

The Effect of 10-week Adapted Educational Games on Social Skill Development of Children with an Intellectual Disability: Behaviour Analysis

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Abstract

This study aimed to examine the social skills of children with educable intellectual disabilities through behavioural analysis. The participant group of the study consisted of 11 students with a mild level of intellectual disability (ID). The students participated in adapted educational game practices 2 days a week for 10 weeks. The Social Skills Analysis Observation Form (SSAOF), the data collection tool of the study, was created based on constructivist recording techniques. The purpose of the SSAOF is to monitor the social skills development of children with ID every week. Based on this, the researcher recorded all sessions of the "Adapted Educational Game" applications, which were conducted for two days a week and for forty minutes, and transferred these records to the SSAOF. As a result, 2 points were given for each behaviour performed independently, 1 point for each behaviour performed with prompting and 0 points for each behaviour not performed. Results showed that the behaviours exhibited with prompting decreased and independent behaviours increased. Therefore, the average increased 7.72 times compared to the first week. In the first weeks of the "Adapted Educational Game" intervention, it was found that children with ID mostly exhibited behaviours exhibited with prompting. However, in the fifth and sixth week on average, independent behaviours started to develop more than the behaviours exhibited with prompting. As a result, it can be said that children participating in adapted educational games develop target social skills independently. [This paper was published in: "EJER Congress 2023 International Eurasian Educational Research Congress Conference Proceedings," Ani Publishing, 2023, pp. 59-71]

Keywords: *Intellectual disability, Game, Social skills, Behaviour analysis*

Introduction

Social skills are very important for individuals to be successful in the society they live in and to display the behaviours expected by the society (McFall, 1982). Social skills are also important for individuals with

special needs. Because there may be many reasons for social skill deficiencies. Having special needs is one of the most well-known reasons (Erbaş et al., 2007). Children with normal development learn social skills unknowingly by observing and modelling their parents and other people around them. Therefore, after acquiring skills that may be necessary throughout their lives in the school environment, children can apply these skills to other areas (Avcıoğlu, 2007). However, children with intellectual disability (ID) may be in less social environments than their peers with normal development. Therefore, the ability of individuals with intellectual disability to observe and model appropriate behaviours in social environments may be more limited than their peers with normal development (Huang & Cuvo, 1997). Accordingly, intellectual disability is defined as a disability characterised by significant limitations in both intellectual functioning and adaptive behaviours including daily social and practical skills and an IQ score of 70-75, which occurs before the age of 22 (AAIDD, 2023).

When we look at the studies in the literature, there are studies in which teacher opinions about the effect of play on the social skills of individuals with special needs are included (Yaman, 2019) as well as studies in which intervention programmes are implemented (Asiya & Naeema, 2019). Accordingly, in a study conducted by Asiya and Naeema (2019), a child with ID improved his socialisation skills by participating in group activities lasting approximately thirty minutes two days a week. The study showed that play and leisure time social group activities were effective in improving the general social skills of a child with ID. In addition, there are also review studies in the literature. In a review study by Atkinson and Hewett (2019), ten studies were identified using different designs and methodologies and covering six different group social skills interventions. It was concluded that there are fewer studies supporting the effectiveness of group social skills interventions for adults with autism spectrum disorder and intellectual disabilities and that more research is needed in this field.

Most of the social skills are behaviours that can be acquired through an educational process that is appropriate to the needs of children with ID (Gresham, 1997). Studies have emphasised that systematic use of teaching environments through play is important in the acquisition of social skills (Pivec, 2007; Mendez et al. 2002). Children's experiences and the knowledge they acquire through trial and error are not sufficient for complex social relationships. Therefore, a planned, programmed teaching in line with the needs of the child prevents loss of time and effort (Çamlıyer and Çamlıyer 2018). Based on this, in this study, it was aimed to gain social skills with an adapted educational game programme prepared in line with the needs of children with ID.

Method

Research Design

Applied behaviour analysis (ABA) is to understand and improve socially important and objectively identifiable behaviours by using principles and techniques based on social learning theory and behavioural psychology (Tekin-İftar, 2017).

