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# Persuasion in Chinese School-Age Children With and Without Autism Spectrum Disorders

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**Abstract**

A large body of work has been done on the deficient conversation skills in autism spectrum disorders (ASD), yet little is known about their performance in other discourse types such as persuasion. The study investigated the persuasion skills in Chinese children with high-functioning ASD. Ten school-age Chinese children with ASD were gender, age, and language matched with 10 typically developing (TD) peers. Persuasion was evaluated via a role-play and a direct temptation task in terms of the participants' persistence and the persuasive strategies used. Results showed no difference in persistence between the two groups. The TD group performed significantly better in their persuasive strategies used. A significant main effect of task was observed where children in both groups performed better in the role-play than the direct temptation task. The present findings provide an account of why children with high-functioning ASD often experience unsuccessful persuasion outcomes in real-life situations.

**Keywords**

persuasion, autism spectrum disorders, Chinese, Cantonese, theory of mind, perspective-taking

Social communication deficits are a core feature of individuals with autism spectrum disorders (ASD), who often find it difficult to understand, respond to, and share others' feeling and perspectives (Howlin, 2004). Even for children and adolescents with high-functioning ASD who started talking early in life and have large vocabulary, they may also find social communication challenging (Volkmar et al., 1996). These individuals often give people an impression of being very capable in nonverbal tasks and yet always encounter communication breakdowns during interaction. Extensive works have been done in investigating the ability of children with ASD in managing an ordinary conversation, such as turn taking (e.g., Dobbinson, Perkins, & Boucher, 1998; Garcia-Perez, Lee, & Hobson, 2006), topic management (e.g., Dobbinson et al., 1998; Hale & Tager-Flusberg, 2005; Rutter & Schopler, 1987), and conversational repair (e.g., Volden, 2004). Moreover, the ability to use other types of discourse in children or adolescents with ASD has received more and more attention recently, for example, comprehension of irony (Martin & McDonald, 2004), appreciation of humor (Emerich, Creaghead, Grether, Murray, & Grasha, 2003; Reddy, William, & Vaughan, 2002), and comprehension of idiom (Norbury, 2004). It has been suggested that these communication challenges can be ascribed to the deficit in their development of theory of mind (ToM; Tager-Flusberg, 1999). ToM refers to the cognitive ability to read people's mental states, such as intentions, beliefs, and emotions, which lead to their actions or speech. Without a sound mental-state understanding and reasoning ability, managing discourse becomes a very complicated task for individuals with ASD. The present study aims to explore a different type of discourse, persuasion, in children with ASD and their typically developing (TD) peers.

## Persuasion

Persuasion is the process of directing a person toward the adoption of a belief, an attitude, or an idea via a communicative mean (Lakoff, 1982). Lakoff (1982) highlighted the discourse nature of persuasion: "(D)iscourse, then, is to be considered persuasive only in case it is nonreciprocal, and the intent to persuade is recognized explicitly as such by at least one party to the discourse" (p. 28). The persuader and

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the audience take turns in the interaction and both contribute to the conversation, yet their roles are not equal. In ordinary conversation, however, participants are equal partners and have equal conversational chances to ask questions and answer questions as other participants.

Persuasion has important social functions. People of all cultures and all ages use persuasion to regulate others to meet their needs or desires (Wilkinson, 1986). Bartsch, Wright, and Estes (2010) suggested that even during infancy, crying to get others' attention can be considered as a primitive form of persuasion. As children grow older, there would be more persuasion goals they want to achieve. Mature individuals become more skillful to deal with complex persuasion situations by using different techniques or means (Rule, Bisanz, & Kohn, 1985). According to the Greek philosopher Aristotle, there are three *means* of persuasion, and they are called "rhetoric":

> Of the modes of persuasion furnished by the spoken word there are three kinds. The first kind depends on the personal character of the speaker; the second on putting the audience into a certain frame of mind; the third on the proof, or apparent proof, provided by the words of the speech itself. (Aristotle, Roberts, Bywater, & Aristotle, 1984, p. 7)

The first mean concerns the credibility or the authority of the persuader (i.e., the persuasion agent). If the audiences believe that the persuader is trustworthy, they are more likely to be persuaded by what he or she has to say. The second mean concerns the emotion of the audiences. If the persuader can provoke a supportive emotion from the audiences related to the issue, the emotion provoked may induce them to make a judgment desired by the persuader. The final mean relates to the use of logical arguments, as well as adequate grammar during persuasion. A logical argument provides information to convince the audience, and grammar facilitates the flow of information.

