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OUTCOMES OF PLAY-BASED HOME SUPPORT FOR CHILDREN WITH AUTISM SPECTRUM DISORDER

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Play-based home support is an important early education option that leads to positive changes in the development of children who are either at risk of, or have been diagnosed with, developmental disorders. In this case study I analyzed the second year of an education program, based on play-based home support and family education offered to a 4-year-old boy with autism spectrum disorder. I found that: (a) the child demonstrated progress in skills covered by the individualized education, (b) there was a consequential decrease in intensity of autism symptoms, (c) there was evidence of development of the child's attention during playtime, and (d) the child's communication and speech skills showed improvement. The implications of this case study are further discussed in relation to natural learning settings, family cooperation, and early education for children at risk of developmental disorders.

Keywords: developmental disorders, impulse control, play-based home support, early childhood education, autism spectrum disorder.

The substantial positive impact of early education programs on reaching developmental milestones in children whose development is retarded in the early childhood period has been documented in numerous studies in the literature.

General characteristics of children with autism include inability to make eye contact, to smile when smiled at, and to initiate and respond communication (Whitaker, Barratt, Joy, Potter, & Thomas, 1998). Additionally, unlike the general population, people with autism have difficulty in comprehending messages, and in interpreting facial expressions, body language, emotional expressions directed

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toward them, and tone of voice (Rapin, 1991). Further, children with autism are likely to have a fear of change of environment, so that keeping to a routine and engaging in repetitive movements may help them calm down (Cohen, 1998).

In earlier times, autism was explained within the framework of learning difficulty or mental disability based on the low scores on IQ tests obtained by children with this disorder. Results gained in recent studies have led to a change in this point of view. With the development of tests designed specifically for autistic children, it has been reported that although mental capacity was determined to be below average in 50% of these children, the other 50% had either average or above average mental capacity (Frith, 2008).

When preschool children at risk for, or with the diagnosis of, developmental disability receive early education that supports their development, diagnostic symptoms are likely to reduce and even disappear, allowing children with autism to reach the same developmental levels as their peers who have not been diagnosed with such disorders. In other words, these disabilities can be prevented. In cases where these developmental disabilities cannot be prevented or the symptoms associated with the disability persist despite their having received early education, these children can effectively benefit from inclusive (mainstreaming) educational environments, with the result that they lead more independent lives than would otherwise be the case. In particular, the continuation of brain development up to the age of three years enhances the positive effects of early education (Gulec-Aslan, 2011).

Families, educators, and professionals experience significant difficulties with children who have developmental disabilities, owing to the behavioral problems displayed by these children (Dunlap, Robbins, & Darrow, 1994). However, the effects of behavioral problems in autistic children can be reduced through various functions of the family (Dunlap et al., 1994). Child-centered play-based education programs, especially those involving family participation, have been found to minimize, or eliminate entirely, the frequency of behavioral problems in children who have pervasive developmental disabilities. The aim in many recent studies has been to determine the effect of families on children's behavioral and learning characteristics. Scott (2006) stated that, in the case of children with special needs, family education programs have a positive effect on family-child interactions, acquisition of learning-related skills, and in guiding or eliminating problematic behaviors. Lovaas and colleagues were the pioneers in emphasizing the importance of family education and participation in education for children with autism (Ingersoll & Dvortcsak, 2006; Lovaas, Koegel, Simmons, & Long, 1973).

Certain behaviors are pivotal in the acquisition of new behaviors. The concept of pivotal behaviors is an effective research tool in studies on interventions for children with autism/developmental disabilities (Koegel & Frea, 1993;

Mahoney, Kim, & Lin, 2007; Stahmer, 1995). The natural setting of family-child interaction and order varying in frequency and type provides innumerable learning opportunities to these children (Hart & Risley, 1999). In past studies the effectiveness has been revealed of behavioral, social, and communication programs conducted with families of children with autism (Koegel, Bimbela, & Schreibman, 1996; Vaughn, Clarke, & Dunlap, 1997).