The aim of ABA is to ensure that behaviour can be reliably measured in the natural environment. It not only examines whether there is a change in behaviour, but also whose behaviour has changed. Because people have the ability to make observations and collect data unlike laboratory tools, it is very important to evaluate the observations made correctly in ABA. Being analytical requires that the event that leads to or prevents the occurrence of the targeted behaviour actually takes place. Analysis occurs when we establish control over a certain behaviour through a certain stimulus or when we ensure the emergence or disappearance of the behaviour (Birkan, 2013). In this direction, an adapted educational game programme was applied to children with ID for 45 minutes 2 days a week for 10 weeks. The applications were recorded on video and each week was analysed by behavioural analysis. The dependent variable of the study was the social adaptation and skill levels of children with ID, and the independent variable was the "Adapted Educational Game" applications specific to socialisation based on student-centred approach-methods and techniques.

Participants

The participant group of the study consisted of children with mild level of intellectual disability attending a Special Education Secondary School affiliated to the Ministry of National Education and registered with a report obtained from the Guidance Research Centre. The ages of the children with ID ranged between 11-12 years. 11 people, 9 boys and 2 girls, constituted the participant group of the study. While forming the participant group, it was taken into consideration that the children with ID did not have the targeted social skills and had not previously participated in an educational game programme adapted to improve their social skills.

Data Collection Tool and Application

Social Skills Analysis Observation Form

Many recording techniques can be used to collect target behaviour data. The literature categorises these recording techniques into various categories. These recording techniques are divided into two categories as either occurrence-based or duration-based (Figure 1). While the record of whether the target behaviour

occurs or not is kept by the occurrence-based recording techniques, the recording techniques based on the time of occurrence keep records of the time it takes for the target behaviour to occur or the time it takes for it to occur (Tekin-İftar and Bilmez 2017). The Social Skills Analysis Observation Form (SSAOF) was developed based on the occurrence-based recording techniques. SBAOF was created to monitor the social skill development of children with ID on a weekly basis.

