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# A Comparison of the Effects of Direct Modeling and Video Modeling Provided by Peers to Students with Autism who are Attending in Rural Play Teaching in an Inclusive Setting

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**Abstract**

In the present research, the peers of children with autism at primary school level and in an inclusive environment were taught using direct modeling and video modeling education processes, and it was observed whether or not they could effectively and efficiently teach how to play games to their friends with autism. This study used adapted alternating treatments design from single subject designs. The research included 21 students from the first and second grades of primary education, 18 of whom participated as peer tutors with normal development, and 3 of whom participated as peer tutees with autism. The dependent variable of the research was the game learning skills determined through interviews with teachers for each sample. The independent variables were the implementation of direct modeling education and video modeling education by peers. The effectuality results of the study indicated that the participants played these games at 83- 100% accuracy level and generalized it to different environments. In addition, the participants were observed to have the rules of games at 83-100% level one and three weeks after the completion of the implementation. Comparing the efficiency of the two education implementations, no significant difference was observed between direct modeling and video modeling education implementations in terms of the efficiency variable. The social validity findings of the research indicated the positive expressions of peer tutors regarding the study.

**Key Words**

Children with Autism, Video Modeling Education, Modeling Education, Single Subject Designs.

Individuals with autism often have problems in exhibiting social interaction skills and in learning sophisticated game skills. Many different techniques are used in teaching those skills, and direct modeling and video modeling are among those techniques (American Psychiatric Association, 2001 cited in Kırcaali & İftar, 2007, pp. 19-27; Genç, 2010).

Modeling is the process in which an individual demonstrates a skill or exhibits a behavior after observing it from the performance of a model (Buffington, Krantz, McClannahan, & Poulson, 1998; Charlop-Christy, Le, & Freeman, 2000). Many studies state that, when used together with other methods, modeling becomes more effective. It is easy-applicable for students at every level and can be used in one-to-one or in group education as well (Nikopoulos & Keenan, 2006, p. 60). Some research finds that direct modeling has little effect

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on children with autism, but some researchers suggest otherwise (Varni, Lovaas, Koegel, & Everett, 1979 cited in Charlop-Christy et al., 2000). Direct modeling is effectively used by Egel, Richman, and Koegel (1981) in order to teach the skill of discriminating between different concepts; by Tyron and Keane (1986), and Arntzen, Halstadtro, and Halstadtro (2003) in order to teach the skills for playing games independently; and by Charlop-Christy et al. in order to teach different communication, self-care and game skills.

Modeling is one of the scientific based implementations frequently used in the education of children with autism (Bellini & Akullian, 2007; Corbett, 2003; Delano, 2007; Genç, 2010; Sturmey, 2003; Sturmey & Fitzer, 2007, pp. 94-95). Video modeling implementation includes the education process in which an individual is asked to perform the target behavior he/she has watched in a video (Corbett; Dowrick, 1991 cited in Nikopoulos & Keenan, 2006). The literature includes many studies reporting the effectiveness of video modeling education in the teaching of many different games and social skills at different academic levels (Charlop-Christy et al., 2000; D'Ateno, Mangiapanello, & Taylor, 2003; Hagiwara & Myles, 1999; Hine & Wolery, 2006; Keen, Brannigan, & Cuskelly, 2007; Marcus & Wilder, 2009; Reagon, Higbee, & Endicott, 2006). The literature includes two studies comparing direct modeling and video modeling education. Of those studies, Gena, Couloura, and Kymissis (2005) revealed the uses of responses to children in the pre-school period using two methods. Charlop-Christy et al. (2000) effectively taught different skills to five children with autism.

Inclusion is the education of students with special needs in regular education classes, which are the least restrictive education environments for them, full or part time, and providing them with necessary supportive services (Batu & Kırcaali-İftar, 2005, p. 11; Odluyurt & Batu, 2009; Sucuoğlu, 2006, p. 35). Children with autism are placed in inclusive environments in both the pre-school period and at primary school level. Given their special conditions, children with autism should be assisted both before and after they are placed in inclusive environments in the areas of academic, social, and communication skills.

Games are entertaining activities which are shaped by children themselves, and they help children to learn, to develop their creativity, to spend their energies and start to develop social interaction skills (Kırcaali-İftar, 2007, p. 20; Şen, 2010; Wolfberg, 1999, p. 17.). Children learn to play games within a framework of definite rules and certain limits (Sevinç 2004; Wolfberg, p. 41; Yavuzer, 1995, p. 46). In the present study, the peers of the students with autism at primary school level and in inclusive environments were taught to give education through direct modeling and video modeling. It was examined whether or not they could effectively and efficiently teach the playing of games to their friends with autism using these methods.

