

## Promoting Prosocial Skill in Early Childhood by Games with Rules Promoción De La Habilidad Prosocial En La Primera Infancia Con Juegos Motores Rudos

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**Abstract.** Prosocial behavior provides many positive benefits for children, especially in various aspects of development including academic success, decreased feelings of loneliness, and aggression. This study aims to investigate (1) whether there is an effect of game with rule on prosocial behavior, (2) knowing whether there is a difference between the prosocial behavior of boys and girls after participating in games with rules. This study used pre-experimental design. Data analysis for examining the effect of games with rules on prosocial behavior was done using nonparametric statistics with the Wilcoxon test. In contrast, the data analysis for examining the difference of prosocial behavior between boys and girls used the Mann Whitney test. The final result of the data analysis shows a difference in prosocial behavior after children participate in a games with rules. Furthermore, this study found no differences in prosocial behavior between boys and girls. The implications of the research results are discussed further in this article.

**Keywords:** Early childhood skills, Play activities, Prosocial behavior, Game with rules.

**Resumen.** El comportamiento prosocial proporciona muchos beneficios positivos para los niños, especialmente en diversos aspectos del desarrollo, incluido el éxito académico, la disminución de los sentimientos de soledad y la agresión. Este estudio tiene como objetivo investigar (1) si existe un efecto del juego con regla sobre el comportamiento prosocial, (2) saber si existe una diferencia entre el comportamiento prosocial de niños y niñas después de participar en juegos con reglas. Este estudio utilizó un diseño preexperimental. El análisis de datos para examinar el efecto de los juegos con reglas sobre el comportamiento prosocial se realizó mediante estadística no paramétrica con la prueba de Wilcoxon. Por el contrario, el análisis de datos para examinar la diferencia de conducta prosocial entre niños y niñas utilizó la prueba de Mann Whitney. El resultado final del análisis de datos muestra una diferencia en el comportamiento prosocial después de que los niños participan en juegos con reglas. Además, este estudio no encontró diferencias en el comportamiento prosocial entre niños y niñas. Las implicaciones de los resultados de la investigación se analizan más a fondo en este artículo.

**Palabras clave:** Habilidad de la primera infancia, actividades de juego, Conducta prosocial, juego con regla.

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### Introduction

Prosocial behavior is identified as voluntary behavior that benefits others (Dunfield & Kuhlmeier, 2013). It is done without direction or command from others as it comes from the heart and mind of the individual. Indicators of prosocial behavior include cooperation, comfort, sharing, support, help, empathy, and sympathy. From an early age, children who are prompted by a sense of sympathy and empathy, can already feel when their friends feel sad. For instance, when a friend is not be friended by others (Sette et al., 2018). The closeness of relationships and feelings between one individual and another causes them to want to provide help voluntarily. However, prosocial behavior may not always be exhibited in early childhood. Children can exhibit different behaviors according to the context (Traverso et al., 2020). In addition, prosocial behavior is also influenced by the habituation that individuals receive from the environment, including the family, school, or community

When instilled from an early age, prosocial behavior may provide many positive benefits for children, especially in various aspects of development, including academic success, decreased loneliness, and aggression (Eisenberg et al., 2007; Lai et al., 2015; van der Storm et al., 2022). In addition, prosocial behavior encourages the acquisition of pleasurable social experiences with peers and adults in preschool-aged children. (Berti & Cigala, 2022). These experiences are important for the development of social skills in adulthood. Furthermore, prosocial behavior is also

reported to be related to children's executive function in the future (Moriguchi et al., 2020). Executive function refers to the ability to control thoughts, conscious emotions, and actions (Zelazo & Carlson, 2012). When the child is able to control their behavior, they are using the executive function (Traverso et al., 2020). Therefore, this ability is one of the important aspects of school readiness in early childhood (Fung & Chung, 2023).

