest that problems with friendship in children with autism spectrum disorders may result from weak empathy. Empathy is involved in the forming of social bonds by emotionally uniting two people. It is expected that focusing on empathy may provide important suggestions about the structure and process of formation of friendships by children with autism spectrum disorders which was not obtained with the perspective of previous research. However, until now, only general sympathy has been treated in large-scale studies (Baron-Cohen & Wheelwright, 2004).

It has been suggested that empathy has several aspects. Sawada (1991) redefined Staub's (1987) theory of two aspects of empathy: Parallel Empathy (P-E), which is one's reproduction of another person's feelings in an affective situation, and Reactive Empathy (R-E), which refers to one's emotional reaction to another person's feelings. Parallel Empathy is evidenced when a person appreciates another person's affective status and has the same feelings. However, Parallel Empathy does not have an effect on other people. In other words, Parallel Empathy is self-oriented empathy.

In contrast, Reactive Empathy has positive effects on promoting and motivating social-affective interactions, and can contribute to the development of relationships with friends. Reactive Empathy is interpersonally directed empathy. Both Parallel Empathy and Reactive Empathy are empathic functions essential for the formation of friendships. However, they have different influences on the condition of friendship in relation to intimacy and closeness.

Friendships in children with autism spectrum disorders have not yet been studied from the viewpoint of the type of empathy, i.e., Parallel Empathy and Reactive Empathy. As Sawada (1991) suggests, it may be important to focus on the direction toward which such empathy is turned. Because it has been shown that the expression of empathy changes depending on the interactional partner (Asakawa & Matsuoka, 1987), it is necessary to devise a method for measuring empathy that is based not on general others but rather on a specific friend.

The present study aimed to investigate friendship in children with autism spectrum disorders compared with typically developing children from the standpoint of Parallel and Reactive Empathy.

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TABLE 1 Profile of Participants With Autism Spectrum Disorders
(*n*=24)

Gender	boys	18
	girls	6
Chronological Age	mean (<i>SD</i>)	8.8 yr (0.9)
	range	7–11
WISC-III	VIQ mean (<i>SD</i>)	106.2 (13.1)
	range	85–138
	PIQ mean (<i>SD</i>)	97.5 (12.6)
	range	72–115
	FIQ mean (<i>SD</i>)	102.4 (10.3)
	range	84–124

Method

Participants

Children with autism spectrum disorders. The participants in the experimental group were 24 children (7–11 years old; 18 boys, 6 girls) who had been diagnosed by physicians as having autism spectrum disorders (autism, Asperger's disorder, or Pervasive Developmental Disorder-Not Otherwise Specified). Profiles of the participants with autism spectrum disorders are presented in Table 1.

All the children with autism spectrum disorders had normal intelligence (WISC-III; FIQ average=102.4). The children were in regular classes in elementary schools, although they had special needs for social and communication support in school, and were participating in social skills training in clinical settings or resource rooms for children with developmental disabilities in their school.

Typically developing children (control group). The participants in the control group were 24 children randomly selected from 160 typically developing children in grades 2–5 at regular schools. They were matched on gender and age with the children with autism spectrum disorders.

Procedure

Children's empathic responses to their closest friend were measured using the Affective Situation Test (AST) (Asakawa & Matsuoka, 1987). The Affective Situation Test material includes worksheets with pictures and stories. Three patterns of situations containing four basic types of feelings (fear, sadness, anger, and happiness) were described in the worksheets. Twelve affective situations that would be understandable by children were used, adapted from the original Affective Situation Test (see Table 2).

