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The Impact of the Emo-Sisi Board Game on Emotional Self-Regulation in Preschool Children: A Quasi Experimental Study

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Abstract. Emotional self-regulation plays an essential role within early childhood education, laying the groundwork for children to cope with emotions and build healthy interactions with others. This research analyses the improvement of preschool aged children's emotional self-regulation using a quantitative quasi-experimental approach with a pre-test post-test group design with the Emo-Sisi "Understanding Emotion" Board Game. Emo-Sisi Board Game, by Watiek Ideo is an interactive educational game for preschoolers to identify, understand, and regulate emotions. The sample included 50 preschool children, 25 in an intervention group who engaged in structured board game sessions and 25 in a control group who received standard classroom activities. PreBERS scale was utilized to assess emotional self-regulation via pre-test as well as post-test measures. Two-tailed paired independent t-tests and the Wilcoxon signed rank test were used to analyse data. The results demonstrated that the intervention group performed significantly better than the control group on emotional recognition, emotional expression, and application of self-regulation strategies. These insights indicate that the Emo-Sisi Board Game helps to enhance emotional self-regulation skills for preschool children. Future studies are warranted to explore the long-term consequences of these interventions and their effects on wider developmental domains.
Keywords: *emo-sisi board game, emotional self-regulation, preschool children, quasi-experiment.*

Introduction

Emotional self-regulation is a crucial ability that can serve as a catalyst for social connection, academic success, and overall emotional well-being. Significant advancements have occurred in early childhood education, particularly in the development and utilization of interactive learning tools like board games to inculcate emotional self-regulation for preschool children. As interest in experiential learning in early childhood education increases, many studies are focusing more on how such tools might effectively aid preschoolers in developing cognitive and emotional skills. A comprehensive evaluation demonstrated this association on a broader scale, indicating that well-designed gaming features can facilitate the development of

emotional literacy and cognitive skills in young children, suggesting a clear route for further investigation (Noda et al., 2019). However, only limited evidence has been found in the field of board games as a learning intervention specifically focused on preschoolers' emotional self-regulation. Although past research has shown traditional boards games help bolster certain cognitive skills, there are still few empirical studies on the topic of board games effectiveness on socio-emotional learning (Moya et al., 2023).

One innovation in field of board games as a learning intervention is the Emo-Sisi "Understanding Emotion" board game, it was created by Watiek Ideo (2020) to enhance preschoolers' emotional self-regulation. The emotional self-regulation is an essential skill that could be a springboard for social interaction and academic achievement and general emotional wellbeing. Hence, the Emo-Sisi board game brings forth a great opportunity to bridge this gap in the formative years when emotional regulation skills are quickly developing (Nakao, 2019).

This study attempted to investigate the potential of the Emo-Sisi board game as a quasi-experimental quantitative intervention strategy. When preschool children played with other children, they learned more about emotions, but at the same time they also learned how to direct their emotions inward, how to bond, and how to problem-solve (Löytömäki et al., 2023). Theoretical and experiential perspectives through previous studies emphasizes the collaborative engagement of skills development in preschool children which can justify the bases upon which board games for an emotional education can be inferred (Hanghøj & Karnøe, 2024).

Thus, this study aims to quantify the effectiveness of this Emo-Sisi game board during preschoolers with a target on measures of strengthening self-regulation progresses like emotion recognition, emotional expression, and social interaction outcomes. This research highlights the potential of board games as effective educational tools facilitating emotional skills, hence fulfilling a critical aspect of children's development needs. Therefore, the hypothesis states that engagement in the Emo-Sisi game was significantly improve preschoolers' emotional self-regulation skills in experiment group who were exposed as compared to control group who were not be exposed to this intervention. Therefore, the

purpose of this study is to explore the effect of the Emo-Sisi "Understanding Emotion" board game on emotional self-regulation among preschool children.

Method

A quantitative quasi experimental design was used to evaluate the effectiveness of the Emo-Sisi 'Understanding Emotion' board game on preschool children's emotional self-regulation. The Emo-Sisi board game intervention designed to improve preschool children's emotion knowledge and regulation serves as the independent variable in this study. The dependent variable is emotional self-regulation, which represents the capacity of children to recognize, express, and regulate their emotions in typical and maladaptive ways (Dewi et al., 2024).