Prosocial behavior is important to introduce and get used to in children from an early age. Children who possess prosocial behavior are reported to have better interpersonal skills (Asscheman et al., 2020; Jambon & Malti, 2022; van den Bedem et al., 2019). They can establish relationships with peers by building trust and warmth. This condition encourages the creation of healthy peer relationships as one of the critical aspects of a child's social-emotional development because it can provide a unique opportunity to learn about role-taking, conflict resolution, and cooperation (Rubin et al., 2013). Furthermore, previous studies have reported that people who habitually behave prosocially feel a greater sense of meaning in life (Klein, 2017). When they sacrifice to provide comfort and well-being to others, people with prosocial behavior feel a higher sense of personal worth and self-esteem. The effect on them does not necessarily come from the response or reward from the person they help, but in the form of a psychologically meaningful sense.

Nevertheless, not all early childhood phases is accustomed to prosocial behavior. Previous studies have revealed that children who come from low-income families exhibit

lower social behavior (Heyman et al., 2018). They exhibit more problematic behaviors and academic difficulties. Parenting style is what causes children's social behaviour from low-income families to be less desirable than those of middle-income families. Similarly, authoritative parenting style can shape prosocial behavior better than neglectful parenting style (Hastings et al., 2007; Hu & Feng, 2022). Another study added that girls' prosocial behavior is better than boys' (Walker et al., 2002). Boys use retaliation or aggressive behavior more often than girls. Verbal or physical aggression is used by boys to fit into a peer group, even if it does not work. In addition, children are also faced with adaptation problems which lead to difficulty in adjusting to new or different conditions, processes or people, and lack of empathy (Yumuş & Bayhan, 2017). Therefore, prosocial behavior becomes one of the foundations for children to be accepted by others. Problems in behavior during early childhood tend to persist in later years as children grow older.

Various things can affect a child's prosocial behavior. Previous studies have reported that reading books together can affect children's prosocial behavior (Curenton & Craig, 2011; Kohm et al. (2016), empathy, and social-emotional adjustment (Aram & Aviram, 2009). After reading storybooks, they engage more in social games with peers, bringing up positive emotions during social interactions. Children are also seen volunteering to help other friends due to the moral of the books they read. Furthermore, when children pretend to play, they exhibit more prosocial behavior and lower levels of physical aggressiveness (Fehr & Russ, 2013). Although children use words more aggressively when pretending, they do not cause others to feel sad or in danger. Oral aggression is different from physical aggression. In contrast, children who are orally aggressive show better prosocial behavior.

Furthermore, social behavior is influenced by different types of toys. Previous studies have revealed that there are

behavioral differences in children when they are given neutral toys (miniature animals, cars, and blocks), antisocial toys (rifles, pistols, swords, and miniature soldiers), and prosocial toys (baby dolls, miniature cooking tools, and paramedic toys) (Snyder & Rogers, 1995). Children involved in the study showed behavior according to the type of toy (antisocial or prosocial). Their behavior will return to a basic level when a neutral toy is given. Another study also revealed that children's prosocial behavior increased after they watched together a television program designed specifically for learning (Mares & Woodard, 2005; Zhang et al., 2021; Zieunska & Chambers, 1995). The television program was reported to be effective in encouraging children's prosocial behavior during free play, encouraging cooperative attitudes, and preventing antisocial behavior.

Many researchers have revealed that games provide many opportunities for children to develop prosocial behaviors (Gentile et al., 2009; Grineski, 1989; Cano-Moya, Isaza-Gómez, & Valencia-Guzmán, 2023). One reported that behavioral problems can be brought down through cooperative play (Finlinson et al., 2000; Li & Shao, 2022). In addition, traditional games performed outdoors can help students adapt to their friends and environment. Prosocial behavior is evident when children engage in such play (Dewi et al., 2020; Junaedah et al., 2020). Moreover, games that involve physical activities, such as games aimed at sports activities, can help children to interact with various peer characters (Li & Shao, 2022). They can actively explore a range of life skills in such activities, including prosocial behavior. Based on the various studies outlined above, games can be used to develop children's prosocial behavior. However, discussions related to games with rules are still very limited. Therefore, this study aims to investigate (1) whether there is an influence of games with rules on prosocial behavior, and 2) whether there is a difference between the prosocial behavior of boys and girls after participating in games with rules.