To achieve effective persuasion, the persuader therefore needs to not only construct logical reasons but also understand human characters and emotions. During the process of persuasion, the persuader makes the persuasion attempt and the audience may resist and try to cope with the attempt. Then the persuader has to evaluate audiences' mental state based on their responses to make the next attempt more effective. How the interaction evolves depends on each other's responses. The discourse is therefore a dyadic process that relies heavily on ToM.

## Development of Persuasion Skills and Theory of Mind

There are a number of studies investigating the acquisition of persuasion skills in TD children, and most of them can be traced back to late 1960s to 1980s. Clark and Delia (1976) investigated the persuasion ability of children aged from 7 to 15. Results revealed that older children were more likely to address the audience's desire and needs, and used a greater diversity of persuasive strategies when compared with younger children. For example, while younger children usually kept on using simple questions for request, older children could also modify their request into a more acceptable and polite form or provided more arguments to support themselves. In a subsequent study, Delia, Kline, and Burleson (1979) examined a wider age range of individuals, from 5 to 18 years old, and reported consistent results as Clark and Delia (1976). With increasing age, the children showed more adjustment to the perspectives of the audience. Older children were more able to state an advantage to the target audience, and anticipate and respond to counterarguments of the audience instead of just stating the argument from their own point of view (Delia et al., 1979). In addition, older children were more capable of adjusting their persuasive strategies according to the familiarity (Clark & Delia, 1976), age (Bragg, Ostrowski, & Finley, 1973), and authority of the audience (Piche, Rubin, & Michlin, 1978). Wess and Sachs (1991) also pointed out that older children tended to use more positive sanction (e.g., politeness, bargaining, and offers of favors), and reduce the use of assertion (e.g., strong verbal assertions to achieve what they want). Nippold (1994) summarized the sophisticated persuasion features exhibited by typical school-age children when compared with the peers with language learning problems. These included greater use of polite forms, better anticipation and responses to persuasive audience's counterarguments, fewer use of negative strategies such as begging and nagging, and inclusion of certain advantages to the audiences on their compliance. Flavell, Botkin, Fry, Wright, and Jarvis (1968) suggested that this kind of behavior would promise a greater possibility of persuasion success.

Bartsch and London (2000) related persuasion with ToM. They studied three groups of children of different grade levels (preschool, Grade 3, and Grade 6) to examine whether they could make use of explicit belief information in selecting their persuasion arguments. Results found that for preschoolers, even if they passed the first-order ToM or false-belief (FB) task, they were still not very capable of choosing a proper argument to address a listener's belief. In other words, even with the acquired belief concept, they failed to consider listeners' mental states to aim for a higher successful possibility in persuasive discourse. It was suggested that children would need a higher order ToM to understand and address listeners' concern so as to achieve greater persuasion success. In a recent study, Slaughter, Peterson, and Moore (2013) examined the association between the number of persuasive arguments and ToM skills in 63 children aged between 3 and 8 years by including a higher order ToM task. After partialing out the effect

**Table 1.** Summary of Participants' Information.

| | *M* age (*SD*) (year) | Age range (year) | *M* language scores (*SD*) | Range of language scores |
|---|---|---|---|---|
| ASD (*n* = 10) | 9.5 (1.81) | 7.3 to 11.7 | 61.5 (8.86) | 51–78 |
| TD (*n* = 10) | 9.3 (1.16) | 7.8 to 11.3 | 62.9 (8.25) | 49–76 |