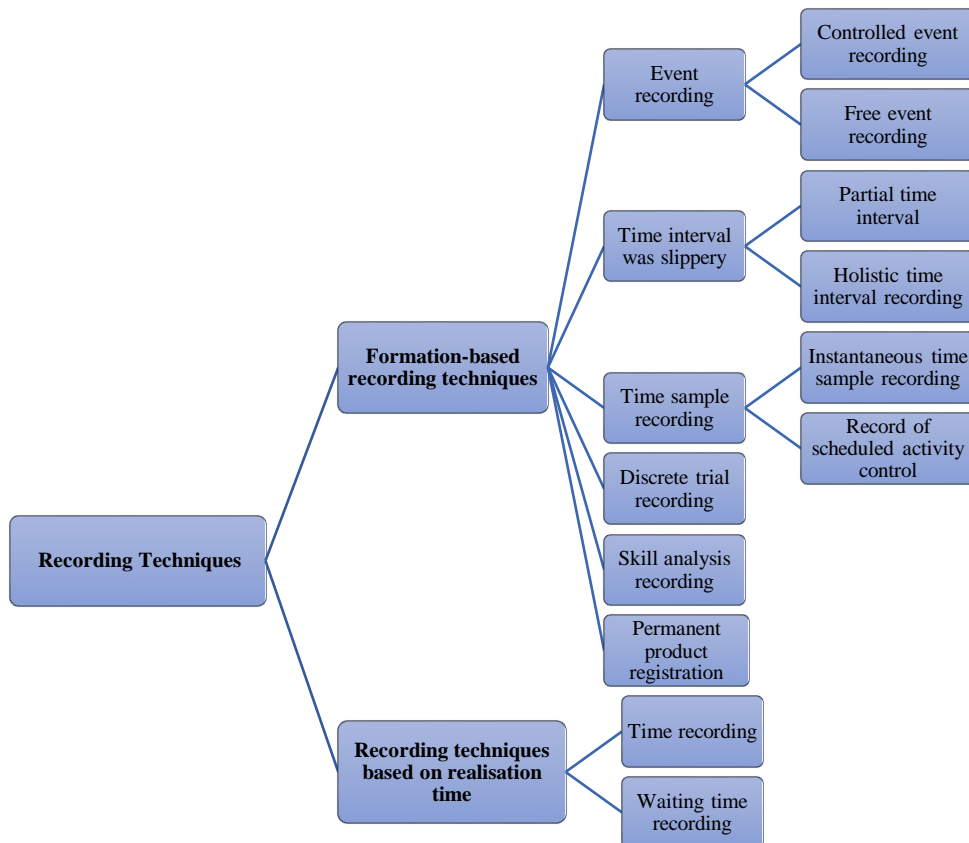


Figure 1. Behaviour Recording Techniques (Tekin-İftar, 2012)

Intervention Programme-Adapted Educational Game

In this study, an "Adapted Educational Game" programme was designed to improve the social skills of children with ID. The "Adapted Educational Game" programme includes social skills such as expressing themselves verbally, recognising others' and their own emotions, managing and maintaining interpersonal relationships, expressing positive and negative feelings and thoughts, participating in group activities, adapting to the group, taking responsibility and fulfilling the responsibility, thanking, apologising, helping and introducing themselves when necessary. In addition, since the game is based on physical activity, the

objectives for developing psychomotor (walking, running, jumping, holding, throwing, rolling, crawling, balance, hand-eye coordination), language and cognitive (imitation, colours, writing, drawing, asking questions, etc.) skills were also included. In line with these objectives, an "Adapted Educational Game" programme based on physical activity was prepared.

In the "Adapted Educational Games" of the first week, the content was prepared on communication skills in order to get to know the children better and interact with them better. In the adapted educational games, especially group games were included each week and each child was allowed to participate in these games. Before starting the "Adapted Educational Game" interventions, the games of the previous lesson were discussed in order to help the children with ID to improve their speaking skills. Thus, the children with ID had the opportunity to share their ideas and feelings after each application. Since the implementation phase of the adapted educational games will be an adaptation based mainly on social development, it is not necessary to have a high level of physical skills. As a result, there is no safety hazard factor. Despite this situation, necessary precautions were taken for minor traumas such as friction, slipping, bumping, etc. as in every education and training institution and auxiliary personnel were available for this process. In addition, a total of 24 games were designed in the "Adapted Educational Game" training programme.

Analysing the Data

The SSAOF was created to monitor the social skills development of children with ID on a weekly basis. All "Adapted Educational Game" sessions were recorded using a video camera. The researcher followed these recordings and recorded the behaviours of the child with ID in the SSAOF. If the child with ID performed the social skill without help during the recording, the relevant behaviour was recorded as independent behaviour (IB). If the child with ID performed the social skill in the relevant step using a cue, this behaviour was recorded as a cued behaviour (CB). When the child with ID did not perform the social skill in the relevant step, the form was recorded as no behaviour (NB). Two points are given for each behaviour performed independently and one point is given for each behaviour performed with prompting. Zero points were given for each behaviour that could not be performed. Children with ID had the opportunity to try the target social skill at least five times in each lesson. The five attempts are scored as independent behaviour, behaviour with prompting and no behaviour. The developmental performances of each child with ID were shown in detail by using the averages of the behaviours performed independently and the averages of the behaviours performed with prompting for ten weeks.

Results

In line with the data obtained from the SSAOF, which was created to follow the social skills development of the children with ID, the developmental performances followed for 10 weeks were graphised and presented in detail. Figure 2, Figure 3, Figure 4, Figure 5, Figure 6 and Figure 7 below show the development of the participants' 10-week targeted social skills as independent behaviour (IB) and cued behaviour (CB). Also abbreviated as week (W) in the figures. For example; 1.W (1st week).