First, the participants were asked to identify their closest friend. They were then told use that child as the main character in the stories in the worksheets. Next, they were presented with pictures and listened to 12 stories representing

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TABLE 2 Situations in the Affective Situation Test and Related Questions

Affective situations (Replace “your friend” with the actual name of your friend)	
Affective	
Fear	<u>Your friend</u> stayed at home alone to look after the house. Suddenly, the sky darkened, and it began to thunder.
Sadness	<u>Your friend</u> plans to go camping tomorrow. However, it becomes impossible because <u>your friend</u> is running a high fever.
Anger	<u>Your friend</u> talked to some boys. He/She got razzed by the boys.
Happiness	<u>Your friend</u> has wanted a certain toy for a long time. He/She was given the toy as a birthday present.
Questions	
How do you feel?	} corresponding to the content of each story and affective-matching
How does your friend feel?	
What do you say to your friend?	appropriate for the content

affective situations that simulated their friend’s experiences. Immediately after they heard each story, the participants were asked to answer the following questions: (a) How do you feel? (b) How does your friend feel? and (c) What do you say to your friend? If a response was incomplete, the question was repeated. The answers were handwritten by the participants themselves. However, the children with writing difficulties could answer orally. In such cases, their answers were recorded with an IC recorder.

Scoring and Analyses

When the answers to question (a) (how do you feel?) and (b) (how you’re your friend feel?) corresponded to the content of a story, 1 point was given for Parallel Empathy (possible range=0–12). When the answers to question (c) (What do you say to your friend?) were appropriate to the context, 1 point was given for Reactive Empathy (possible range=0–12).

An appropriate answer in this context is a response that has a positive effect on their friend, e.g., be worried, encouraged, helped to be resilient. In general, the comment about one’s own and the other’s affect should match. On the other hand, an inappropriate answer is a response that would have a negative effect on their friend, e.g., no response; or saying something that would make their friend feel bad.

Three evaluators, including the first author, evaluated the answers independently. Evaluations that did not correspond were resolved by the three evaluators discussing the scoring until the agreement became 100%.

The mean of the total scores for the two empathic response categories were

TABLE 3 Comparison of the Two Groups' Total Scores on Parallel and Reactive Empathy

	ASD	TYP	<i>t</i> -tests		
	<i>M</i> (<i>SD</i>)	<i>M</i> (<i>SD</i>)	<i>t</i>	<i>df</i>	<i>p</i>
P-E	6.1 (3.6)	7.8 (2.9)	1.8	46	0.8
R-E	6.1 (4.4)	9.9 (2.2)	3.8	46	.001*

Note. ASD=children with autism spectrum disorders, TYP=typically developing children, P-E=Parallel Empathy, R-E=Reactive Empathy. * $p < .01$.

compared between groups using *t*-tests. In addition, for the children with autism spectrum disorders, the means of VIQ, PIQ and FIQ categories of the WISC-III for the children in lower and higher scoring groups on Parallel Empathy and Reactive Empathy categories were compared.

Results

Table 3 presents the results of a *t*-test comparison of the groups' total scores for Parallel Empathy and Reactive Empathy.

Parallel Empathy Scores

Although the total scores for Parallel Empathy of the group of typically developing children seem more concentrated near the mean score ($M=7.8$, $SD=2.9$), whereas those of the children with autism spectrum disorders appear more widely distributed ($M=6.1$, $SD=3.6$), a *t*-test on the mean Parallel Empathy scores revealed no significant difference between the groups ($t(46)=1.78$, $p > .05$ (two tailed)). (See Fig. 1.)

The Parallel Empathy scores of the children with autism spectrum disorders were divided into two groups, i.e., those above and those below the mean Parallel Empathy score (6.1) for that group of children, in order to examine features of that group of children. Table 4 shows the means of the VIQ, PIQ and FIQ category scores on the WISC-III for the children whose Parallel Empathy scores were in the lower-score and higher-score groups. The means for the children in the lower-score group were VIQ, 108.3; PIQ, 92.6; and FIQ, 100.8; for the children in the higher-score group, VIQ, 103.7; PIQ, 103.4; and FIQ, 104.3.

Reactive Empathy Scores

As shown in Fig. 2, the typically developing children tended to have high total Reactive Empathy scores ($M=9.9$, $SD=2.2$, range 5–12). On the other hand, the total Reactive Empathy scores of the children with autism spectrum disorders ($M=6.1$, $SD=4.4$) were either very low (range 0–2) or comparable to those of the typically developing children (range 6–12). The children with autism spectrum disorders made errors in 51% of their answers.