## Methods

### Research desain

Table 1.  
Observation instruments prosocial capability of children aged 5-7 years

No	Children's Name	Prosocial Indicator					
		Helping friends	Cooperating	Sharing with other	Playing with all friends	Knowing and response other feeling	Showing tolerance
1							
2							
3							
4							
5							
6							
7							
8							
9							
10							

This study used a pre-experimental design with one group pretest-posttest design. The data collected was in the form of numbers which indicate the value or score of each

indicator of prosocial behavior. The collected data was in the form of primary data from observations. A 4-point scale was used to record data for each indicator indicating

prosocial behavior with the following categories: (1) not yet apparent, (2) starting to appear with motivation from others, (3) appear 1-2 times either with or without motivation from others, and (4) frequently apparent. The observation process is only carried out by one person, while the others help condition the trial. The data collection instruments are observation sheets (see Table 1.) The indicators listed in the prosocial behavior observation sheet are the result of the adaptation of previous research instruments (Dunfield, 2014) which consists of helping friends who are struggling, cooperating with friends, sharing with friends, playing with friends, identifying and responding positively to the feelings of friends, and being tolerant. Helping behavior is demonstrated by providing convenience to others, whether when carrying out planned activities or playing freely. Collaborative behavior is demonstrated by being willing to share tasks with friends. Sharing behavior is indicated by sharing possessions or opportunities (when playing) to friends. The behavior of willing to play with any friends is shown when children are not selective about friends when playing, as they accept all friends. Identifying and responding positively to the feelings of friends is shown by showing facial expressions and behavior that are appropriate to the condition of other friends. Tolerance is indicated by not making fun of friends who are in a sad situation

We employed an adaptive approach by identifying several key indicators in Dunfield's (2014) instrument that align with our research objectives, then modified some questions from previous instruments to suit our research context better. These modifications included simplifying the language, adapting the content, and creating additional questions. We conducted pre-research testing with several respondents to ensure that the adapted instrument achieved the validity and reliability required for our research objectives. This adjustment is necessary because the context or objectives of our research differ from previous research; hence, it needs more specific consideration of the variables we want to measure.

### **Participant**

Saturated sampling was used as the sampling technique. Participants were 16 children aged 6-7 years (9 boys and 7 girls) enrolled in a kindergarten in Sleman City. They belong in the same class with one homeroom teacher who assists them daily in learning with the central system. Data was collected after the researcher had been given permission from the school principal. As one of the research norms, the objectives of the research were communicated directly and face-to-face to the principal. This is because as the school leader, the principal has the right to know the purpose of events conducted in their school.

### **Procedure**

Before conducting trials with games with rules, we conducted a pretest on children's prosocial behavior. The pretest was conducted by observing children's prosocial behavior during activities in the classroom. Even though we did

not have a control group, we strived to minimize weaknesses in our trial design by maintaining internal validity by: 1) limiting the period between pre-test and post-test; 2) using the same test for all subjects; 3) using several data collection instruments, namely the pre-test, the post-test, the scale, and an interview guide, so that the non-subjectivity of data can be minimized; 4) the existence of a contract or activity agenda to reduce the threat of mortality; and 5) selecting subjects by identifying children who have negative prosocial behavior.

Children's interactions with friends and how to collaborate, negotiate, share, and help behavior were maintained from the beginning of learning to the end. We also verified the data obtained based on the pretest results with the class teacher. The instruments used in the pretest and posttest were the same.



Figure 1. 'Pass the key' Game Concept

Researchers invited children to play a game with rules called "pass the key" (Figure 1). The idea of the game is to pass the key from one post to the next. Children must work with other friends in the group to get to the finish line. One group consists of 3-5 children. Each child in the group has a task to answer a question in each post. The questions are adjusted to suggestions from the teacher, which are typically on addition and subtraction. When a child reaches a post and answers a question, they should step aside. The number of steps must match the answer to the question. They then clasp one hand over the other and move sideways like a crab to the final post. The key passed along during the game must be handed over to a friend in the next post. The key will be opened and attached on a paper to be able to answer the questions in the last post. The game will end when the five questions in the last post have been answered. The game was carried out for two meetings. In the second meeting, the researcher changed the last post's questions into a group puzzle activity.