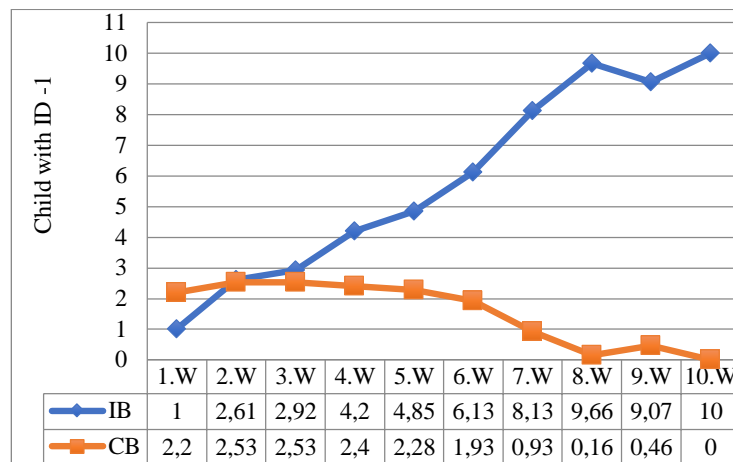


Figure 2. SSAOF Independent Behaviour and Behaviour with Cue Means of Child with ID-1

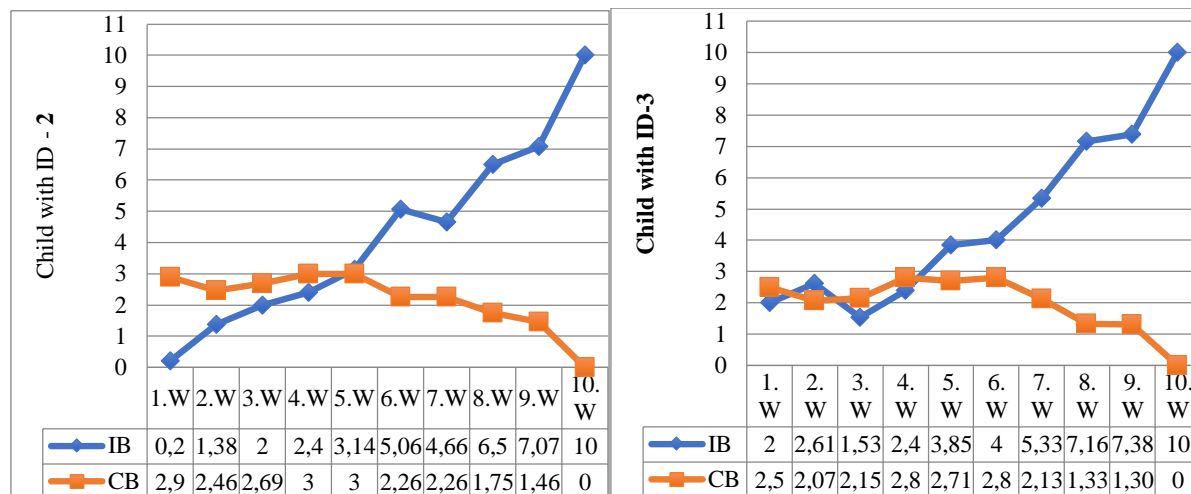


Figure 3. SSAOF Independent Behaviour and Behaviour with Cue Means of Child with ID-2 and Child with ID-3