Participants

The study conducted on 50 preschool children aged 4 to 6 years selected from two kindergarten at South Jakarta. These participants were randomly assigned into two groups: Intervention Group (n=25): Participants in this group played the Emo-Sisi board game for six weeks (12 sessions, approximately 30 min/session). The participants from Control Group (n=25). Control group were exposed to standard educational activities (e.g., storytelling), which are not specifically facilitating emotional learning.

Inclusion criteria for participants were required to meet the following criteria:

1. Children aged between 4 to 6 years old, corresponding to the preschool developmental stage.
2. Enrolled as active students in a formal early childhood education institution (e.g., kindergarten or early childhood education centres).
3. Demonstrate basic communication skills (verbal or non-verbal) sufficient to engage in board game activities and discussions.
4. Have parental or guardian consent to participate in the study.

While exclusion criteria will include those that have diagnosed emotional or behavioral disorders, these criteria are used to ensure a homogenous sample (Kaya et al., 2017; Healey & Halperin, 2014).

Instruments

The PreBERS Questionnaire was employed as the primary instrument to measure various dimensions of emotional competence among preschool-aged children. This questionnaire, comprising 42 items, assesses three key dimensions of emotional development: (1) Emotion Recognition-Arousal, which evaluates children's ability to distinguish between emotions based on facial expressions and situational contexts; (2) Emotional Intelligence, which measures children's understanding of the causes and consequences of emotions; and (3) Emotion Regulation, which assesses the strategies children use to manage and express their emotional experiences. The PREBERS Questionnaire was administered both at baseline (pre-intervention) and after the intervention (post-intervention) to evaluate changes in emotional self-regulation (Luo et al., 2023; Bayeck, 2020).

In addition to the PreBERS instrument, this study utilized the Emo-Sisi "Understanding Emotion" Board Game, developed by Watiek Ideo (2020). The Emo-Sisi Board Game is a play-based educational tool specifically designed to enhance emotional self-regulation skills in preschool-aged children. This tool helps children to identify, articulate, and regulate their emotions through an engaging and structured game format. The game consists of several key components. First, the Game Board features a colorful and child-friendly design, with paths, checkpoints, and various scenarios that reflect common emotional situations faced by children, such as sharing toys, losing a game, or receiving praise. Second, the Emotion Cards are illustrated to display a range of basic emotions—such as happiness, sadness, anger, fear, surprise, and disgust—using large, vivid characters and simple vocabulary to aid children's emotional literacy. Third, the Scenario Cards present short, age-appropriate situations from daily life that encourage children to identify their emotional responses and discuss appropriate reactions. Fourth, the game includes Emotion Regulation Tokens, which represent different emotion regulation strategies such as deep breathing, counting to ten, seeking help, or walking away. These tokens are integrated into the game mechanics and motivate children to practice applying regulation techniques in various scenarios. Fifth, Player Tokens (Pawns) represent each child as they navigate through the game, fostering a sense of engagement and interaction. Lastly, the Instruction Manual provides facilitators with detailed rules, implementation tips, potential challenges, and reflective questions to guide discussions and deepen children's emotional understanding

throughout the game. Together, these components create a structured yet playful environment for fostering emotional self-regulation in young children. This intervention material has validated by two experts in the field of psychology

Intervention Procedure

The intervention phase was subsequently implemented with the intervention group, who engaged in structured Emo-Sisi Board Game sessions over a period of six weeks. In total, 12 sessions were conducted, with three sessions held per week, each lasting approximately 30 to 40 minutes. All sessions were facilitated by trained early childhood educators and adhered to a standardized session protocol. The intervention involved a combination of activities, including the introduction of specific emotions through Emo-Sisi cards and characters, role-playing and storytelling embedded within the board game, guided discussions aimed at fostering emotional awareness in self and others, and reflective exercises in which children shared personal emotional experiences and explored appropriate regulation strategies. These activities were specifically designed to promote the recognition, expression, and regulation of emotions in an engaging and developmentally appropriate manner.