Early childhood environmental organization and education has been reported to have positive effects on children's well-being and future life (Talay-Ongan, 2001). In particular, early education programs initiated within the first three years of life have been documented to have longer lasting and more effective outcomes (Gwynne, Blick, & Duffy, 2009). Early education has significant effects on cognition, communication, adaptation, psychological development, and psychosocial and self-help skills (Barnett, 1995; Talay-Ongan, 2001; Yoshikawa, 1995). Different types of early education programs have been developed for children diagnosed with autism later or earlier in life, including the relationship-based approach, training and education of children with autism and related communication handicaps. *Applied behavioral analysis* can be summarized as a systematic regulation of environmental events for acquisition of desired behaviors. Hundreds of special teaching techniques are used within the context of applied behavioral analysis. In our study, a home-supported play-based education program was applied to teach important (key) behaviors based on the principles of *pivotal response training* (PRT).

PRT is one of the techniques used in the early childhood period in early intervention practices for children with autism, and this training technique is targeted at providing skills and key behaviors including having an interest in others, establishing eye contact, and engaging in fictional and functional game play with peers and adults, in a play-based, semistructured natural environment (Koegel et al., 1996; Koegel, Koegel, & Brookman, 2003). Play-based training of pivotal behaviors is a method used to support normal development in the natural environment for children with autism and language delays, up to the age of six (Humphries, 2003).

Mahoney et al. (2007) recommend teaching key behaviors with family involvement in a responsive play setting via the Interaction-Based Early Education Program (IBEEP). The IBEEP is an early education program with a growing scientific basis and was developed by Mahoney and McDonald (2007) in the United States. It is aimed at enabling the mother/father or other caregiver who spends greatest amount of time with the child throughout the day, to support and stimulate the cognitive, communicative, and social emotional development of children during one-on-one interactions. IBEEP can also be used in parent-child interaction for children aged 0-6 years who are at risk of, or have been diagnosed with, developmental disabilities (e.g., mental disability,

autistic spectrum disorder), as well as for children who are developing normally (Karaaslan, 2010).

Family-supported and play-based educational programs have been found to have a positive impact on internal motivation (Dunlap, 1984; Koegel, Dyer, & Bell, 1987; Koegel & Koegel, 1986; Koegel et al., 1988), which is commonly lacking in children diagnosed with developmental disorders. Six main stages designed to enhance motivation in teaching pivotal behaviors are as follows:

1. Child's Attention. When the child becomes uninterested in his/her environment, the family should find different activities to spark attention. Development of attention and establishment of eye contact are very important.

2. Clear Opportunity. The family should attempt to make the child realize the relationship between language and context by providing clear questions, explanations, or alternative options. If the child does not respond within three minutes, the adult pauses for a response. Providing the child with a toy or an alternative activity are examples of this stage.

3. Child's Choice. The parent should follow the child's choice with regard to tasks and activities. If a child is not showing interest in the current task, or is not showing interest in the environment, then the parent should try changing tasks or providing the child with choices.

4. Contingency. Reinforcement must be contingent upon the child's behavior. The parent's response is dependent on the child's responses. If the child says "ball", the family hands the actual ball to the child as a reinforcer for the word "ball". Every action of the child should be observed and positively supported.

5. Natural Reinforcement. Reinforcement should be natural or directly related to the task. If the child does not respond, then the parent withholds the natural reinforcement.

6. Contingent on Attempts. Any functional goal-directed attempt to respond to an opportunity should be reinforced. An attempt does not need to be correct. This includes word approximations (Christensen, 2010).

Pivotal behavior training consists of training on skills that form the basis of social skills such as paying attention, taking turns in play, expressing preferences, receptive language development, and use of gestures and mimicry (Christensen, 2010; Iovannone, Dunlap, Huber, & Kincaid, 2003; Koegel et al., 2003).

In the home education approach, educators are able to teach and are present in the child's natural daily setting. The advantages of this approach are that generalizations and applications occur instantly, and that the specialists can get to know and directly observe the children in their natural settings. If a clinical-based approach is used, the child will be limited to the clinic's playroom, and the parents will have to devote extra time to transportation to and from the clinic. Marcus, Kunce, and Schopler (1997) stated that in a home setting, the child will be educated in normal daily conditions and will learn the skills more easily.