*Note.* ASD = autism spectrum disorders; TD = typically developing.

of age and verbal ability, Slaughter et al. reported a significant correlation between the total amount of persuasive arguments and total FB scores including both basic and advanced FB tasks. Sato and Wakebe (2012) also investigated the relationship between Japanese-speaking children's ability to understand audiences' mental states and the use of effective responses to the audiences' opposition in a persuasion task. They found that children who cannot provide effective responses were likely to fail in reading the audience's mental state. These findings suggested that understanding another person's mental states is a key factor of effective persuasion, highlighting the role of ToM in persuasion.

The present study aimed to explore whether children with high-functioning ASD demonstrated difficulties in persuasion when compared with TD children. Given that individuals with ASD were widely found to have deficits in understanding mental states, they would also have a difficulty in developing persuasion skills. This difficulty is generally consistent to the observation that figurative language comprehension is challenging to individuals with ASD. Happé (1994) developed the *Strange Stories* test to examine more advanced ToM skills through processing of figurative languages. Each story describes an event that ends with a person giving a remark that is literally not true. These nonliteral languages included lie, white lie, joke, pretend, misunderstanding, appearance/reality, figure of speech, irony, forgetting, double bluff, contrary emotions, as well as persuasion. Happé (1994) presented an overall summary of the comprehension of these nonliteral languages and reported that even individuals with ASD who were very high functioning still exhibited problems in some of this nonliteral language interpretation. Individuals with ASD are also impaired in their discourse abilities, especially the ability to respond adequately to questions and comments (Capps, Kehres, & Sigman, 1998). This difficulty would also contribute to a deficit in persuasion. However, to our knowledge, there is no research on persuasion skills in individuals with ASD yet.

Previous studies suggest that as persuasion skills become more mature, children not only demonstrate more advanced persuasive strategies, but also show persistence in their persuasion (Clark & Delia, 1976; Wess & Sachs, 1991). These two dimensions, persistence and level of persuasive strategies, were thus used as the measures of persuasive skills in the present study. It was hypothesized that children with high-functioning ASD were more likely to give up and used lower level persuasive strategies in their persuasion attempts than children with TD.

## Method

### *Participants*

All children were recruited in Hong Kong. The participants should have normal visual acuity (with or without correction) and no hearing impairment according to the teachers' and parents' verbal report. Wess and Sachs (1991) suggested that language sophistication and gender would affect persuasion performances. Therefore besides age, children's language skills and gender were taken into account in participant recruitment. Among the various language skills, grammatical ability was used as a matching variable as the command of grammar of the persuader could influence persuasion outcomes (Hardwick, 2006). Table 1 summarizes the participants' characteristics.

*ASD group.* Ten Cantonese-speaking children with high-functioning ASD, seven boys and three girls, aged 6 to 12 were recruited through a parent association and non-governmental organizations for children with ASD in Hong Kong. All the participants were diagnosed with either autism with IQ scores higher than 85 using the *Hong Kong Wechsler Intelligence Scales for Children* (Psychological Corporation, 1981) or Asperger syndrome by a pediatrician or a clinical psychologist in a government setting, either in public hospitals or child assessment centers. During the time of testing, the diagnostic criteria of ASD stated in *Diagnostic and Statistical Manual of Mental Disorders* (4th ed., text rev.; *DSM-IV-TR*; American Psychiatric Association, 2000) and International Classification of Disease (ICD-10; World Health Organization, 2008) were used. All the children studied in mainstream primary schools. These children shared the same curriculum as their typical peers and were supported by special educational service such as speech therapy. The grammar subtest in the *Hong Kong Cantonese Oral Language Assessment Scale* (HKCOLAS, T'sou et al., 2006), which is a norm-referenced language test for diagnosing Cantonese-speaking children with language disorders. A score in the grammar subtest for each participant in the ASD group was calculated for matching.