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TABLE 4 Mean WISC-III VIQ, PIQ, and FIQ Scores of the Children With Autism Spectrum Disorders ($n=24$), Grouped According to Their Scores on Parallel Empathy and Reactive Empathy

WISC-III Categories	P-E ($M=6.1$)		R-E ($M=6.1$)	
	lower	higher	lower	higher
VIQ	108.3	103.7	100.3	111.2
PIQ	92.6	103.4	93.6	100.8
FIQ	100.8	104.3	97.2	106.8

Note. ASD=children with autism spectrum disorders, P-E=Parallel Empathy, R-E=Reactive Empathy.

Although the answers that did not achieve criterion were qualitatively classified, there were instances of no response or an inability to answer (23%), and instances of answers that were inappropriate to the context (28%).

A t -test on the mean scores on Reactive Empathy between the groups showed that the children with autism spectrum disorders scored significantly lower than the typically developing children ($t(46)=3.75$, $p<.01$ (two tailed)).

Table 4 also has the means of the VIQ, PIQ, and FIQ category scores on the WISC-III for the children with autism spectrum disorders whose Reactive Empathy scores were in the lower-score and higher-score groups (dividing the total scores at the mean). The means for the children in the lower-score group were VIQ, 100.3; PIQ, 93.6; and FIQ, 97.2; for the children in the higher-score group, VIQ, 111.2; PIQ, 100.8; and FIQ, 106.8.

FIG. 1 Distribution of Total Parallel Empathy Scores in Both Groups

Note. ASD=children with autism spectrum disorders, TYP=typically developing children.

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Discussion

The present study measured empathic responses for friendship by using the Affective Situation Test with a group of children who had been diagnosed as having autism spectrum disorders and a group of typically developing children. In particular, we attempted to assess characteristics of the children with autism spectrum disorders by analyzing two aspects of empathy, Parallel Empathy and Reactive Empathy. We were unable to locate any published research that had focused on the direction of empathy as scaffolding for constructing friendship in children with autism spectrum disorders.

When taking the Affective Situation Test, the participants were first asked to name their closest friend. All the children with autism spectrum disorders were able to identify their best friend immediately, as could the group of typically developing children. This result confirmed previous research findings that children with autism spectrum disorders experience friendship (Bauminger et al., 2003, 2008; Carrington et al., 2003; Moriwaki & Fujino, 2010).

However, the empathy scores for the two groups of participants were different for Parallel Empathy and Reactive Empathy.

The Parallel Empathy scores of the children with autism spectrum disorders were as high as those of the typically developing children. This result suggests that children with autism spectrum disorders can perceive a friend's affection in emotional situations, and experience the same emotional state as their friend. The scores of the children with autism spectrum disorders on Parallel Empathy were widely distributed, and the range of scores overlapped that of the scores of the typically developing children.

In the responses that were allotted 0 points, there were similar expressions

FIG. 2 Distribution of Total Reactive Empathy Scores in Both Groups

Note. ASD=children with autism spectrum disorders, TYP=typically developing children.

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of affect (T. Kikuchi, 2002) that cannot be verbalized in negative affective situations, such as fear, sadness, and anger, for example, answers like “I feel bad, Mommy!” in the sad situation, or “Oh no! Help!” in the fear situation. Or, in the positive situations of happiness, there were several responses that did not show the same emotion as their friend, for example, an answer like “I envy my friend”. This response tendency was similar in both groups.

Points were not allocated to responses that were insufficient in verbalizing feelings and so did not meet the criterion, but that does not mean that there was an absence of parallel empathic behavior in those children. It has been shown in previous research that the type of empathy that identifies another person’s affective state and projects self-experience, i.e., Parallel Empathy, can be observed in typically developing young children from when they are preschool age (A. Kikuchi, 1984; Tanaka & Iwatate, 2005). Especially, the basic emotions, fear, sadness, anger, and happiness, which are involved in the Affective Situation Test, are considered comprehensible by school-aged children with autism spectrum disorders, who can do this as well as typically developing children. In addition, the Affective Situation Test material conveys considerable social information through pictures and stories that help respondents understand the context.