One initial step in play for children who are younger or still less functional is turning a car's wheel or pushing it along a surface. In an attempt to advance the play, the teacher would add new components to the existing pattern set associated with the play. For example, in play with a doll, the child will place the doll in bed or under the blankets before s/he kisses it and says "goodnight". In every game, each step forward or backward is repeated. The child is taught the play skills through trials. Each step is performed repeatedly using the forward and backward chaining method and each step is related to the other. The desired skills are developed via teaching (Leaf & McEachin, 1999; Maurice, Green, & Luce, 1996; Smith, 2001; Stahmer, Ingersoll, & Carter, 2003; Weiss & Harris, 2001).

In studies on the effectiveness of the recently developed parent-child interaction based models, the likelihood of the positive effect of relational applications grounded in parent-child relationship is emphasized in relation to the bidirectional, reciprocal, and responsive nature of interactions among children with autism (Gutstein, Burgess, & Montfort, 2007; Karaaslan, 2010; Mahoney & Perales, 2003, 2005; Rogers & DiLalla, 1991; Rogers & Lewis, 1989; Rogers et al., 2006; Solomon, Necheles, Ferch, & Bruckman, 2007). As reported in past studies, relational applications aimed at encouraging parents to display responsive behaviors during their interactions with their children and enabling the acquisition of interactional behaviors by children, have an impact on the children's development (Mahoney & Perales, 2003). Relationship-based interventions programs include the play project (Solomon et al., 2007); relationship development intervention (Gutstein et al., 2007); the social communication/emotional regulation/transactional support (SCERTS) model developed in 2002 by Prizant, Wetherby, Rubin, Laurent, and Rydell and reviewed and published by Prizant, Wetherby, Rubin, and Laurent (2003); the difference relationship (DIR)/floortime model (Greenspan, Wieder, & Robins, 1998); the Hanen Programs (Sussman, 1999; Weitzman, 1992); and the IBEEP (Karaaslan, 2010; Mahoney & MacDonald, 2007).

There has been a limited amount of research in Turkey on play-based PRT and interactional teaching of pivotal behaviors to children with autism under the age of six. Karaaslan (2010) reported that play-based PRT contributed to an increase in mother-child interactional behaviors as well as further development in children's cognitive, communicative, and socioemotional skills, and mothers gave positive feedback concerning the program. Gulec-Aslan (2011) also reported that early education had a positive impact on acquisition of these skills.

Given the limited data available on play-based teaching of pivotal behaviors to children with autism with the participation of families in Turkey, herein I have presented a descriptive report of a case study concerning the first 2-year outcome of a play-based parent-child education program used with a child with impulse control disorder who is at high risk of autism. The study was also aimed at

benefitting future researchers by sharing the collected qualitative and quantitative data related to the child's development during training.

Method

A case study research design was chosen because it allows for in-depth investigation of only a part of a problem in a limited amount of time, meaning that it is particularly suited to single-participant studies. Another strength of this method is its convenience for concentrating on a specific case or condition, and for identification of interactive processes (Arikan, 2005). The case study is a relatively flexible method, which is focused on the research itself rather than conjecture. Researchers are relatively free to explore issues. Further, the flexible nature of case studies allows researchers to begin with general questions and to narrow down their focus as the study progresses. Case studies, aimed at obtaining as much information as possible from an individual or a small sample, are focused on obtaining in-depth knowledge or intensive descriptions. This emphasis gives researchers an opportunity to compare their initial observations with quantitative findings obtained using other methods (Simsek & Yildirim, 2000).

Participant

The participant in this case study was Ahmet (the name has been changed in this article within the framework of scientific research applications) who was born in the second half of 2008 and who resides in the European part of Istanbul, Turkey. Both of his parents hold a college degree and are in paid employment, so that it is his maternal grandmother who stays at home to take care of him.