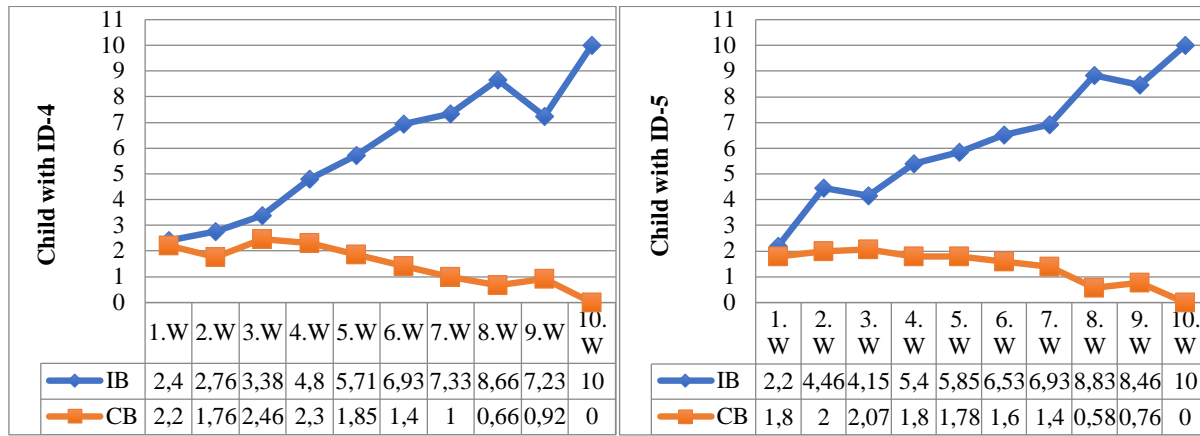


Figure 4. SSAOF Independent Behaviour and Behaviour with Cue Means of Child with ID-4 and Child with ID-5

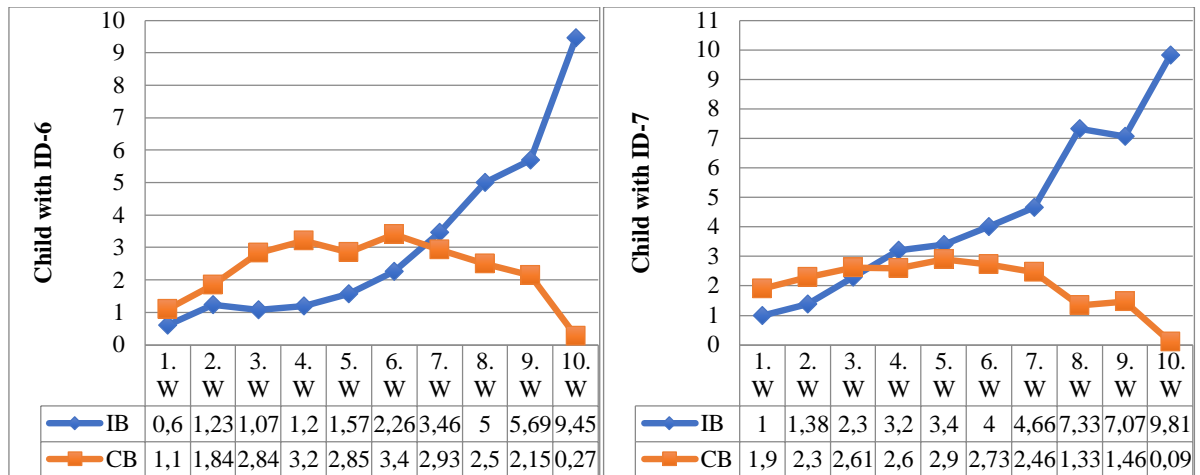


Figure 5. SSAOF Independent Behaviour and Behaviour with Cue Means of Child with ID-6 and Child with ID-7

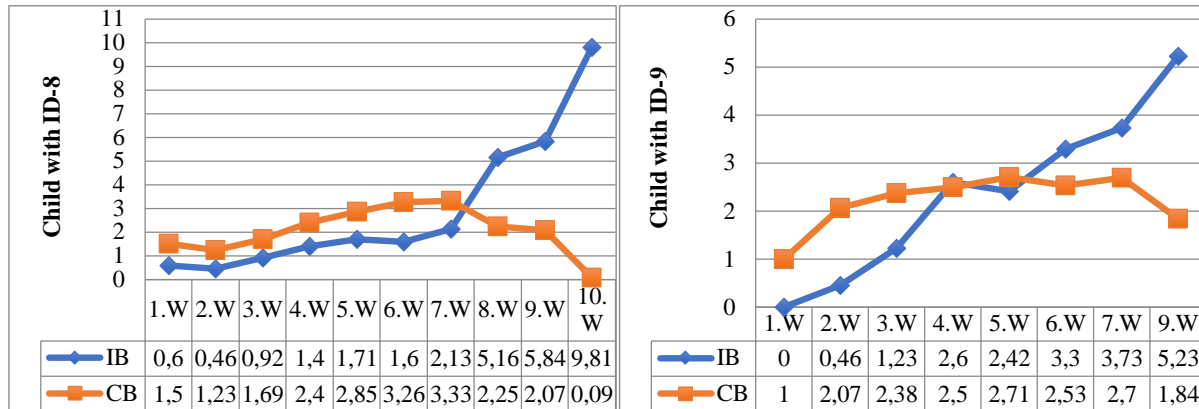


Figure 6. SSAOF Independent Behaviour and Behaviour with Cue Means of Child with ID-8 and Child with ID-9