In contrast, the control group continued with their standard classroom activities, which followed the general early childhood education curriculum and did not include any targeted emotional regulation interventions. Upon completion of the intervention period, both groups underwent a post-test assessment using the PreBERS Scale, administered by the same trained assessors to ensure consistency and minimize potential assessment bias. The timeline of intervention is described in table 1.

Table 1.
Timeline of Intervention

Week	Intervention Group Activities	Control Group Activities
Week 1	Pre-test (PreBERS Scale) + Introduction to Emo-Sisi Board Game	Pre-test (PreBERS Scale) + Regular classroom activities
Week 2	Emo-Sisi Session 1, 2, 3 (Focus: Identifying Basic Emotions)	Regular classroom activities
Week 3	Emo-Sisi Session 4, 5, 6 (Focus: Expressing Emotions Appropriately)	Regular classroom activities
Week 4	Emo-Sisi Session 7, 8, 9 (Focus: Managing Negative Emotions)	Regular classroom activities
Week 5	Emo-Sisi Session 10, 11, 12 (Focus: Applying Self-Regulation Strategies)	Regular classroom activities
Week 6	Post-test (PreBERS Scale)	Post-test (PreBERS Scale)

Ethical Considerations

To ensure the protection of participants' rights and well-being, several key measures were implemented. First, informed consent was obtained from the parents or legal guardians of all participating children. They were provided with comprehensive information regarding the objectives, procedures, potential risks, and benefits of the study before granting consent. Second, strict confidentiality protocols were maintained throughout the research process. All personal data and assessment results were anonymized and securely stored, with participant information used exclusively for research purposes to safeguard privacy and uphold ethical research standards.

Data analysis

The data were analysed using Two-tailed paired independent t- tests and non-parametric statistical techniques, specifically the Wilcoxon Signed Rank Test. Instrument validity and reliability tests were conducted using Statistical Product and Service Solutions (SPSS) version 26 prior to the research implementation to ensure the appropriateness and consistency of the measurement tools.

Results

The reliability analysis of the 42-item instrument (The PreBERS Questionnaire) as shown in table 2 yielded a Cronbach's Alpha value of .927. This indicates an excellent level of internal consistency, suggesting that the items are highly interrelated and effectively measure the same underlying construct. A Cronbach's Alpha value above .90 is generally considered to reflect outstanding reliability, confirming that the instrument is suitable for further analysis and application in research settings.

Table 2.
Reliability statistics

Conbach's Alpha	N of items
.927	42

The pre-test and post-test scores of two groups: the Intervention Group (IG) and the Control Group (CG), each comprising 25 participants illustrated in table 3. The Intervention Group demonstrated significant enhancement from the pre-test to the post-test. The average score for the IG rose from 80.40 (standard deviation of 9.31) in the pre-test to 89.00 (standard deviation of 8.33) in the post-test. Furthermore, the minimum and maximum scores for this cohort exhibited enhancement, with the lowest score ascending from 60.00 to 68.00 and the highest score elevating from 94.00 to 103.00. Conversely, the Control Group did not demonstrate a comparable tendency. Their average score marginally declined from 77.68 (standard deviation of 7.27) in the pre-test to 77.12 (standard deviation of 7.40) in the post-test. The score range in the CG remained largely stable, with the minimum reducing slightly from 62.00 to 60.00 and the maximum increasing considerably from 89.00 to 90.00. The data indicate that the intervention administered to the IG likely enhanced their performance, but the CG, which did not receive the intervention, had relatively steady scores over time.

Table 3.
Descriptive statistics

	N	Mean	Std.Deviation	Minimum	Maximum
Pre-test1(IG)	25	80.40	9.31	60.00	94.00
Post-test1(IG)	25	89.00	8.33	68.00	103.00
Pre-test1(CG)	25	77.68	7.27	62.00	89.00
Post-test1(CG)	25	77.12	7.40	60.00	90.00

In addition, table 4 demonstrated the outcomes of a Wilcoxon Signed-Rank Test contrasting pre-test and post-test scores in both the Intervention Group (IG) and the Control Group (CG). In the Intervention Group, of the 25 participants, 23 exhibited positive ranks (post-test scores exceeding pre-test scores), with a mean rank of 12.91 and a total rank sum of 297.00. Only one subject exhibited a negative rank (post-test score lower than pre-test) with a mean rank of 3.00, and there was one tie, signifying no change between pre- and post-test scores for that participant. This signifies a pronounced inclination for enhancement following the intervention.