In 2010 Ahmet was reported to be at high risk for autism disorder diagnosis. Before taking part in the play-based home education training as part of this study, he had failed to establish eye contact, speak, respond to his name, focus on a specific object, carry an object in his hand, or fulfill simple instructions. When he wanted something he sometimes held his mother's hand and pointed at it, and usually had bouts of crying and shouting. He was interested in an object for a very short amount of time (5-7 seconds) and would throw the object away afterwards. He did not have the prerequisite skills to progress to toilet training. He did not display any interest in his peers or other people. He lacked impulse control. He walked and ran while looking at an object at hand. Ahmet had received a 2-hour service at another counseling center before starting the play-based home education program, but the family reported that the counseling was interrupted because of his inability to comply with the requested behaviors.

Measures

The Ankara Developmental Screening Inventory (ADSI; Savasir, Sezgin, & Erol, 1998) is a culture-specific evaluation tool providing in-depth and

systematic information on development of children aged between 0 and 72 months. This inventory was used to determine Ahmet's developmental level. The ADSI is a 154-item scale that consists of four subscales to assess language-cognitive development, fine motor development, gross motor development and social interaction. The general development score is obtained from the total of the four subscales. It is completed by the child's main caregiver(s), who are given three choices of response (*yes*, *no*, *I do not know*) for each item. The procedure for application of the ADSI can be learned in a short training session and the inventory has been shown to have high test-retest reliabilities (0.99-0.88) and good internal consistency (0.99-0.80) for the three age groups (0-12 months, 13-44 months and 45-72 months). Given the likelihood that environmental factors have an impact on the cognitive and psychological development of babies and children, the inventory was designed for use with children of low socioeconomic status and those who are at risk for developmental delays (Savasir et al., 1998).

The Denver Developmental Screening Test (DDST; Frankenburg and Dodds, 1967) was developed to help healthcare professionals in identifying developmental problems amongst young children and has been widely used. The DDST was revised and standardized for use with children in Turkey and other countries and was renamed the DENVER-II in 1995 (Anlar, Bayoglu, & Yalaz, 2007). As used in Turkey, the DENVER-II consists of 121 items that provide age-appropriate developmental screening of 0-72-month-old children in four development areas of personal-social, fine motor adaptive, language, and gross motor. The person administering the test scores each item performed by the child by selecting from one of four alternatives of *pass*, *fail*, *no opportunity*, or *refusal* for each item, and compares the results with age-based norms to determine the category of the child in terms of developmental stage (normal range, abnormal, suspect, untestable). The test-retest reliabilities of the DENVER-II for different age groups are ≥0.90 and internal consistency is ≥0.86.

The Autism Behavior Checklist (ABC; Krug, Arick, & Almond, 1993) is a simple and low-cost screening instrument used by both clinicians and educational professionals to identify symptoms of autism in children, and to evaluate and plan relevant educational interventions for those children who are identified with such symptoms (Yilmaz-Irmak, Tekinsav-Sutcu, Aydın, & Sorias, 2007). The ABC can be completed by either a parent or a teacher and consists of an index of 57 behavioral characteristics of autism. These are grouped into five scoring areas of development classified as sensory, relating, body and object use, language and social, and self help. Total scores range from 0 to 159, with a proposed cut-off score of 39 or above considered to indicate a high probability of autism in the study by Yilmaz-Irmak et al. (2007). The alpha coefficient and split half reliability of the ABC in a Turkish population were 0.92, and its rate of correct classification was 0.88.

Procedure

I determined Ahmet's pre-education skill development level using the criteria developed by Maurice et al. (1996). The first stage of the program was designed to improve Ahmet's skills in establishing eye contact, imitating actions, and taking simple instructions. If Ahmet's attention could be focused within the context of play, the researcher also designed tasks relating to imitating the child, paying attention to objects, and expressing preference for food or objects.