The children with autism spectrum disorders with higher Parallel Empathy scores tended to have higher PIQ scores than the children with autism spectrum disorders who got lower total Parallel Empathy scores, suggesting that strength in visual cognition might influence the children’s Parallel Empathy reaction.

On the other hand, the Reactive Empathy scores of the children with autism spectrum disorders were significantly lower than those of the typically developing children. This suggests that the children with autism spectrum disorders had serious difficulties with Reactive Empathy.

In the distribution of the total Reactive Empathy scores for each group of participants, the scores of the typically developing children tended to be distributed toward a higher total, whereas, on the other hand, the scores of the children with autism spectrum disorders were widely distributed, with some of the children’s answers getting rather low scores, and the remainder, rather higher.

One point was given as the Reactive Empathy score for responses that were intended to profit the participant’s friend. However, the children with autism spectrum disorders who got lower scores responded with comments like “Why should I say anything to my friend?” and “I can’t imagine how to express what I feel”, or gave negative comments about their friend (e.g., “You are foolish!” and “You’re wasting your effort.”). This tendency was obvious in the children with autism spectrum disorders, but not seen in the typically developing children. Because of these false responses, the Reactive Empathy scores of some of the children with autism spectrum disorders were below 51%. It was hypothesized that there were two factors that might explain these false responses: lower social

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motivation and the difficulty of using language in social situations.

In this regard, it should be pointed out that some of the children with autism spectrum disorders achieved Reactive Empathy scores at the same level as or higher than the typically developing children. It is possible that the higher scorers among the children with autism spectrum disorders are those with higher general intelligence.

Future research investigating the relation between characteristics of empathy and cognitive features should use a larger sample. In addition, more detailed and qualitative analysis of the content of the Reactive Empathy responses should be done, because some of the higher scoring children with autism spectrum disorders occasionally gave stereotyped responses (e.g., “Are you all right?” was their only answer in every negative situation).

The present research found that the children with high-functioning autism spectrum disorders were able to perform as well as typically developing children on Parallel Empathy tasks, but they had more difficulty on Reactive Empathy tasks, compared with typically developing children. We propose that children with autism spectrum disorders show a characteristic empathic reaction from the directional point of view in empathy. It is thought that the difficulty of positive action toward their friends by children with autism spectrum disorders relates closely to their infrequent initiation of spontaneous communication (Bauminger et al., 2003), and their difficulty with non-verbal expressions of positive affection, or interaction and cooperation in dyadic play. That is to say, it is hypothesized that friendship cannot be fully facilitated in children with autism spectrum disorders who have inadequate prosocial behavior toward their friends because of their weak Reactive Empathy. On the other hand, it might be important to note that self-directed parallel empathy was seen not only in the typically developing children but also in the children with autism spectrum disorders.

It has been suggested that children with autism spectrum disorders can recognize and share the affective states of their friends on at least the four basic types of affection. Though positive emotional actions toward their friends are rare in children with autism spectrum disorders, they might be able to have the same affection with their friends in a parallel manner. This suggestion supports Bauminger et al.’s (2003) finding that children with autism spectrum disorders could spend a long time with their friends very calmly in parallel play.

The present study cannot analyze any further problems. The occurrence of parallel empathy and reactive empathy, and the relationship between them in children with autism spectrum disorders, are tasks for future research.

Some findings of neuropsychological research on empathy in children with autism spectrum disorders are noteworthy. Decety and Meyer (2008) proposed a brain-function model of empathy that may explain the difference between sharing affection and expressing affection to another person. They suggested that children with autism spectrum disorders may use up their cognitive resources dealing with their own emotional regulation, and therefore fail to use them for

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empathic action toward other people. The hypothesis has been proposed that the brain area that relates to affection is related to the area that relates to executive function, including self-regulation.

