



Using a social story intervention to decrease inappropriate behavior of preschool children with autism

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ABSTRACT

This research investigated the inappropriate behavior of preschool children with autism in a classroom and examined the effectiveness of the use of social stories to decrease inappropriate autistic behavior. An A-B-A-B single subject design was used across the five participants selected for the study. Investigating the problematic social skills and developing a social story intervention for the preschool autistic children was completed, followed by an examination of the effectiveness of the social story intervention. Ten common problematic social skills among the autistic children in preschool were identified—walking around, making loud noises, not sharing their toys with others, showing frustration when feeling unsatisfied, having no patience, not putting toys away when finished, taking other people's belongings without permission, not knowing how to greet others, destroying things when feeling frustrated, and giving a hug to other people at inappropriate times. It was found that the social story intervention helped to decrease inappropriate behavior in children with autism. The social story intervention consisted of five social story books and five e-books (one story per child) using a single subject design with an A-B-A-B pattern. The autistic children preferred social stories from the hardcopy books compared with stories from the e-books. A fourth stage time trial was used over 6 weeks, five times per week, for a total of 30 times. The findings suggested that the use of properly constructed social stories can be effective in decreasing the inappropriate behavior of children with autism. However, each story intervention should be applied with caution because of individual differences between children. The social story intervention should be designed only for autistic children who exhibit specific inappropriate social behavior.

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Introduction

According to the National Education Act of B.E. 2542 (1999), Chapter 2: Educational Rights and Duties, Section 10, persons with physical, mental, intellectual, emotional, social, communication, and learning deficiencies, those with physical disabilities, the crippled, those unable to support themselves, or the destitute or disadvantaged, shall have the right and opportunities to receive specially

provided basic education. Furthermore, education for the disabled shall be provided free of charge from birth or at first diagnosis. These persons shall have the right to access the facilities, media, services, and other forms of educational aid in conformity with the criteria and procedures stipulated in the ministerial regulations (Department of Education Ministry of Education, 2006). The goals of “education for special needs” were to provide free, appropriate public education for all students with disabilities in Thailand, and to enable students with disabilities to be able to benefit from educational opportunities (Ministry of Education, 2002). Thus, special education in Thailand was

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provided for gifted children, children with learning disabilities, and children with autism (Srisuruk, n.d.). The idea that special education services for students with severe disabilities, like students with autism, would take place in regular education classrooms is relatively new. The successful inclusion of students with autism in regular preschool classrooms or child care facilities requires a high level of commitment, support, and preparation by everyone involved (Ministry of Education, 2002).

An autistic child is classified as gifted and has developmental disabilities in three areas—social, communication, and behavior (Sarnattana, 2006). It has been revealed that medical treatments impaired the development of children with autism. As a result of a malfunction or failure of the brain, an autistic child develops differently from a normal child. An autistic child is unable to recognize and communicate in an uncontained environment. Generally, he/she is isolated in a world of his/her own, lacking the ability to communicate with other people and lacking imagination and cognitive ability (Powers, 2000).

An autistic child is able to enhance his/her understanding toward his/her environments through learning social skills. A child can adjust more easily to other people as he/she understands the emotions of others and properly identifies those emotions in a situation. Learning social skills also helps to lower some behavioral problems (Staley, 2001). Moreover, Swaine (2004) reported that good social skills are important for an autistic child because it helps him/her to develop social understanding. Without learning social skills, an autistic child cannot appropriately interpret others' behavior which leads to miscommunication and a lack of relationships with others. Thus, supporting the development of social understanding in an autistic child is necessary (Swaine, 2004).

The preceding issues led the researcher to study how to reduce unexpected behavior in autistic children. Using the social story is an effective teaching tool that can be used to develop social skills (Reynhout & Carter, 2006) and helps to reduce unexpected behavior. It also helps a child to recognize the environment, understand the people surrounding him/her, and to be able to appropriately interact with other people. Since good social skills are developed, such a child is more accepted in society (Gray & Garland, 1993). An autistic child needs to know and understand the various emotions as he/she interacts with other people. This helps the child to happily co-exist with others in society. Furthermore, it is necessary to develop training and guidance for parents, teachers, and related personnel to support an autistic child and to help the child to maintain appropriate social skills in the long term.