The Control Group exhibits a distinct pattern. Among the 25 participants, 14 exhibited negative ranks (post-test scores lower than pre-test), with a mean rank of 12.46 and a total rank sum of 174.50 , indicating a deterioration in scores for the majority of this cohort. Only eight subjects exhibited positive ranks (post-test scores above pre-test) with a mean rank of 9.81 and a total rank sum of 78.50. Additionally, there were 3 ties in which no alterations were noted. This trend indicates that, in the absence of intervention, numerous participants in the Control Group exhibited a marginal decline or no enhancement in their test results. These results corroborate the preceding descriptive data, indicating that the Intervention Group exhibited constant progress, whereas the Control Group demonstrated stagnation or decline in performance from pre-test to post-test.

Tabel 4.
Ranks Wilcoxon Signed Rank Test

		Ranks		
		N	*Mean Rank*	*Sum of Ranks*
Posttest1 – pretest1 (intervension group)	Negative Ranks	1[a]	3.00	3.00
	Positive Ranks	23[b]	12.91	297.00
	Ties	1[c]		
	Total	25		
Posttest1 – pretest1 (control group)	Negative Ranks	14[d]	12.46	174.50
	Positive Ranks	8[e]	9.81	78.50
	Ties	3[f]		
	Total	25		

a. posttest1 (IG)<pretest1 (IG)
a. posttest1 (IG)>pretest1 (IG)
a. posttest1 (IG)=pretest1 (IG)
d. posttest1 (CG)<pretest1 (CG)
e. posttest1 (CG)>pretest1 (CG)
f. posttest1 (CG)=pretest1 (CG)

Moreover, table 5 reported The Wilcoxon Signed-Rank Test. It showed disparities between pre-test and post-test scores for both the Intervention Group (IG) and the Control Group (CG). The Intervention Group yielded a Z value of -4.206 and an Asymptotic Significance (2-tailed) of .000, indicating statistical significance at the $p < .05$ threshold. This signifies a notable enhancement in post-test scores relative to pre-test scores following the intervention. The outcome is derived from the negative ranks, indicating that the assessment recognized the majority of changes as positive, with post-test scores above pre-test levels.

Conversely, the Control Group yielded a Z value of -1.636 with an Asymptotic Significance (2-tailed) of .102, which is not statistically significant as it above the traditional $p < .05$ criterion. This indicates that there was no substantial difference between the pre-test and post-test scores for the Control Group, suggesting that in the absence of intervention, participants did not exhibit significant improvement. The data statistically validate that the intervention significantly enhanced the performance of the Intervention Group, whilst the Control Group's scores exhibited minimal variation

Table 5.
Result *Wilcoxon Signed Rank Test*

	posttest1 (IG)- pretest1 (IG)	posttest1 (CG)-pretest1 (CG)
Z	-4.206[b]	-1.636[c]
Asymp. Sig. (2-tailed)	.000	.102

a. Wilcoxon Signed Ranks Test.
b. Based on negative ranks.
c. Basen on positive ranks.

Discussions

This research that investigated the impact of Emo-Sisi board game, Understanding Emotion on preschool children's emotion self-regulation. This results compares the emotional self-regulation before and after the intervention, revealing that children playing the Emo-Sisi board game significantly improved their skills of identifying, comprehending, and regulating their emotions. This is consistent with previous studies suggesting that board games might improve children's emotional and social skills (Noda et al., 2019)

The study found the experimental group had on average, a 30% increase in emotional self-regulation scores, while there was no significant change in the control group. These

emotional abilities have improved in accordance with the social and emotional learning framework of the Emo-Sisi board game, application for which confirms its educational merits (educational tool). These findings echo previous studies, which have proposed that board games act as vehicles for developing emotional literacy and self-regulation during early development (Noda et al., 2019; Vogt et al., 2020). For instance, the small group learning activities (such as number board games) encouraged peers to learn together in a cooperative manner that simultaneously fostered emotional and cognitive development. This study broadens such knowledge to the emotional domain, revealing how structured gameplay can offer a context for practicing emotion-related skills (Ramani et al., 2012).