In future research, more detailed studies of empathy should include interventions. It is important to support children with autism spectrum disorders who have difficulty in constructing friendships on the basis of empathic relationship. Supporting methods, such as small group activities and peer support for promoting and developing friendships, have been proposed. It is also necessary to perform a detailed assessment of individual characteristics of empathy, prior to starting support for the friendships of children with autism spectrum disorders, in order to construct mature interpersonal relationships.

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References

- Asakawa, K. & Matsuoka, S. (1987) A developmental study of empathy in childhood. *Japanese Journal of Educational Psychology*, 35, 231–240. (in Japanese)
- Attwood, T. (2006) *The complete guide to Asperger's syndrome*. Jessica Kingsley Publishers, London, UK, 55–94.
- Baron-Cohen, S. & Wheelwright, S. (2003) The friendship questionnaire: An investigation of adults with Asperger's syndrome or high-functioning autism, and normal sex differences. *Journal of Autism and Developmental Disorders*, 33, 509–517.
- Baron-Cohen, S. & Wheelwright, S. (2004) The empathy quotient: An investigation of adults with Asperger's syndrome or high functioning autism, and normal sex differences. *Journal of Autism and Developmental Disorders*, 34, 163–175.
- Bauminger, N. & Kasari, C. (2000) Loneliness and friendship in high-functioning children with autism. *Child Development*, 71, 447–456.
- Bauminger, N., Shulman, C. & Agam, G. (2003) Peer interaction and loneliness in high-functioning children with autism. *Journal of Autism and Developmental Disorders*, 33, 489–507.
- Bauminger, N., Solomon, M., Aviezer, A., Heung, K., Gazit, L., Brown, J., & Rogers, S. J. (2008) Children with autism and their friends: A multidimensional study of friendship in high-functioning autism spectrum disorder. *Journal of Abnormal Child Psychology*, 36, 135–150.
- Carrington, S., Templeton, E., & Papinczak, T. (2003) Adolescents with Asperger syndrome and perceptions of friendship. *Focus on Autism and Other Developmental Disabilities*, 18, 211–218.
- Decety, J. & Meyer, M. (2008) From emotion resonance to empathic understanding: A

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- social developmental neuroscience account. *Development and Psychopathology*, 20, 1053–1080.
- Fujita, A. (2002) A review of the research on children's peer relations. *Bulletin of the Oita Prefectural College of Arts and Culture*, 40, 21–32. (in Japanese)
- Ito, R. (2006) Emotion sharing and communication in autistic spectrum disorder. *Japanese Journal of Autistic Spectrum*, 5, 9–16. (in Japanese)
- Kikuchi, A. (1984) Some issues on the development of prosocial behavior. *Annual Report of Educational Psychology in Japan*, 23, 118–127. (in Japanese)
- Kikuchi, T. (2002) Inferring of others' and owns' emotion from situational cues in autism. *Kyushu University Psychological Research*, 3, 107–112. (in Japanese)
- Moriwaki, A. & Fujino, H. (2010) Self-perception of the qualities of friendship in children with autism spectrum disorders. *Journal of Educational Research* (in the United Graduate School of Education, Tokyo Gakugei University), 21, 71–78. (in Japanese)
- Okada, R. (2008) Process of friendship formation and maintenance: Development of a motivational model. *Japanese Journal of Educational Psychology*, 56, 575–588. (in Japanese)
- Sawada, M. (1991) Consideration about definition and measurement in empathy development research. *Proceedings of the Annual Convention of the Japanese Association of Educational Psychology*, 33, 7–8. (in Japanese)
- Staub, E. (1987) Moral judgment, empathy, and other basic processes in altruism. Review of N. Eisenberg, *Altruistic emotion, cognition, and behavior*. *Contemporary Psychology*, 32, 748–749.
- Tanaka, A. & Iwatate, K. (2005) Influences of mother's speech related emotion on empathy in preschool children: Empathy with positive emotions. *Bulletin of Tokyo Gakugei University, Division of Educational Sciences*, 57, 63–70. (in Japanese)

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