## Method

### Participants and Settings

The study included 21 students in education at a primary school of the Ministry of National Education. Eighteen of the participants were peer tutors with normal development, and 3 participants were peer tutees with autism. The peer tutees were three male students with autism and their ages ranged between 7 and 13 years. Nine of the peer tutors were female and 9 were male. Their ages ranged between 8 and 13 years.

### Research Model

For comparing the effectiveness and efficiency of direct modeling and video modeling education in teaching game playing skills in children with autism in inclusive environments, the present study used an adaptive alternating treatments model from single subject designs.

### Dependent and Independent Variable

In the adapted alternating treatments model, experimental control is achieved when the changes in the inclination or the level of the dependent variable, to which an independent variable is applied, is higher than the change in the inclination or the level of the dependent variable, to which another independent variable is applied (Tekin-İftar & Kırcaali-İftar, 2006). For the purposes of the present study, two games which are functionally the same were chosen. However, they are independent of each other, for each sample. One of the skills was taught through direct modeling education, and the other through video modeling education.

### Implementation Procedure

The period of experiment consisted of peer education sessions (where both methods were taught to

peers), examination (initial probe and intermittent probe sessions), training, maintenance, and generalization sessions. All stages of the experiment process were conducted by the implementer. The answering interval was 5 seconds. Before the studies, the implementer prepared the equipment for the games that were to be taught and used in probe sessions.

The below mentioned implementation flow was used when the peer tutors were taught how to implement direct modeling and video modeling education, and how to present the reinforcers (Tekin-İftar, 2003; Yıldırım & Tekin İftar, 2002). (a) An oral explanation about the methods to be used, (b) the implementer being a model in the implementation of the methods to be used (c) arranging education sessions where each of the peer tutors acted as both tutors and tutees, (b) giving feedback about their implementation. The peer education process was realized as a small group education organization.

**Probe Sessions**

Starter level probe sessions were organized before beginning the education and continued until the determined data were obtained in three subsequent sessions. A single-opportunity method was used for acquiring data in the starter level probe sessions. According to the single-opportunity method, evaluation was terminated when the participants gave the wrong response, and in skill analysis, together with this step, all the subsequent steps were accepted as implemented wrongly.

**Intermittent Probe Sessions**

Intermittent probe sessions were made after each three education sessions in order to determine the performance levels of the participants regarding the games that had been taught. The process of the intermittent probe sessions was the same as the one of the starting level probe sessions. Intermittent probe data were used in the graphical analysis process.

**Training Sessions**

The implementations of the direct modeling and video modeling education were realized in a rank that could not be predicted by the researcher, and this ranking was made through random assignment. Peer tutors presented skill directive and model clue for the determined games to peer tutees in order for them to implement all the steps in skill analysis. The peer tutor was reassured in her/his participation when the tutee completed all the steps and played the game.

**Maintenance and Generalization Session**

Maintenance data were acquired in two sessions and at different dates for each sample and each game in one, and three weeks after the fulfillment of the criterion for the games, and the same process of probe sessions were followed in these process.

Generalization sessions were planned as across settings style in pre-test and post-test design, and were conducted in the children's school playgrounds. The same process of probe sessions was followed in generalization sessions.

**Reliability**

Two types of reliability data were acquired in the research: a) inter-observer reliability data and b) implementation reliability data. The formula of "consensus/ consensus+ dissensus X 100" (Tekin-İftar & Kırcaali-İftar, 2006, p. 67) was used in the analysis of the inter-observer reliability data. The lowest inter-observer reliability coefficient obtained from the study was determined as 97%, and the highest as 100%. An "observed implementer behavior/planned implementer behavior X 100" formula (Tekin-İftar & Kırcaali-İftar, p. 67) was used in the implementation reliability analysis of the research. All behaviors that were considered in acquiring the implementation reliability data of the study were determined to be realized at an average of 99% (range=%97-100%) reliability level.