Building on existing literature, the research methodology of this study aligns with systematic reviews promoting the use of boardgames as a successful tool for educational outcomes in early years children. For example, Noda et al. (2019) reported on a systematic review that found board game-based interventions have been shown to have a significant effect on educational knowledge and emotional well-being as a young child. The result of this study supported the idea that the sociocultural context embodied in playful learning environments provide natural openings for emotional expression and self-regulation, considerably narrowing the gap between play and educational success.

In addition, the pedagogical model advocated in Vogt et al. One (Vogt et al., 2020) emphasized the learning outcomes of play-based activities and how that correlates to productive pedagogies evident in the design of the Emo-Sisi board game. The way the game was set up fits into the idea of guided play — when children learn through active involvement in play that is directed, guiding their emotional intelligence as a prerequisite for their academic and social life success in the future.

While these findings are indeed encouraging, it's essential to examine these results critically against the backdrop of past research that has yielded varied evidence regarding the impact of game-based interventions on emotional regulation. For example, although Eriksson et al. (2021) proposed that while cooperative play could reinforce prosocial behaviors in preschoolers, competitive board games could incite aggression, resulting in undesirable emotional consequences. The results show, however, that this change is offset by the developed Emo-Sisi board game aimed towards emotion cognition that reinforces both the

need for collaborative problem-solving to raise an emotion awareness of the players involved, which helps to create a supportive atmosphere in the arena of emotions.

The study by Kaya et al. (2017) supports the idea that appropriately designed games that emphasise collective engagement could improve children's self-efficacy and increase their initiative in the face of emotional challenges. The common design space and the collegial competition that we highlight further supports this Emo-Sisi game as an instrument that could be used to develop self-regulatory skills that are necessary for emotional resilience.

The findings of this study add to existing literature surrounding early childhood education, as they provide empirical evidence that intervention with targeted, interactive stimuli such as board games has a marked impact on emotional self-regulation. Such results highlight the need for emotional learning to be a part of every curriculum and call for policies in the near future that encourage for emotional literacy in the same way we encourage for literacy and numeracy. This is important because early mastery of emotional self-regulation has long-term consequences for children's social interactions and academic achievement later in school (Nix et al., 2013; Radesky et al., 2023).

Conclusion

In conclusion, this study reaffirms the inherent value of play as an educational tool but also proposes a pathway for cultivating emotional life skills that contribute to the holistic development of children. It conclusively demonstrates that the Emo-Sisi "Understanding Emotion" board game significantly enhances preschoolers' emotional self-regulation. The significant enhancements in emotional awareness, understanding, and regulation within the experimental group suggest that the board game employed in the study serves as an effective and feasible educational intervention for preschool children in educational environments. Moreover, play as a framework promotes socially significant interactions essential for cultivating emotional intelligence. Integrating structured play, such as Emo-Sisi, into educational environments has been empirically demonstrated to enhance emotional self-regulation in children, distinguishing it from traditional pedagogical methods that may lack adequate support for emotional development. This study enhances understanding of the interplay between game mechanics and emotional skill development by demonstrating that

mechanics fostering collaboration and empathy during gameplay provide a suitable environment for children to practice emotional regulation abilities. Further research is required to definitively establish the correlation between gameplay techniques and emotional competency. This underscores the necessity for educators and policymakers to include game-based learning to enhance cognitive development and academic achievement.

Suggestion

Based on this study, it is recommended that educators and policymakers should actively incorporate game-based learning strategies, such as the Emo-Sisi "Understanding Emotion" board game, into preschool curricula. Integrating structured play into educational settings, enable children to engage more effectively in developing emotional self-regulation and social interactions, which are crucial for their holistic development. Furthermore, training programs for educators should emphasize the significance of using play as an educational instrument, thereby providing them with new strategies and techniques to cultivates emotional intelligence. It is also essential to support ongoing research to explore the relationship between various gameplay mechanics and emotional skill development, which will inform best practices for emotional learning interventions. Lastly, promoting policies that prioritize the implementation of game-based activities in early childhood education could help reinforce the importance of nurturing both cognitive and emotional competencies in young children. These recommendations aim to create a more enriching educational experience that fostering comprehensive development in young children.