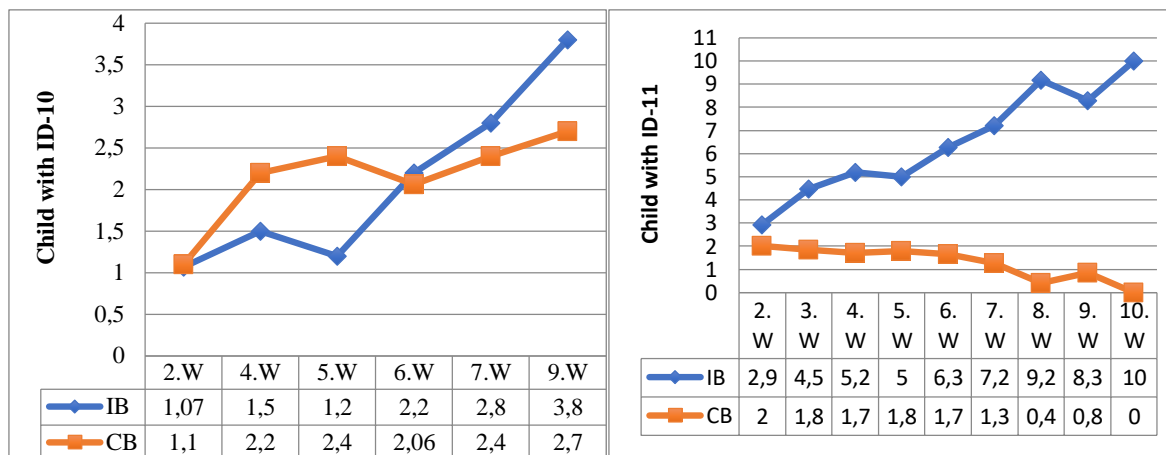


Figure 7. SSAOF Independent Behaviour and Behaviour with Cue Means of Child with ID-10 and Child with ID-11

The 40-minute lessons of the children with ID who participated in the "Adapted Educational Game" training programme were videotaped 2 days a week for 10 weeks. Then, using the SBAGF, the independent and prompted display of the targeted social skills of each child with ID were examined. When the figures are examined, it is seen that independent behaviours increased 7.72 times on average compared to the first week, while the behaviours exhibited with prompting decreased steadily. However, it has been shown that whether or not the children with ID continue the "Adapted Educational Game" interventions affects the averages of independent behaviours and behaviours with prompting. For this reason, it was found that the child-9 participant with ID was absent in the 8th and 10th weeks and had a lower mean independent behaviour (IB=5.23) in the last week of participation in the intervention compared to the other participants.

Nevertheless, it was observed that there was a decrease in the mean behaviour with prompting until the ninth week. When child-10 was examined, it was observed that he participated in a 6-week implementation process. However, in the ninth week, it was found that the mean of independent behaviour (IB=3.8) and the mean of behaviour with prompting (CB=2.7) were quite close to each other. This situation means that the child with ID continued to exhibit behaviour with prompting. While the mean independent behaviour of child-10 increased as expected, the mean cue behaviour did not decrease.

With these exceptions, it was observed that the children with ID who regularly participated in the interventions exhibited each social skill independently at the end of the tenth week. In the first week of the intervention, it was observed that the children with ID showed an average of two to three prompting behaviours and this behaviour gradually decreased. In the first weeks of the "Adapted Educational Game" intervention, it was observed that the children with ID mostly exhibited behaviours exhibited with prompting. However, in the fifth and sixth week, it was observed that the behaviours exhibited independently started to occur more than the behaviours exhibited with prompting.