The objective of the game is to promote prosocial behavior in children. Even though there are some questions to be solved in the game, the observation only focuses on how the children cooperate or work together, have a discussion with each other, help others, and share with each other. The questions in each post helps the children share their ideas with their group. Accordingly, the researcher takes notes of their interaction and determines who needs to increase their prosocial behavior. Because our research does not use a control group, we hope our results can complement

another study on the same topic. These results can be used as a complement if the study is not widely representative. The development of prosocial behavior is recorded for each student.

**Analysis**

Data analysis from the normality test using the Kolmogorov-Smirnov shows that the data is normally distributed with an Asymp.Sig (2-tailed) value of 0.24. Meanwhile, the variance of the prosocial behavior data shows that the data is homogeneous with Sig. 0.04. Even though the prerequisite test in parametric statistics has been fulfilled, the participants involved are at most 30. Therefore, data analysis to determine whether there is an increase is carried out by nonparametric statistics with the Wilcoxon test. Meanwhile, the data analysis for examining the difference of prosocial behavior between boys and girls is conducted using the Mann-Whitney test.

**Results**

Table 2. Wilcoxon Signed Ranks Test Result

	N	Mean Rank	Sum of Ranks
Negative Ranks	0 <sup>a</sup>	.00	.00
Positive Ranks	9 <sup>b</sup>	5.00	45.00
Ties	7 <sup>c</sup>		
Total	16		

- a. postes < pretes
- b. postes > pretes
- c. postes = pretes

The final result of the data analysis shows a difference between prosocial behavior before and after using a game with rules. The results of the statistical test using the Wilcoxon test show an Asymp.Sig (2-tailed) value of 0.00. Table 2 shows the results of a score of 0 for negative ranks or a difference (negative) between prosocial behavior in the pretest and posttest. This value indicates no decrease or reduction from the pretest to posttest scores. The value of positive ranks or a difference (positive) suggests that nine children experience an increase in prosocial behavior from the pretest to the posttest. The average increase is 5.00, while the number of positive ratings is 45.00. On the other hand, the tied values are shown in seven children with the same pretest and posttest scores. Differences in prosocial behavior in the pretest and posttest are also clearly visible when presented in a chart, as shown in Figure 2.

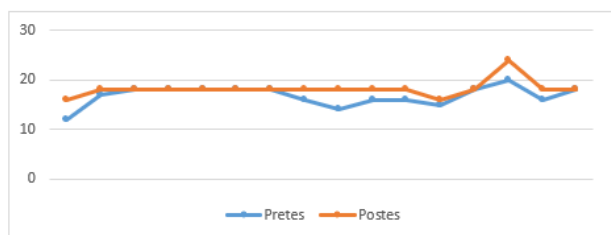


Figure 2. Differences in Children's Prosocial Behavior During Pretest and Post-test

Based on the indicators of prosocial behavior, the most increase occurs in tolerance, sharing with friends, working together, and responding positively to the feelings of friends. Meanwhile, a low increase occurs in helping friends in trouble and playing with friends (Figure 3). Furthermore, the results of the data analysis do not show any differences in prosocial behavior between boys and girls with an Asymp score. Sig (2-tailed) is 0.119. Nonetheless, one of the girls has the highest prosocial behavior score, whereas one of the boys has the lowest after being given treatment using a game with rules, although both boys and girls show increased prosocial behavior. They try to collaborate, share, and play together with friends. We realize that this may be partially due to the game's rules we designed. At least, through this game, teachers can see who still needs assistance to behave prosocially. During the pre-test, one child did not want to be in a group with his friends. However, after the post-test, the child showed improvement by assisting his friends.