Social stories could help an autistic child to learn expected types of behavior by teaching specific component skills that can be chained together with a larger task. Social stories can be used for variety of purposes. Gray and Garland (1993) stated that numerous uses of social stories included: (a) explaining routines or changes in routines, (b) describing social situations without intimidating, (c) teaching academic skills, (d) teaching social skills, (e) training adaptive skills, and (f) dealing with difficult types of behavior, including emotional expression, aggression, or obsessive behavior (Gray, 2000).

Gray (2004) described six types of sentences that can be used to write social stories—descriptive, perspective, affirmative, directive, control, and cooperative—to explain abstract situations, often through the use of analogies. Briefly, descriptive sentences provide social rules governing the target situation and objective facts or events occurring. Perspective sentences describe other's thoughts or feelings associated with the target situation. Affirmative sentences emphasize a value underlying a particular fact (for example, taking care of friends is a good thing to do.). Directive sentences provide information about how to behave in the target situation. Control sentences consist of a description developed by the student to help retrieve important information in the target situation. Finally, cooperative sentences describe who will help the individual and how to succeed in the target situation. The story should be within the child's comprehension level and limited to the vocabulary and print size that are appropriate to the child's age and ability.

In addition, Gray (2000) reported that pictures in the social story are possible when they do not distract the child and do not restrict his/her ability to generalize the principle beyond the depicted situation.

The purpose of the current study was to investigate inappropriate types of behavior of preschool children with autism in a classroom and to examine the effect of social stories on children with autism to decrease their inappropriate behavior. The study provided specific instructions describing how social stories should be written; Gray (2004) gave guidelines for implementing social stories. The current study showed that using social stories was an effective teaching tool which develops social skills and helps reduce unexpected behavior. The study adds to the current literature by evaluating the extent to which social stories (books and electronic books) can effectively reduce inappropriate types of behavior of children with autism.

Methods

Research Design

This study employed an A-B-A-B single subject design consisting of four phases: baseline phase A₁ (no social story), intervention phase B₁ (social story read prior to observation session, then left students to access independently), baseline phase A₂ (no social story), and intervention phase B₂ (social story read prior to observation session, then left students to access independently and the teacher to review with the student).

Participants

Five children aged between 6 and 10 years with a diagnosis of autistic disorder (ASD) were selected from preschool classrooms. The participants were autistic children and had impairments in social skills, including inappropriate interactions with others and behavioral problems in social situations.

The criteria used to select the participants for this study were: (a) diagnosed with ASD, (b) aged between 6 and 10

years, (c) high functioning, (d) parent's consent, and (e) teachers' permission to participate in the study.

The first participant was an 8-year-old boy, Aea, whose target behavior was that he often ate without a spoon. He liked to use his fingers to pick up food. Sometimes he was moving around while eating. He was from a special education center. He was diagnosed as a high function autistic and had to be treated daily by a speech therapist and a muscle therapist. Apparently, he looked like a normal child. He had a cheerful smile when he was talking about something that was funny for him. However, he sometimes showed frustration without knowing the cause. He rarely spoke. He did not understand conversations with others, and often did not respond to a conversation with anyone. Sometimes he felt frustrated, frequently in the morning when he was away from his parents. Along the way to school on foot, when his parents dropped him off, he was crying. He often could not sit still and walked around. He walked across the classroom and went outside. In particular, the boy was walking out of line and refusing to stand for prayers. Sometimes he used a tone of voice, when singing or during prayers, that was inconsistent with other children. This behavior was physically obvious.

The second participant was a 7-year-old boy, Nut, whose target behavior was violence, which included hitting and biting a friend. This behavior often disrupted the activities of other students who were nearby and disrupted the teacher who attended to the behavior. According to his main teacher, his reading comprehension level was equivalent to an intermediate grade. He was well adjusted to school activities, and no challenging behaviors were observed. Nut was selected because he was diagnosed with autism, demonstrated at least first-grade reading skills, and was considered to prefer specific teachers.

The third participant was a 6-year-old boy, Leo, whose target behavior was not often sharing items with friends when he played. His brother was Nut, the second participant. Apparently, he looked like a normal child. When he played, he cheerfully smiled. He liked to draw pictures with crayons. Leo had a lot of crayons, markers, pencils, and color-magic pens that he took home. According to his main teacher, his conversation skills were good and he could respond to other people. Leo was an intelligent autistic child. He was able to tell a story in pictures. However, Leo did not like it when the teacher told him to share his things with friends.