Data Collection and Analysis

I utilized qualitative data collection methods such as document review, observation, and interviewing both prior to and during the entire course of the education program. For this purpose, I collected data on the training process and its features along with information on the child and family, my observational notes, and reports of meetings held with family and other individuals present during the program. After I had met Ahmet, and before the home-based education program began, I prepared an individualized program and wrote registration forms to follow up on Ahmet's development. Additionally, I also collected the notes of the educator who supported the educational applications at home along with the family. I conducted a recorded exit interview with the family at the end of each training day. My observational notes on the training and changes in Ahmet were evaluated. The remarks made to the family by the child psychiatrist who regularly followed Ahmet were also used.

To carry out a quantitative evaluation of Ahmet's performance, the ADST, DENVER-II, ABC, and a test of his skill development level were administered in weekly sessions. Interrater reliability was not tested. Collected data were integrated holistically in light of the research goals.

Case Study

I am a graduate of the special education program at Anadolu University, and have obtained a doctorate degree in preschool education from the Educational Sciences Institute at Marmara University. I designed and presented the education program that is described in the following paragraphs. The first at-home educator who was involved in the program is a graduate of the Department of Special Education at Marmara University. The second, male, at-home educator was, at the time, a second-year student in the same department. Throughout the program, all three educators held weekly meetings where we discussed Ahmet's education process and how we would work with play support.

Ahmet's parents made an appointment at the counseling center with which I am affiliated, after the research psychiatrist for Ahmet recommended that he receive special education. The first session with the family was held on October 4,

2010. As a result of the initial meeting with the family and my observation of Ahmet, our initial decision was that we would work with him at the center via the family-witnessed educational program. Initially, in order for Ahmet to accept the process and for me to get to know him better, it was decided that we would engage in one hour-long play-based education session each week, with each session consisting of a 45-minute play session followed by a 15-minute family interview. All study stages were completed with Ahmet accompanied by his mother. I started to work with Ahmet by joining him in playing with his toy of preference. Tasks such as catching bubbles I blew, watching the bubbles, taking turns, and waiting were designed as the primary steps in establishing eye contact. Attention tasks with objects were designed within play activities. Ahmet's mother was a passive observer, becoming an active observer when he interacted with her during the play sessions. After each 45-minute play session, I provided Ahmet's mother with an interpretation of the process and written instructions for the home education program. She repeated the play-session tasks at home for a minimum of five sessions per week. At the beginning of the following meeting, she reported on the work completed at home and on Ahmet's reactions to the activities during that week. In December 2010, after following the program for three months, Ahmet was able to wait for 20 seconds in these play activities and, based on a meeting with the family, a special education teacher was assigned to administer the special education program at home to support and accelerate the progress of the program. Focusing on my suggestions, the special education teacher started to play with Ahmet at home, with his mother observing at all times. This play-based program was designed to extend across two 90-minute sessions per week. Initially these sessions took place in Ahmet's home and then advanced, with sessions being held in the park and in the backyard of Ahmet's parents' apartment complex. This brought the total time for the sessions up to 4 hours per week, while the process became more natural with family participation at home. This arrangement continued until May of 2011. At that time, because of the child's gender, and as Ahmet's father was unable to take an active part in the education program, a male student from the special education department started to work with Ahmet for a 90-minute play session each week. In this way, Ahmet was now receiving 5 hours and 30 minutes of sessions per week, not including the family's own educational support at home.

Features of the Educational Program

At the beginning of the study, I created a list of target skills that it was intended Ahmet would acquire, based on the developmental assessment instruments already described and information provided by his family. These skills included, but were not limited to, establishing eye contact, understanding simple commands such as give and take, maintaining interest in a certain object for at least three seconds, and following and catching bubbles.

I assessed the list of target skills as appropriate for the development of children aged from 0 to 6 years, according to my own observations, the developmental items provided in the ADSI, DENVER-II and ABC and the specific characteristics of children with autism (e.g., establishing eye contact and ordering activities).

The target skills were embedded in the activities during the play sessions of the program and were determined according to Ahmet's areas of interest, in order to be able to attract his attention and establish a relationship with him.