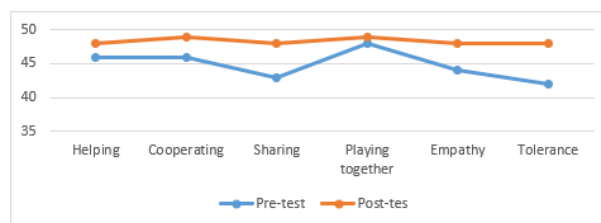


Figure 3. Differences in Prosocial Behavior of Indicator Children in Pretest and Posttest

**Discussion**

This study proves that there is an effect of games with rules on children's prosocial behavior. These results are supported by previous studies, such as Garaigordobil (2008), which suggests that programmed play has a positive effect on children's social attitude and behavior. Furthermore, there are differences in prosocial behavior before and after playing games with a rule that requires children to work together to complete every challenge in each post. If they understand that solutions must be based on the consideration of each member, then prosocial behavior will be formed. This is important to consider in the selection and development of a game as learning tool because prosocial behavior will have a real impact on children's lives when introduced from an early age. A previous study explained that educational games must have a balance between obtaining pleasure and learning opportunities related to the real world (Miller & Kocurek, 2017).

There is an increase in tolerance, sharing with friends, collaborating, and responding positively to friends' feelings after treatment. Tolerance is the indicator with the highest increase. This can be seen in the post-test session when children are evidently willing to play with anyone appointed to be in their group, regardless the gender or the popularity level. Previous studies have explained that tolerance is important to be nurtured since childhood by both teachers and

parents (Adams & Ebbeck, 1997). Its formation is carried out in an integrated manner with the stimulation of other aspects of development. This attitude is the foundation that must be developed since childhood, not taught as a certain material. Furthermore, games can be used as a treatment for children with low social skills. Studies report that children with low social skills show changes through more positive play behaviors such as asking questions, offering suggestions, initiating play episodes, and sharing. (Choi & Md-Yunus, 2011).



Figure 4. Cooperation and Communication in Games

Children work together not only physically but also verbally (see Figure 4). In a group, they have a discussion with each other to find the answer to the problem in each post, and show each other the way when one of them makes a mistake. This situation shows that language plays a role in the formation of prosocial behavior through the provision of assistance (Conte et al., 2018). Engaging in prosocial behavior requires a certain level of language competence because it is largely rooted in language (Girard et al., 2017). Children's ability to express themselves competently during social interactions can lead to more positive exchanges and consequent positive feelings about their experiences during their social interactions.

When children play games with rules, the teacher acts as a guide to ensure that the previously antisocial children become more prosocial. The teacher can provide scaffolding through sensitive feedback during the playing process. Providing feedback is one predictor of quality learning (Hirsh-Pasek et al., 2015). Feedback can be given at various levels according to the ability of the child (Nikolayev et al., 2021). Teachers may comment on what the children are doing, ask open questions, help if there are difficulties, encourage children to do the expected behavior, and help them to communicate what they mean to friends in the group by paraphrasing (Girard et al., 2011; Weisberg et al., 2013). Therefore, games with rules can also be referred to as guided play because there are rules in the game, which involves adult guidance to carry out the expected behavior (Ahlskog-Björkman & Björklund, 2016) (Fisher et al., 2013).

It is therefore clear that the teacher's behavior in class contributes to the formation of children's prosocial behavior. By providing feedback, the teacher gives an example of how to do the game correctly and what constitutes an acceptable attitude to have when a friend is having trouble. Indirectly, the teacher provides examples of indicators of

prosocial behavior in children. When the teacher shows this attitude more often, children will also share, help, and collaborate more with other friends (Spivak & Farran, 2012). In addition, verbal support also increases prosocial behavior, although not too strongly.