*TD group.* Ten Cantonese-speaking children with typical development were matched with the 10 children with ASD according to their age, gender, and grammatical ability in the grammar subtest of HKCOLAS. All the children in the TD group were recruited from a tutorial center and mainstream schools in Hong Kong. Results of *t* tests revealed no significant difference of age and language scores between the two groups.

## ToM Skills of Participants

To ensure that the typical group showed appropriate ToM skills, the children were screened for two FB tasks. The first-order ToM task included three sub-tasks: the first two were a "location-change" task modified based on the "Sally–Ann task" developed by Baron-Cohen, Leslie, and Frith (1985), and the third one was an "unexpected content" task modified based on the "Smarties task" developed by Perner, Frith, Leslie, and Leekam (1989). The second-order ToM task was modified based on the "ice-cream van task" developed by Perner and Wimmer (1985). All the modifications took into account the cultural factors in Hong Kong. For example, although the "Smarties" chocolate is available locally in Hong Kong, it is not as popular as other snacks. So the "Smarties" tube was replaced by a more common biscuit box in the present study. Similarly, ice-cream vans are not very common in Hong Kong. Another story that also required second-order ToM was constructed. The children in the TD group passed both the first- and second-order ToM tasks. In comparison, all the children in the ASD group passed the first-order ToM tasks but failed the second-order task.

## Experimental Design and Dependent Variables

The present study used a matched-group design. Persuasion skills were examined through two tasks: a role-play task and a direct temptation task. The role-play task required participants to persuade the experimenter acting the mother to let him or her buy a cat. It was suggested that using role-play, which simulated a daily situation, can prompt the optimal responses from participants (Burke & Clark, 1982). The direct temptation task required a participant to persuade the experimenter to let him or her play games on an iPod that the experimenter was playing with. Before the two experimental persuasion tasks, one short trial scene of role-play was first carried out to familiarize the participants with the task requirements.

In all the trials, the experimenter refused the participants' requests based on the method suggested by Wess and Sachs (1991) with the following reasons: (a) simple direct refusal, (b) lack of control on the part of experimenter, (c) showing worry, (d) statement of punishment, and (e) showing annoyance, to prompt for more persuasive responses from the participants. The scripts of refusals for the two experimental tasks are given in Appendix A. The presentation order of the rejecting reasons was the same across participants in the tasks. When all five refusals were over, the experimenter complied with the participants, and the participants were given reinforcement. Sometimes, children may give up in the middle of tasks, for example, stopping the conversation and shifting to another activity or indicating explicitly that they compromised on the experimenter's suggestions. If this happened in the middle of the task, that persuasion task was concluded. The sessions were audio-recorded for later analysis.

## Coding and Analysis

Participants' performance in the persuasion task was analyzed based on two aspects, their persistence and the level of persuasion strategies (see Table 2) .

*Persistence.* Persistence of persuasion depended on which stage the participants gave up in the persuasion tasks. If the participants gave up after the first refusal was given, they would get the minimum score of 1. If the participants could persist in persuasion after all the five refusals given, they would get the maximum score of 6 for each persuasion task. An average persistence score of the two tasks was calculated.

*Level of persuasive strategies.* Persuasive strategies were set into four levels based on Clark and Delia (1976) and the characteristics of sophisticated persuasive strategies used by school-age children as summarized in Nippold (1994). The lowest level of persuasive strategies (Level 0) includes those responses that did not involve any intention to persuade the audience or include a statement that probably results in irreversible refusal by the audience. Level 1 strategy involves a statement of request or indication of the child's desire without any elaboration. Level 2 strategy includes more elaboration about the child's personal needs for the audience's consideration or an elaboration that sounds slightly more acceptable. The highest level strategy includes a statement that addresses the potential concerns of the audience or indicates advantages to the audience.

Each response of the participants was coded as one of these four levels with a corresponding score. For example, a response representing a Level 0 strategy would be scored 0 while a Level 3 strategy would be scored 3. The possible maximum score for each response for each refusal turn was 3, and the possible maximum score for this dimension was 30. An average score of all the responses was calculated for each participant to indicate his or her average level of persuasive strategies.