**Results**

The effectiveness results of the study indicate that the participants realized these games at an approximately 83- 100% accuracy level and generalized them to different environments. In addition, all three participants were observed to retain an ability to play these games at an approximately 83-100% level one and three weeks after the completion of the implementation. Comparing the efficiency of the two education implementations, no significant difference was observed between the direct modeling and the video modeling education implementation in terms of efficiency variable. The social validity findings of the research indicate that the peer tutors expressed positive opinions concerning the study.

**Discussion**

The results of the present study indicate there is no differentiation between the effectiveness of direct modeling education and video modeling education. In other words, this study reveals the same level of effectiveness for both direct modeling and video modeling education in teaching games.

The literature includes only a few studies comparing direct modeling education and video modeling education. Gena et al. (2005) teach how to show emotional responses to children in the preschool period using both methods, which are found to be effective at the same level. Charlop-Christy et al. (2000) teach communication, self-care and game skills to children with autism, and report that video modeling is more effective, especially in the generalization phase, when compared to direct modeling. Therefore, it can be stated that the results of the present study are consistent with the studies independently examining the effectiveness of direct modeling and video modeling education in teaching games.

When the two education implementations were compared in terms of the efficiency variable, the same differences were observed between the direct modeling and the video modeling education implementation. All three samples were found to have the same efficiency level in terms of the session number and trial number realized until the fulfillment of the criteria in both methods. The video model education was found to be more efficient when compared to the direct peer modeling education. Given the results of the present research in terms of the total time elapsed until the criterion was achieved, which was another dimension of the efficiency dimension, direct modeling education was found to be more efficient. The reasons for the differences regarding the aforementioned efficiency variables can be explained as: Firstly, the characteristics of the students may cause these differences. Secondly, the intermittent probe sessions are organized at three education session intervals. Thirdly, they may result from the features of the preferred games. The fact that the games required oral expression may explain the high rate of percentage error.

The social validity results of the study indicate the positive expressions of peer tutors regarding the study. Both studies comparing direct modeling and video modeling education (Charlop-Christy et al., 2000; Gena et al., 2005) are observed not to have social validity data. Therefore, the present study, which examined the social validity of direct modeling and the video modeling education implementation, depending on the participation of peer tutors, is expected to contribute to the literature. In addition, the literature includes no other studies that had been conducted in an inclusive environment with children with autism, and additionally included the education in games by peers. In that respect also, this study is expected to contribute to the literature.

Previous studies are observed to be ones conducted in one-to-one education in structured environments (Charlop-Christy et al., 2000; Gena et al., 2005). The fact that the present study was conducted in an inclusive environment with classmates of peer tutees can be said to increase its generalizability, and supports the harmonization of children with autism within an inclusive environment, and thus supports social inclusion, one of the targets of inclusion.

Based on the results of the research, the present study may suggest future studies: similar studies may be conducted with different implementers (e.g. parents, teachers) in the education of different skills and may include samples with different features (e.g. individuals with different disabilities at different levels). The effectiveness and efficiency of video modeling may be examined with different education methods (e.g. constant time delay procedure). Different academic and everyday life skills can be taught via video modeling and direct modeling education. Qualitative research determining the views of students' parents and of school personnel, and observing the changes occurring in the children of both groups could be conducted.

**References/Kaynakça**

Arntzen, E., Halstadtro, A. M., & Halstadtro, M. (2003). Training play behavior in a 5-year-old boy with developmental disabilities. *Journal of Applied Behavior Analysis*, *36*, 367-370.

Batu, S. ve Kırcaali-İftar, G. (2005). *Kaynaştırma*. Ankara: Kök Yayıncılık.

Bellini, S., & Akullian, J. (2007). A meta-analysis of video modeling and video self-modeling interventions for children and adolescents with autism spectrum disorders. *Exceptional Children, 73*, 264-287.

Buffington, D. M., Krantz, P. J., McClannahan, L. E., & Poulson, C. L. (1998). Procedures for teaching appropriate gestural communication skills to children with autism. *Journal of Autism and Developmental Disorders*, *28*, 535-545.

Charlop-Christy, M. H., Le, L., & Freeman, K. A. (2000). A comparison of video modeling with in vio modeling for teaching children with autism. *Journal of Autism and Developmental Disorders*, *30* (6), 537–552.

Corbett, B. A. (2003). Video modeling: A window into the world of autism. *The Bahavior Analyst Today*, *4*, 367-377.

D'Ateno, P., Mangiapanello, K., & Taylor, B. A. (2003). Using video modeling to teach complex play sequences to a preschooler with autism. *Journal of Positive Behavior Interventions*, *5*, 5-11.