The fourth participant was an 8-year-old boy, Nu, whose target behavior was inappropriate for greeting people. He liked not only to hug, but to jump up on people as well. Also, he sometimes pulled other people's hands. Psychometric reports indicated that he was functioning in the mild-to-moderate range of global disability. Nu was unable to participate in a conversation, and his speech was generally limited to two to three word utterances. He was able to follow basic instructions, but unable to attend to self-care needs independently. His academic skills included being able to read more than 300 sight words, writing simple sentences with prompting, and performing three-digit addition without renaming. Nu habitually tapped on many surfaces, including his own body, with a frequency/intensity that was noisy and disruptive. His teachers and

peers described this behavior as annoying and distracting. The teacher observed that Nu tapped whenever he was happy, that is, whenever any of his expectations associated with his daily routine were fulfilled.

The fifth participant was a 6-year-old boy, Max, whose targeted inappropriate behavior was licking his fingers. Licking the fingers is defined as the repetitive licking one or both hands, wiggling the fingers, palms parallel to any surface including the participant's own body. Max was a child who rarely spoke, and did not understand conversations with others, or did not often respond to conversations with anyone. He was able to repeat any languages that were spoken to him. Max would follow many verbal requests, indicating that he had receptive language skills, but would not initiate speech, beyond yelling "No" in protest while sticking his fingers in his ears. However, Max was an intelligent autistic child. He could count to 100 and could recognize approximately 100 vocabulary words. Max was selected because he was diagnosed with autism. According to his main teacher, his negative behavior had decreased. He usually licked his fingers when he met new situations.

Materials

This research study utilized two resources—books and electronic books. The social story used in the intervention followed the guidelines of Gray (2004), except for the inclusion of visual cues (pictures) and multiple pages, which are now considered common practice for social stories (Sansosti, Powell-Smith, & Kincaid, 2004). The social story contained one cover page and eight instructional pages. Each instructional page had one sentence per page with a colored picture (5.08 cm × 5.08 cm) at the center of the page above the sentence. Each child had a different story book.

Procedures

The research process occurred in three phases. The study of the problematic social skills using survey research methodology was performed in the first phase. The effectiveness of the experimental results using a single subject A-B-A-B design was subsequently investigated in the second phase. For the single subject A-B-A-B design, the social story intervention was created in two forms—books and electronic books—with five different stories (one story per child). A fourth stage time trial over 6 weeks, five times per week with a total of 30 times, was performed in the experiment mentioned above. Eventually, a study of the effectiveness of the social story intervention using survey research methodology to develop the social skills of children with autism was examined in the third phase.

Data Collection and Inter-rater Reliability

A 15-s cues partial interval recording system during 20-min daily observations was used to record the behavior of each participant over 6 weeks. In order to have inter-rater reliability, the researcher and an assistant researcher collected the observational data for each participating

child. The assistant researcher coded 80 percent of the observational data for reliability. Inter-rater reliability data were gathered 30 times per child during the study (once a week for 6 weeks), representing 80 percent of the observations. Agreements were calculated by dividing the number of intervals in which the observers agreed by the number of agreements plus disagreements and multiplying by 100. An inter-rater reliability coefficient of .80 was required between the coder. For Aea, Nut, Leo, and Max, the inter-rater reliability was 100 percent, but Nu's inter-rater reliability was 89 percent.

Social Validity

To evaluate the social validity of social story intervention, the Intervention Rating Profile (IRP-15) (Mathens, Witt, Elliot, & Darveaux, 1985) was used to assess the levels of teachers' satisfaction with the intervention and involved 15 items. Scores on the IRP-15 can range from 15 to 90, with higher scores indicating a greater acceptance level. Scores above 52.50 are acceptable (Von Brock & Elliot, 1987). Scores on the IRP-15 were well within the acceptable range for all participants. Specifically, the treatment acceptability score for Aea was 89, the score for Nut was 80, the score for Leo was 78, the score for Nu was 64, and the score for Max was 85.