## Reliability

To determine the inter-rater reliability for the coding of the level of persuasive strategies used, 50% of the data were randomly selected and rescored by another rater who was a

**Table 2.** Coding for Different Levels of Persuasion Strategies.

| Level | Description | Examples |
|---|---|---|
| 0 | • An agreement to the experimenter's argument or compromising<br>• No statement of request at all<br>• A negative comment or an impolite command | "You are so mean!"<br>"I see. It is very delicate." |
| 1 | • Nagging or begging<br>• A statement about the child's request or his or her desire without any elaboration<br>• A statement about general principles or social rules that appear to be appealing but actually not | "I want to have a go."<br>"I really want to play with it."<br>"Please let me have a go."<br>"Good children always share and so you should lend it to me to play with." |
| 2 | • A statement of request indicating a child's personal needs<br>• An elaborated argument that is more acceptable to the experiment | "I have never played with it before."<br>"Can I borrow it for 15 min?" |
| 3 | • An argument that addressed the experimenter's concerns or a polite counterargument to experimenter's concern<br>• A statement about certain favorable outcomes or advantages to the experimenter. | "If you lend it to me, I will treat you candies."<br>"Don't worry. I will play with it with care and will not damage it." |

final-year undergraduate student of the Speech-Pathology Program after a detailed explanation of the whole coding system. This rater was also blind to the group membership of the children. A correlation coefficient was calculated between the two sets of scores given by the two raters. A high inter-rater reliability was obtained for the level of persuasive strategies used ($r = .91$).

## Results

Descriptive statistics of the two tasks were computed. Mixed-effect analyses of variance (ANOVAs) were conducted to examine the effects of group (ASD vs. TD) and task (role-play vs. direct temptation) on the measures of persistence and level of persuasion strategies.

### *Persistence*

The two groups showed high and similar level of persistence in the two persuasion tasks. Recall that the two persuasion tasks in this study were set to have five refusals only, and the maximum number of trial for persistence would be 6. The ASD group had a mean score of 4.60 ($SD = 1.63$) while the TD group had 5.50 ($SD = 0.58$). Half of the participants (10/20) persisted until all refusals presented in the tasks suggesting a ceiling effect.

Results of the mixed-effect model ANOVA showed that there was no significant interaction effect of group and task, $F(1, 18) = 0.75$, $p = .398$. The main effects of task and group were not significant. This revealed that both groups of children persisted in a similar degree in the two persuasion tasks.

### *Level of Persuasive Strategies*

The mean scores of different levels of persuasive strategies used by the two groups are also presented in Table 3, and the breakdown of different levels used is shown in Table 4. The ASD group obtained a mean score lower than 2 in both tasks whereas the TD group obtained a mean score higher than 2 (see Table 3).

The patterns in the level of persuasive strategies used by the two groups varied. On average, the ASD group predominantly used Level 1 (37.2%) and Level 2 (29.8%) strategies while the TD group mainly used Level 3 strategies (51.8%). Moreover, the TD group never used the Level 0 strategy while 18.1% of the responses by the ASD group belonged to that level. Examples of persuasive strategies produced by a TD child and a child with ASD can be found in Appendix B.

Results of the mixed-effect ANOVA examining the effects of group and task on the mean level of persuasive strategies showed that there was no significant interaction effect. Unlike the measure of persistence, the main effects of group and task on the level of persuasion strategies were both significant: group, $F(1, 18) = 19.84$, $p < .001$; task, $F(1, 18) = 5.76$, $p = .027$. For the task effect, children in both groups performed significantly better in the role-play task than the direct temptation task.

## Discussion

The present study aimed to compare the persuasion skills in children with ASD with their age-, gender-, and language-matched TD peers. Results found that both groups showed a similar level of persistence in the persuasion tasks and the TD group showed significantly more advanced persuasive strategies than the ASD group in general.