Although the "pass the key" game used in this study is initially aimed to increase prosocial behavior, several other aspects of development can also be stimulated through this game. The game is designed to integrate aspects of development in a complex way. This is supported by previous studies, which state that when games are used in learning, they must be able to facilitate various cognitive, motivational, affective, and sociocultural aspects (Plass et al., 2015; Sacramento, 2013). In the game "pass the key", cognitive aspect is stimulated when the child solves the problems in each post. They use memory and information processing on the questions given. Motivation is stimulated when the game is designed to involve all body parts of the children to move around. In addition, the game is carried out outdoors to provide a different atmosphere. Affective and sociocultural aspects are stimulated during the game because children have to work together, play, help and share with friends. They also have to show the acceptable attitude when some friends may not be able to answer a question or when they lose when two groups compete to complete the challenge.

This study also found no difference in prosocial behavior between boys and girls. This aligns with previous studies, which revealed no significant difference in prosocial behavior between the two genders (Garaigordobil, 2008). Nonetheless, other studies have found that there are not too many differences between them (Woods et al., 2016). Meanwhile, boys are considered to have low prosocial behavior when they have low pragmatic skill scores (Bouchard et al., 2020). Pragmatic skills are the ability to use language adapted to the user's context, conditions and situations. When boys were asked who would accompany a child who did not have many friends or did not live with a mother, they said the teacher would. Meanwhile, the girls said that they would, and the teacher would, as well. The answers from these children were associated with prosocial behavior that differed between the two genders (Hägglund, 1993). Meanwhile, when the level of pragmatic skills is high, there is no difference in social behavior between boys and girls. Nonetheless, gender-stereotyped roles influence this belief. In contrast, girls with ADHD have low prosocial behavior. Based on reports from parents and teachers, boys with ADHD behave better in prosocial behavior than girls (Ragnarsdottir et al., 2018). However, this condition is more common in older children

The main weakness of this study is the use of observation sheets with unclear observation indicators to measure children's prosocial behavior. Using instruments with more extensive indicators encourages more optimal measurement of prosocial behavior. Data on peer acceptance obtained by asking children can also support the validity of prosocial behavior that appears during observations. This research has

yet to generate interview data with teachers to validate the observed data. On the other hand, the number of participants involved in this study needed to be bigger to allow for low data validity to be generalized. Data collection coinciding with an internship program for student teachers at the destination school limited the number of homeroom classes to be involved in this research.

## Conclusion

The results of this research can be used as initial study results to initiate more extensive research on experimental design. Notably, differences in prosocial behavior before and after gameplay, where children work collaboratively, highlight the role of considering each member's perspective in shaping prosocial conduct. This underscores the importance of integrating prosocial behavior into early educational games, emphasizing the real-life impact on children's lives. The study reveals increased tolerance, sharing, collaboration, and positive responses among children after treatment, with tolerance exhibiting the most significant improvement. Moreover, the study identifies the role of language in fostering prosocial behavior, observing that children's ability to express themselves proficiently influences positive social interactions. The "pass the key" game notably stimulates changes in prosocial behavior, highlighting the teacher's pivotal role in shaping children's behavior through feedback and guidance. While the study indicates no discernible difference in prosocial behavior between boys and girls, it uncovers the influence of pragmatic skills and gender-stereotyped roles on these behaviors. However, the study's weaknesses lie in the lack of clarity in observation indicators for measuring prosocial behavior and the limited number of participants, urging the need for more extensive instruments and increased participant inclusivity for generalized data validity. Interview data with teachers and additional peer acceptance assessments could further validate observed prosocial behaviors.

## Recommendations

The recommendation of this study is to integrate prosocial elements in learning. To strengthen these findings, it is imperative to refine observation indicators for measuring prosocial behavior, as well as enhancing clarity and accuracy in assessments. Moreover, future research would benefit from increased participant inclusivity to ensure broader data validity and generalizability of results. Incorporating interviews with teachers and additional peer acceptance assessments could further validate observed prosocial behaviors, enhancing the reliability of the study's outcomes. Emphasizing the significance of language in nurturing positive social interactions, educators could focus on language development within the curriculum to promote enhanced communication skills and, consequently, more positive exchanges among children during their social interactions. Lastly, continued exploration into the impact of pragmatic

skills and gender-stereotyped roles on prosocial behavior would provide valuable insights into fostering inclusive and supportive environments for children.

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