Results

In the first phase, 10 problematic social skills were identified among five preschool autistic children, consisting of: walking around while the teacher is teaching, making loud noises, not sharing toys with others, being frustrated when feeling unsatisfied, not waiting for his/her

turn, not putting toys away after playing, picking up other's belongings without asking for a permission, not knowing how to say "Hello!" to other people, destroying things when getting emotional (angry), and hugging others at inappropriate times.

In the second phase, it was found that the social story intervention could decrease inappropriate behavior among autistic children. The present study results showed that following implementation of the social story, Aea, Nut, Leo, Nu, and Max demonstrated a significant reduction of targeted inappropriate behavior compared to the baseline performance. During the intervention (A_2), all five participants' percentage of inappropriate behavior indicated a slight decrease but remained low. As the baseline (B_1) continued, the percentage of inappropriate behavior for Aea, Nut, Nu, and Max showed a slight decrease, but remained low whereas Leo's percentage of inappropriate behavior indicated a slight increase. During story condition (intervention B_2), all participating autistic children's percentage of inappropriate behavior continued to occur at a low level. Overall, the maintenance data showed that during the intervention, the five participants demonstrated levels of inappropriate behavior that were significantly lower than their baseline performance. The results supported previous studies that found reductions in inappropriate behavior through the use of social stories (Kuttler, Myles, & Carlson, 1998).

In the third stage, it was found that each social story intervention could not be applied to all children with the same problematic social skills. Each had different characteristics. Therefore, the social story intervention should be designed for a specific child with specific social skills problems. Autistic children seemed to prefer social stories in book form to electronic books (Figures 1 and 2).



Figure 1 Social story books and E-books



Figure 2 Teacher and participant were reading the social story book

Figures 3–7 provide examples of the percentage change in one child-specific type of behavior during the study for each of the five children.

Discussion

The maintenance data showed that after the intervention performance, the five participants exhibited levels of inappropriate behavior significantly lower than their baseline performance. The results supported previous studies that found reductions in inappropriate behavior

through the use of social stories (Sansosti & Powell-Smith, 2008). The present study, therefore, was done to understand the effectiveness of social stories. For instance, this study demonstrated the potential benefits of using social story intervention as the sole intervention to decrease the inappropriate behavior of autistic children. A multiple-baseline experimental design was used in this study, while other studies on the effectiveness of social stories have used non-experimental designs plagued by threats to internal and external validity (Reynhout & Carter, 2006). The study also contributed additional empirical evidence

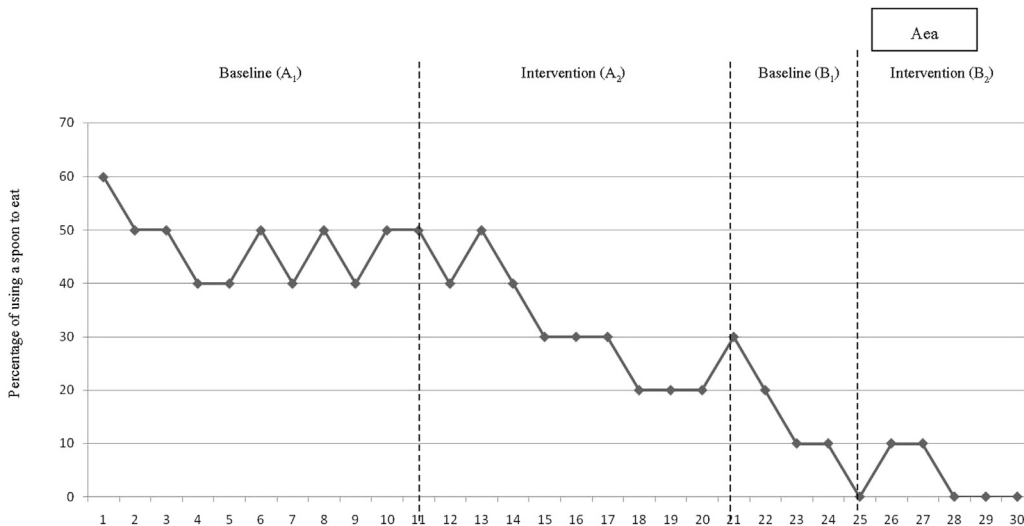


Figure 3 Duration of inappropriate use of a spoon to eat (first participant)