When the figures are examined holistically, the majority of the children with ID who participated in the "Adapted Educational Game" interventions for ten weeks gained momentum in the behaviours they exhibited independently after the third or fourth week. The intermittent participation of the children with ID in the "Adapted Educational Game" interventions caused the acceleration to be prolonged gradually. The averages of the behaviours with prompting started to decrease as of the sixth week. Therefore, especially from the sixth week onwards, the content and duration of the "Adapted Educational Game" interventions started to be effective. The children with ID attempted all targeted social skills until the fifth week. However, the frequency of repetition of targeted social skills increased after the fifth week.

Discussion

The findings of this study illuminate the potential of adapted educational games as an important tool to improve the social skills of children with ID. The results of the study are in line with research in the literature highlighting the positive impact of play interventions in improving social development in this population (Mancil et al., 2015; Smith et al., 2018; Asiye & Naeema, 2019; Yaman 2019). Asiya and Naeema (2019) investigated how play and leisure time activities affect the socialisation skills of a child with ID. Accordingly, it shows that leisure time and play activities are effective in improving the general social skills of a child with ID.

In the literature, there are studies supporting the role of adapted educational games, which is one of the important findings of the study, in developing communication skills. Accordingly, it is in line with the study of Barbu et al. (2016), which revealed that cooperative games can improve the communication skills of children with ID. In their study, Duman and Sukan (2014) stated that physical activity contributed to the development of communication skills of children with ID and that children started to be more accepted and adapted in the society. In addition, the research also emphasises the development of cooperation and teamwork through games. Most of the adapted educational games used as intervention programmes in the research require cooperation. Accordingly, it is seen that students developed social skills such as teamwork, taking turns and helping each other. These findings are consistent with the study of Johnson and Johnson (2019), who emphasised the collaborative nature of games as a way to build social behaviours and promote positive relationships. In another study, it was determined that play and sports activities of children with ID developed social aspects such as gaining group membership and participating in teamwork (Yaman, 2015).

Developing social skills Children with ID often face difficulties in social interactions. This makes it necessary to provide targeted interventions and support. Studies have proven that behavioural analysis is an effective method to facilitate social skills development in this population (Matson et al., 2013). Our findings underline the important role of behaviour analysis in supporting social skills development among children with ID. This study is in line with research highlighting the effectiveness of behaviour analysis interventions in increasing the social skills development of children with ID (Matson et al., 2013). One of the important findings from our study is that behaviour analysis provides a structured framework for teaching and reinforcing specific social behaviours, enabling children with ID to acquire basic skills in a systematic and targeted manner. This approach allows educators and specialists to tailor interventions to the unique needs and abilities of each child, ensuring that social skills development is both achievable and meaningful (Leaf et al., 2015).

Conclusion

The results of this study underline the positive effect of adapted educational games on the social skills development of children with ID. Adapted educational games offer a versatile and fun tool to develop social skills such as communication and cooperation in children with ID. At the same time, the results reveal the importance of behaviour analysis in the acquisition of social skills among children with ID. By providing a systematic and individualised approach to skill acquisition, addressing challenging behaviours and facilitating generalisation, behaviour analysis holds great promise as a valuable tool to improve the social

competence and overall quality of life of children with ID. In conclusion, it was found that children attending adapted educational games independently demonstrated the targeted social skills.

Recommendation

It is important to acknowledge the need for ongoing research to improve and expand the application of behaviour analysis in the context of social skills development for children with ID. Future studies should investigate the long-term outcomes of such interventions and explore innovative ways to make these interventions more accessible to the wider spectrum in this population. However, it is important to recognise that not all games may be equally effective and that individual preferences and abilities should be taken into account when selecting games for interventions. It is recommended that future research explore the specific types of games and interventions that provide the most significant benefits for different disability groups of children with ID. In addition, a new study can be planned to monitor whether the children with ID who participated in the study use the skills they learnt in situations and environments they encounter in their daily lives.