Delano, M. E. (2007). Video modeling interventions for individuals with autism. *Remedial and Special Education, 28,* 33-42.

Egel, A. L., Richman, G. S., & Koegel, R. L. (1981). Normal peer models and autistic childrens learning. *Journal of Applied Behavior Analysis*, *14*, 3-12.

Gena, A., Couloura, S., & Kymissis, E. (2005). Modifying the affective behavior of preschoolers with autism using in-vivo or video modeling and reinforcement contingencies. *Journal of Autism and Developmental Disorders, 35* (5), 545-556.

Genç, D. (2010). *Otistik özellikler gösteren çocuklara eşzamanlı ipucuyla öğretimin yalnız sunulmasıyla video modelle birlikte sunulmasının karşılaştırılması.* Yayınlanmamış yüksek lisans tezi, Anadolu Üniversitesi, Eğitim Bilimleri Enstitüsü, Eskişehir.

Hagiwara, T., & Myles, B. S. (1999). A multimedia social story intervention: Teaching skills to children with autism. *Focus on Autism and Other Developmental Disabilities*, *14* (2), 82-91.

Hine, J. F., & Wolery, M. (2006). Using point-of-view video modeling to teach play to preschoolers with autism. *Topics in Early Childhood Special Education*, *26*, 83-93

Keen, D., Brannigan, K. L., & Cuskelly, M. (2007). Toilet training for children with autism: The effects of video modeling. *Journal of Developmental and Physical Disabilities, 19*, 291-303.

Kırcaali-İftar, G. (2007). *Otizm spektrum bozukluğu*. İstanbul: Daktylos Yayınları.

Marcus, A., & Wilder, D. A. (2009). A comparison of peer video modeling and self video modeling to teach textual responses in children with autism. *Journal of Applied Behavior Analysis, 42*, 335-341.

Nikopoulos, C., & Keenan, M. (2006). *Video modeling and behaviour analysis*. London: Jessica Kingsley Publishers.

Odluyurt S. ve Batu, E. S. (2009). Okul öncesi dönemdeki kaynaştırmaya hazırlık becerilerinin öğretmen görüşlerine ve alanyazın taramasına dayalı olarak belirlenmesi. *Kuram ve Uygulamada Eğitim Bilimleri, 9*, 1819-1851.

Reagon, K. A., Higbee, T. S., & Endicott, K. (2006). Teaching pretend play skills to a student with autism using video modeling with a sibling as model and play partner. *Education and Treatment of Children, 29,* 517-528.

Sevinç, M. (2004). *Oyun; Erken çocukluk gelişimi ve eğitiminde oyun.* İstanbul: Morpa Yayın.

Sturmey, P. (2003). Video technology and persons with autism and other developmantal disabilities: An emerging technology for PBS. *Journal of Positive Bahevior Interventions, 5,* 3-4.

Sturmey, P., & Fitzer, A. (2007). *Autism spectrum disorders*. USA: PRO-ED.

Sucuoğlu, B. (2006). *Etkili kaynaştırma uygulamaları.* Ankara: Ekinoks Yayınları.

Şen, M. (2010). Erken çocukluk eğitiminde oyun ve önemi. İ. H. Diken (Ed.), *Erken çocukluk eğitimi* içinde (s. 404-431). Ankara: Pegem Akademi.

Tekin-Iftar, E. (2003). Effectiveness of peer delivered simultaneous prompting on teaching community signs to students with developmental disabilities. *Education and Training in Developmantal Disabilities,38,* 74-94.

Tekin-İftar, E. ve Kırcaali-İftar, G. (2006). *Özel eğitimde yanlışsız öğretim yöntemleri* (3. bs). Ankara: Nobel Yayınları.

Tryon, A. S., & Keane, S. P. (1986). Promoting imitative play through generalized observational learning in autisticlike children. *Journal of Abnormal Child Psychology*, *14*, 537–549.

Wolfberg, P. J. (1999). *Play & Imagination in children with autism*. NY; Teachers College Press.

Yavuzer, H. (1995). *Ana-baba okulu.* İstanbul: Remzi Kitabevi.

Yıldırım, S. ve Tekin-İftar, E. (2002). Akranların sunduğu sabit bekleme süreli öğretim gelişimsel geriliği olan öğrencilere tanıtıcı levhaların öğretiminde etkili midir? Özel Eğitim Dergisi, *3*, 67-84.

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