### *Persistence*

Both groups performed similarly on the measure of persistence. There are two possible reasons explaining the null effect. To persuade someone, one has to first understand that his or her persuasion attempts have a probability to influence

**Table 3.** Mean Performance of ASD and TD Groups in the Two Persuasion Tasks.

| Task | Measures | ASD ($n$ = 10) | TD ($n$ = 10) |
|---|---|---|---|
| Role-play | Persistence | 4.70 (1.70) | 5.40 (0.70) |
| | Level of persuasive strategies | 1.75 (0.54) | 2.47 (0.56) |
| Direct temptation | Persistence | 4.50 (1.84) | 5.60 (0.52) |
| | Level of persuasive strategies | 1.41 (0.59) | 2.15 (0.23) |
| Overall | Persistence | 4.60 (1.63) | 5.50 (0.58) |
| | Level of persuasive strategies | 1.58 (0.49) | 2.38 (0.29) |

*Note.* ASD = autism spectrum disorders; TD = typically developing.

**Table 4.** Frequency and Percentage of Different Levels of Persuasive Strategies Used.

| | Role-play | | Direct temptation | | Average | |
|---|---|---|---|---|---|---|
| Level | ASD | TD | ASD | TD | ASD | TD |
| 0 | 10 (21.7%) | 0 | 7 (14.6%) | 0 | 17 (18.1%) | 0 |
| 1 | 17 (37.0%) | 12 (23.1%) | 18 (34.6%) | 18 (29.0%) | 35 (37.2%) | 30 (26.3%) |
| 2 | 12 (26.1%) | 10 (22.2%) | 16 (30.8%) | 15 (24.2%) | 28 (29.8%) | 25 (21.9%) |
| 3 | 7 (15.2%) | 30 (66.7%) | 7 (13.5%) | 29 (46.8%) | 14 (14.9%) | 59 (51.8%) |

*Note.* ASD = autism spectrum disorders; TD = typically developing.

a person's belief or behavior. The persuader therefore would initiate or persist in persuasion. Besides, desire is another important factor in determining persistence in persuasion (Bartsch et al., 2010). Once the persuader understands this possibility of successful persuasion, persistence in persuasion then may mainly depend on the persuader's desire, instead of the ability to read the audience's mind. Therefore, even children with ASD who were high functioning and possessed adequate linguistic skills persisted in the two persuasion tasks as much as the TD children.

Another possible reason is the ceiling effect observed in this task. The task was designed in a way to comply with the participants' desire after five refusals. As such, it was not clear whether the participants who kept persuading for five turns would continue, and if so, how further they would go. That means, the task might not really reveal the participants' ability in actual situations, in which refusals would continue for more than the five refusal turns set in the experimental task. Therefore, it might be a weakness in the task design that failed to capture the difference in their ability and so masked the effect of the group difference.

## *Level of Persuasive Strategies*

The TD children in the present study showed more sophisticated persuasive strategies. The ASD group showed persuasive strategies lower than Level 2, which may indicate that most of their strategies did not include any statement or argument of request either from their own perspective or the experimenter's perspective. The TD group, however, performed at a level higher than Level 2 implying that they generally used persuasive strategies that addressed the experimenter's concern or provided adequate counterarguments. Persuasion is an interactive process. A persuader needs to predict how an audience copes with the persuasion attempt so that the persuader can prepare for the next persuasion attempt, such as providing counterarguments (Friestad & Wright, 1994). Therefore, the formation of an advanced level of persuasion attempts actually depends on the prediction of the audience's coping behavior. For example, a child may have to take into consideration second-order beliefs (e.g., a child may think that "The experimenter is refusing me because she knows that I really want her to lend me the iPod, so I have to think of a way to change her mind like giving her some advantages"). In other words, second-order ToM may be necessary as the persuader needs to understand the audience's belief toward the persuader's belief so as to identify the obstacle that prevents the persuader from complying. First-order ToM alone may thus not be sufficient for the persuader to formulate a more advanced level of persuasive strategies that are specific to the audience's concern that make the audience resist complying. This may be a reason why children with ASD in this study showed lower level persuasive strategies. However, further studies with children showing different ToM profiles can be conducted to test this speculation. It is worth pointing out that about 18.1% of the strategies used by the ASD group belonged to Level 0, while the TD group did not use any Level 0 strategies. Most of the Level 0 strategies produced by the ASD group consisted of negative comments. Although the TD group may not be fully effective in invoking the experimenter's emotion to induce his