References

- AAIDD (2023). *FAQ on the AAIDD definition on intellectual disability*. Access address (12/08/2023):<https://www.aaidd.org/intellectual-disability/faqs-on-intellectual-disability>
- Asiya, K., & Naeema, S. (2019). Effectiveness of leisure and play activities for socialization skills of a child with intellectual disability - A case study. *JPMA The Journal of Pakistan Medical Association*. 69 (2), 178.
- Atkinson-Jones, K., & Hewitt, O. (2019). Do group interventions help people with autism spectrum disorder to develop better relationships with others? A critical review of the literature. *British Journal of Learning Disabilities*, 47(2), 77-90.
- Avcıoğlu H. (2007). Validity and reliability study of social skills assessment scale (4-6 years). *Abant İzzet Baysal University Journal of Faculty of Education*, 7(2), 87-101.
- Barbu, E. A., Bergin, C., & Thompson, C. L. (2016). Cooperative board games: A way to modify aggression and prosocial behavior in preschoolers. *Journal of Applied Developmental Psychology*, 43, 95-103.

- Birkan, B. (2013). Autism and applied behaviour analysis: Community-based applications. *Journal of Occupational Therapy and Rehabilitation, 1*(2), 92-96.
- Çamlıyer H., & Çamlıyer H. (2018). *Child movement education and play in education integrity*. Manisa Celal Bayar University Press.
- Duman, S., & Sukan, H. D. (2014). The effect of physical activity on socialisation of mentally disabled children. II. International Congress on Physical Education and Sports in Disabled People. Batman University. Batman.
- Erbaş, D., Kırcaali-İftar, G., & Tekin-İftar E. (2007). Functional assessment: The process of dealing with behaviour problems and acquiring appropriate behaviours. Kök Publishing House: Ankara.
- Gresham, E. (1997). Social competence and students with behavior disorders. Where we've been, where we are and where we should go. *Education and Treatment of Children, 20*, 233-249.
- Huang, W., & Cuvo, A. J. (1997). Social skills training for adults with mental retardation in job-related settings. *Behavior Modification, 21*(1), 33- 44.
- Johnson, D. W., & Johnson, R. T. (2019). Cooperative learning in the classroom (3rd ed.). ASCD.
- Leaf, R., Taubman, M., Bloomfield, S., Palos-Rafuse, L., Leaf, J., McEachin, J., ..& Johnson, D. (2015). Increasing social skills and pro-social behavior for three children diagnosed with autism through the use of a teaching package. *Research in Autism Spectrtrum Disorders, 10*, 32-41.
- Mancil, G. R., Conroy, M. A., Nakao, T., & Kanfiszler, D. (2015). Social validity of function-based interventions for young children with disabilities. *Journal of Positive Behavior Interventions, 17*(1), 50-59.
- Matson, J. L., & Wilkins, J. (2013). A critical review of assessment targets and methods for social excesses and deficits for children with autism spectrum disorder. *Research in Autism Spectrum Disorders, 7*(8), 1107-1115.

- Mcfall, R. M. (1982). A review and reformulation of the concept of social skills. *Behavioral Assessment, 4*, 1-33.
- Mendez, J. L, McDermott, P., & Fantuzzo, J. (2002). Identifying and promoting social competence with african american preschool children: Developmental and contextual considerations. *Psychology in the Schools, 39*(1), 111-123.
- Pivec, M. (2007). Play and learn: Potentials of game based learning. *British Journal of Educational Technology, 38*(3), 387-393.
- Smith, J. D., Roberts, R. M., & Allison, C. L. (2018). The effects of physical activity on student behavior, achievement, and academic health. *Journal of Applied Behavior Analysis, 51*(3), 784-792.
- Tekin-İftar, E. (2017). Behaviour recording techniques. In: Tekin-İftar E, (ed.). *Single-subject research in education and behavioural sciences*. Turkish Psychologists Association: Ankara. p:69-108.
- Yaman, D. (2019). Teacher opinions on the effect of play on the social development of children with special needs. Yakın Doğu University Institute of Educational Sciences, Master's Thesis. Nicosia.
- Yaman, T. (2015). Investigation of the effect of physical education and play on social skill acquisitions of mild mental disabilities. Mehmet Akif Ersoy University Institute of Educational Sciences, Unpublished Master's Thesis. Burdur.