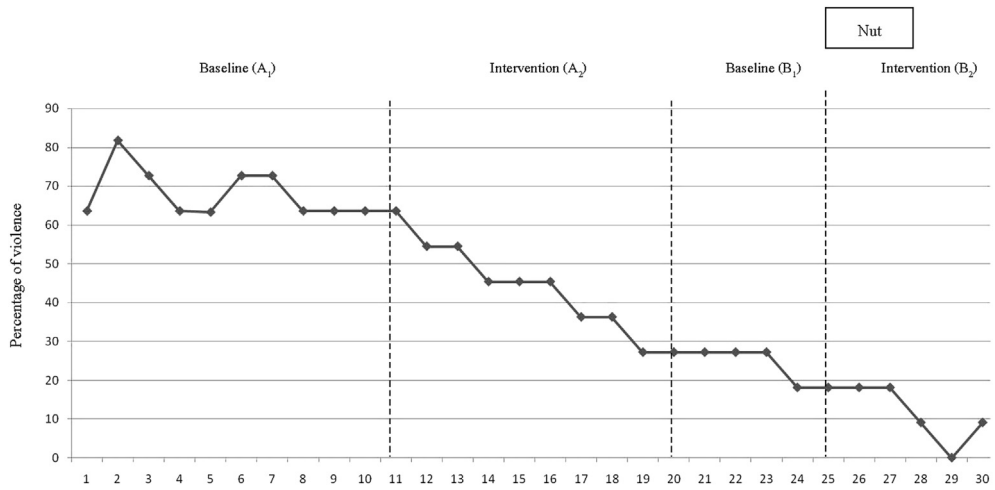


Figure 4 Duration of violence (second participant)

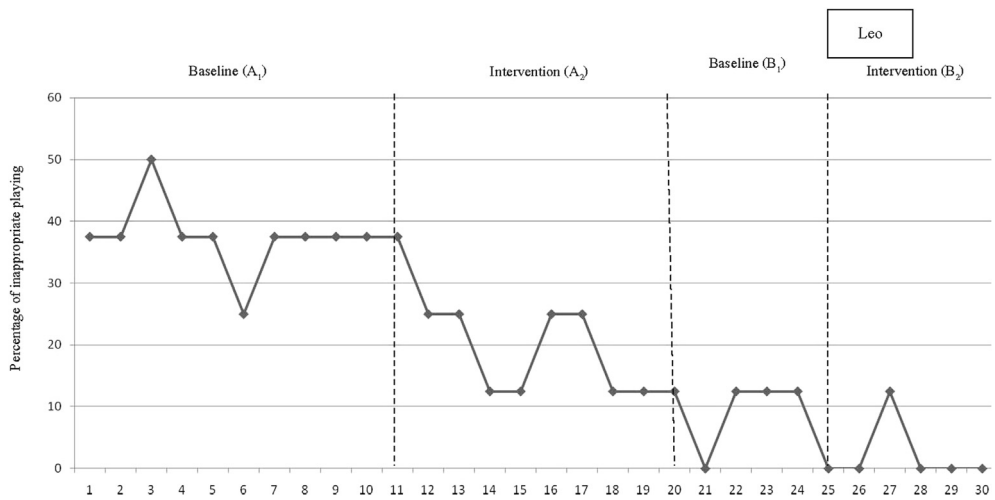


Figure 5 Duration of inappropriate play (third participant)