or her compromise, they rarely produced destructive responses. The tendency of using negative comments in the ASD group could be ascribed to their difficulty in reading or taking into account others' emotional issues (Happé, 1994), which can have a direct impact on the success of their persuasion attempts.

Finally, a post hoc observation in the present study was the significant task effect on children's level of persuasion strategies: Children in both groups performed better in the role-play task than the direct temptation task. With reference to the task nature, the direct temptation task was closer to an everyday life persuasion in which all the children in the present study were very eager to play the iPod at that moment. As in the role-play task, although children understood the situation and demonstrated the pretense in the role-play, not all were as motivated as when they were requested to persuade the experimenter to lend them the iPod. These two tasks appeared to represent a contrast between a real-life situation and a laboratory task. Some children, including those who succeeded in the role-play task, however, still encountered certain difficulties in other real-life persuasion situations. This may not be due to their lack of mentalizing skills but for other reasons such as affective influence. In this specific direct temptation task, children's desire and urge to play with the iPod may induce certain impulsive behaviors that may override their cognitive control in planning for effective responses to the experimenter's oppositions. This finding highlighted the potential difference between competence and performance in children who are susceptible to affective states when undertaking high-level cognitive tasks such as persuasion. Such an account of affective involvement may be one of the reasons why some children can pass laboratory-based mentalizing tasks but still encounter difficulties in real-life social situations.

## Implications and Future Studies

A small number of studies in the literature explored the characteristics manifested by this clinical population in advanced discourses (e.g., Hand, 2012). The present study illustrated a preliminary picture about the persuasion performance of children with ASD when compared with their peers. This relationship may, to some extent, elucidate why even though they possess good structural grammatical skills as their TD peers, they are not ready to use the skills in persuading people. The manifestation of persuasion strategies described in the present study underlined the fact that abstract and qualitative differences demonstrated in the two groups can be operationalized to become quantifiable. These quantitative measures may in turn provide more tangible directions to assessment and intervention (Nippold, 1994). In addition, the current study indicated that the task nature may also affect children's performance. It is important to consider more authentic tasks to allow generalization beyond experimental situations.

There are still many aspects of persuasion communication in ASD that would need further investigation. For example, nonverbal and paralinguistic behaviors during persuasion were not investigated in this study. As a post hoc observation, it was found that the two groups differed a lot in their ways of presentation in their persuasion attempts such as tone and loudness. The tone used by children with ASD usually sounded relatively less pleasant or expressed an impression of being blunt. Future studies can also take into account these paralinguistic yet influential features during persuasion. Furthermore, some persuasive strategies may show the similar level of perspective-taking but lead to different outcomes. For example, bribing and threatening demonstrate a very high level of perspective-taking skills, but bribing has more positive and pleasant manifestations while threatening has negative and hostile manifestations, which may also indicate different persuasion power. Future studies can consider the outcomes of persuasion attempts using different strategies. Finally, the sample size of this study was small. Only 10 pairs of participants could be formed given the difficulties in matching the variables of age, gender, and language ability of the participants. The inclusion of a larger sample may lead to a more robust pattern.