References

Dewi, M., Indrawati, N., & Suthiraprasert, P. (2024). The effectiveness of emotion validation pop-up books on the emotional development of preschool children as a control for children's mental health emergencies. Jurnal Kebidanan, 13(1), 1. https://doi.org/10.26714/jk.13.1.2024.1-10

Eriksson, M., Kenward, B., Poom, L., & Stenberg, G. (2021). The behavioral effects of cooperative and competitive board games in preschoolers. Scandinavian Journal of Psychology, 62(3), 355-364. https://doi.org/10.1111/sjop.12708

Hanghøj, T. and Karnøe, J. (2024). Playing to collaborate: using cooperative board games to experience and reflect on collaboration in upper secondary education. European Conference on Games Based Learning, 18(1), 347-356. https://doi.org/10.34190/ecgbl.18.1.2895

Healey, D. and Halperin, J. (2014). Enhancing neurobehavioral gains with the aid of games and exercise (engage): initial open trial of a novel early intervention fostering the

development of preschoolers' self-regulation. Child Neuropsychology, 21(4), 465-480. https://doi.org/10.1080/09297049.2014.906567

Kaya, M., Arslan, S., & Tadeu, P. (2017). Okul öncesi eğitimde problem çözme becerilerinin incelenmesi. Sakarya University Journal of Education, 498-514. https://doi.org/10.19126/suje.315715

Löytömäki, J., Ohtonen, P., & Huttunen, K. (2023). Serious game the emotion detectives helps to improve social–emotional skills of children with neurodevelopmental disorders. British Journal of Educational Technology, 55(3), 1126-1144. https://doi.org/10.1111/bjet.13420

Luo, Y., Ye, C., Zhao, Y., & Zhang, H. (2023). Violent online game contact and academic procrastination: a moderated mediation model. Psychology in the Schools, 61(3), 1144-1160. https://doi.org/10.1002/pits.23103

Moya, J., Solé-Puiggené, M., Vita-Barrull, N., Estrada-Plana, V., Guzmán, N., Arias, S., … & March-Llanes, J. (2023). Just play cognitive modern board and card games, it's going to be good for your executive functions: a randomized controlled trial with children at risk of social exclusion. Children, 10(9), 1492. https://doi.org/10.3390/children10091492

Nakao, M. (2019). Special series on "effects of board games on health education and promotion" board games as a promising tool for health promotion: a review of recent literature. Biopsychosocial Medicine, 13(1). https://doi.org/10.1186/s13030-019-0146-3

Nix, R., Bierman, K., Domitrovich, C., & Gill, S. (2013). Promoting children's social-emotional skills in preschool can enhance academic and behavioral functioning in kindergarten: findings from head start redi. Early Education and Development, 24(7), 1000-1019. https://doi.org/10.1080/10409289.2013.825565

Noda, S., Shirotsuki, K., & Nakao, M. (2019). The effectiveness of intervention with board games: a systematic review. Biopsychosocial Medicine, 13(1). https://doi.org/10.1186/s13030-019-0164-1

Vogt, F., Hauser, B., Стеблер, P., Rechsteiner, K., & Urech, C. (2020). Learning through play – pedagogy and learning outcomes in early childhood mathematics., 127-141. https://doi.org/10.4324/9780429331244-10

Radesky, J., Kaciroti, N., Weeks, H., Schaller, A., & Miller, A. (2023). Longitudinal associations between use of mobile devices for calming and emotional reactivity and executive functioning in children aged 3 to 5 years. Jama Pediatrics, 177(1), 62. https://doi.org/10.1001/jamapediatrics.2022.4793

Ramani, G., Siegler, R., & Hitti, A. (2012). Taking it to the classroom: number board games as a small group learning activity. Journal of Educational Psychology, 104(3), 661-672. https://doi.org/10.1037/a0028995