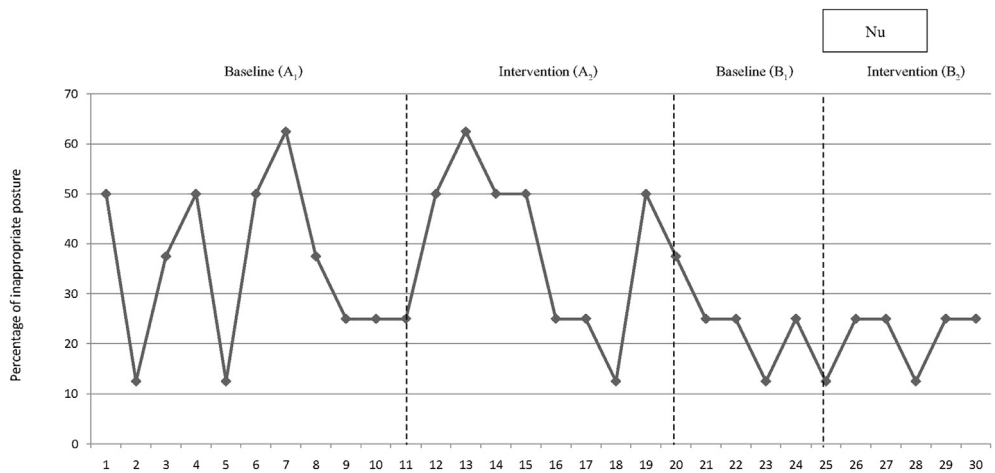


Figure 6 Duration of inappropriate posture (forth participant)

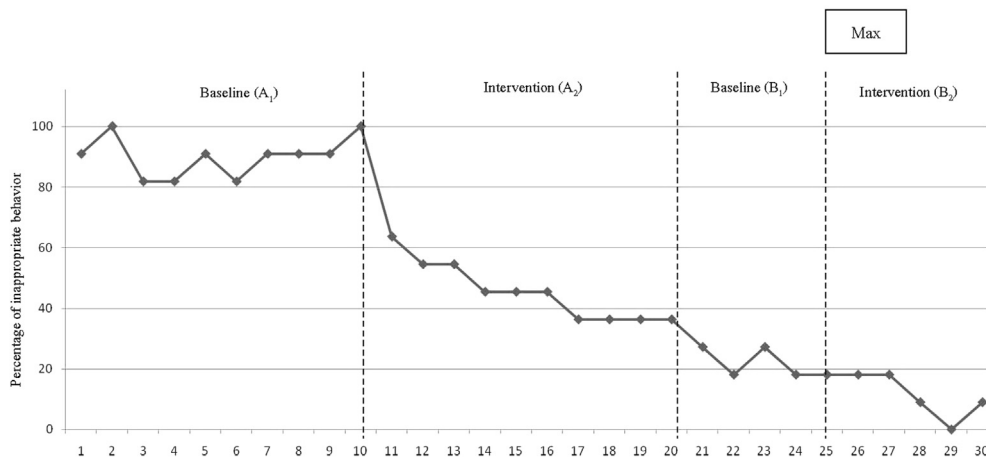


Figure 7 Duration of inappropriate behavior (fifth participant)

for research in the area of social story interventions for preschool autistic children. Although the previous applications of social story interventions have focused on children with mild to moderate autism, this study extended the application of the intervention to children who had exhibited more severe symptoms of autism but still had a higher level of communication skills. Additionally, teaching by using social stories is one of the teaching techniques using children's own experiences or stories. It improves social skills through guided sentences leading to the appropriate practices through reading activities. The activities can help children understand and learn to behave more appropriately and effectively in their classes. Involved persons can also integrate social-skill training for primary level students with autism into the teaching routine with regular students and teachers so that in the future the students with autism can learn and share with regular students in a social network.

Hence, future research should continue to focus on the investigation of the effects of social stories on children with different kinds of deficits to help identify groups of people who can benefit from the intervention. In addition, teachers ought to teach children with autistic social skills in conjunction with the structure of a lesson plan by using social stories to continuously reduce inappropriate behavior. Teaching equipment and facilities, especially multimedia, should also be well prepared and thoroughly utilized in order to increase teaching efficiency.

Although social stories were first developed for use with autistic children, the approach has also been successful with children, adolescents, and adults with autism and other social and communication delays and differences, as well as normally developed individuals (Gray, 2004). The study contributes additional empirical evidence for the effectiveness of social story interventions for children with autism. Previous applications of social story interventions have focused on children with mild and moderate autism. This study extends the research base by applying the intervention to children who have high functioning autism and are able to use language skills to communicate. It was originally suggested that this method should be used with

only higher functioning individuals who possess basic language ability; however, these guidelines were expanded to include children with more severe learning disabilities. To accommodate differences in ability, one sentence per page paired with pictures could help individuals concentrate on one concept at a time while the pictures could enhance the meaning of the text. The addition of pictorial representation or visuals is supported by claims that many individuals with autism learn visually. The efficacy of using social stories with other populations of individuals, other than those with autism, has not yet been sufficiently studied.

Conflict of interest

There is no conflict of interest.

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