## Appendix A

**Table A1.** Script for the Refusal in the Two Persuasion Tasks.

| | Task 1: Role-play (buying a cat) | Task 2: Direct temptation (borrowing the iPod) |
|---|---|---|
| (1) Simple refusal | "No." | "No." |
| (2) Showing a lack of control on the part of experimenter | "I have no money to buy it." | "This iPod is not mine. I cannot lend it to other people without asking for permission from the owner." |
| (3) Showing worries | "Keeping a cat will make the home become dirty." | "It is very delicate." |
| (4) Showing a doubt or a blame | "How can you take care of a cat when you cannot even take care of yourself well?" | "I will not lend it to you as you also did not lend me your toys before." |
| (5) Showing annoyed | "You are so annoying." | "You are so annoying." |

## Appendix B

**Table B1.** An Example by a Child With ASD in the Persuasion Tasks.

| Transcription | | Persuasive strategies |
|---|---|---|
| Task 1: Buying a cat | | |
| C: | Buy me a cat. | An unelaborated request (Level 1) |
| E: | No | |
| C: | Buy it please. | An unelaborated request (Level 1) |
| E: | I have no money to buy it. | |
| C: | You have to buy it! | An impolite command (Level 0) |
| E: | Keeping a cat will make the home become dirty. | |
| C: | Yes. It can be very smelly. | An agreement but no counterargument (Level 0) |
| E: | How can you take care of a cat when you cannot even take care of yourself well? | |
| C: | I have never tried before. | An elaboration of personal needs (Level 2) |
| E: | You are so annoying. | |
| C: | You are even more annoying! | A negative comment (Level 0) |
| Task 2: Borrowing the iPod | | |
| C: | Can you lend it to me? | An unelaborated request (Level 1) |
| E: | No. | |
| C: | You are too mean. | A negative comment (Level 0) |
| E: | This iPod is not mine. I cannot lend it to other people without asking for permission from the owner. | |
| C: | Can you lend it to me? | An unelaborated request (Level 1) |
| E: | It is very delicate. | |
| C: | I will take good care of it when I am playing with it. | A counterargument (Level 3) |
| E: | I will not lend it to you as you also did not lend me your toys before. | |
| C: | I will lend the toys to you in the future. | A counterargument (Level 3) |
| E: | You are so annoying. | |
| C: | You are too mean. | A negative comment (Level 0) |

*Note.* ASD = autism spectrum disorders; C = child; E = experimenter.

**Table B2.** An Example by a TD Child in the Persuasion Tasks.

| Transcription | | Persuasive strategies |
|---|---|---|
| Task 1: Buying a cat | | |
| C: | Can you please buy me a cat? I have never kept a pet before, so I want to keep a cat. | A simple request (Level 1)<br>An elaboration of personal needs (Level 2) |
| E: | No | |
| C: | I will work very hard for good grades. | A statement of possible consequences specific to the target's role of mother (Level 3) |
| E: | I have no money to buy it. | |
| C: | I will use the pocket money that I saved to buy. | A counterargument (Level 3) |
| E: | Keeping a cat will make the home become dirty. | |
| C: | I can help him to bath every day. | A counterargument (Level 3) |
| E: | How can you take care of a cat when you cannot even take care of yourself well? | |
| C: | I will become more responsible after I learn to keep a pet. | A counterargument (Level 3) |
| E: | You are so annoying. | |
| C: | Please buy it for me. | An unelaborated request (Level 1) |
| Task 2: Borrowing the iPod | | |
| C: | Can you lend it to me? | An unelaborated request (Level 1) |
| E: | No. | |
| C: | Please lend it to me. I will return it to you within 15 min. | A statement which is more acceptable to the audience (Level 2) |
| E: | This iPod is not mine. I cannot lend it to other people without asking for permission from the owner. | |
| C: | You help me to tell him that I want to play with it very much and I could lend some toys to him. | A statement addressing the audience's concerns (Level 3)<br>A statement indicating possible consequences specific to the owner (Level 3) |
| E: | It is very delicate. | |
| P: | I am good at that so I will not damage it. | A counterargument (Level 3) |
| E: | I will not lend it to you as you also did not lend me your toys before. | |
| C: | I will lend it to you in the future. | A counterargument (Level 3) |
| E: | You are so annoying. | |
| C: | Please lend it to me. | An unelaborated request (Level 1) |

*Note.* TD = typically developing; C = child; E = experimenter.

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