During the time that the program was being delivered, I provided the family and in-home educators with written and verbal information about engaging in activities for the daily skills they were to focus on with Ahmet. I recommended methods for handling his common behavioral problems, which were applied by both the family and the teachers. The first step was to understand Ahmet's behavior in a comfortable setting with objects that interested him and in which he perceived the person who was working with him as providing for his needs. Waiting periods followed this, starting with 3-second periods and gradually increasing the time.

Results

During his visit to the psychiatrist in July of 2011, Ahmet was reported to have shown improvement in terms of linguistic development, impulse control, and ability to display his intellectual skills. Continuation of the support program at the same level of intensity was recommended.

In September of 2011, Ahmet started to attend 2-hour free playtime morning sessions at a kindergarten, based on the consensus formed between his parents and me. Before this process began, the special education teacher attended the kindergarten sessions for one hour per week for a month to inform the staff about, and demonstrate to them, ways of treating Ahmet. At the same time, I discussed with the family and the special education teacher the observed behavioral problems and difficulties in initiating communication, in order to reach a consensus on the list of behaviors that required modification or that should be targeted. As planned, when Ahmet started at kindergarten, the special education teacher stopped working with him. Afterwards, time spent on the play-supported activities at home, excluding the time at kindergarten, was reduced to three hours on every weekday.

Changes in the Child

Ahmet was observed to show improvements in his targeted skills with the support of the individualized educational program. For example, at the end of the first year (November 11, 2011), he started to establish eye contact, respond to his

name, speak in single words, was able to delay his need for instant gratification for about two minutes, and began to engage in play with another person. In the second year (December 10, 2012), he was observed to express his thoughts and feelings with words, answer questions related to a story that was read or told to him, engage in playful games, and show improved reading skills. At the end of this period, new goals were set such as understanding others' thoughts (theory of mind), playing board games with rules, such as memory and matching pairs, and talking about something that happened to him in relation to the reasons for, and results of, the event. Behaviors that had previously been a problem, such as refusing to use the toilet and creating difficulties while being bathed, were no longer occurring. Difficulties experienced both at home and outside, like crying at the shopping mall and shouting and insisting, had been eliminated. Along with the reduction in problem behaviors and an increase in the ability to focus on activity or object, Ahmet had made rapid progress in understanding concepts of color, shape, and size. Although he had not received specific instruction in this regard, he had also learned to read and, at that point, reading activities were also added to Ahmet's study program.

My findings revealed that Ahmet made remarkably positive progress in all developmental fields, specifically in the areas of communication, academia, and linguistics. The observations made while the report on the case study was prepared showed that Ahmet's play and communication skills advanced further, he had acquired the target skills, and he had started to respond as would a child of his age who is not developmentally delayed to events and situations on a more regular basis. However, he still continues to insist on certain subjects, and needs further work on following instructions in a group setting and understanding others' thoughts. Despite this, Ahmet's psychiatrist reported that he had made remarkable progress and was moving towards hyperactivity along the autism spectrum. His parents and his maternal grandmother have also noticed positive developments in Ahmet. Even though they know that they will need to keep working on his developmental skills in the future, they expressed the view that future training would positively impact both the child's life and theirs.

Ahmet's mother completed the ABC at the start of the program (October 6, 2011; score = 73) and repeated this a year later (October 7, 2012; score = 37). Therefore, with the work of the family and the educators and without any additional support, the effects of the behaviors associated with autism had been significantly decreased.

When Ahmet's development was first assessed with the ADST at the age of 25 months, his overall score classified his developmental stage as equivalent to that of a child aged 11 months, with linguistics skills of a 12-month old, fine motor skills of 6-month old, gross motor skills of an 18-month old, and social and self-care skills of a child of 9 months. The test was repeated when Ahmet

was aged 4 years, 3 months, and 12 days old and his overall score was around that of a child aged 3 years, linguistic-cognitive skills 4 years and 4 months, fine motor skills 21 months, gross motor skills 22 months, and social and self-care skills 23 months.

The results of the initial administration of DENVER-II categorized Ahmet's scores as equivalent to a child aged 8 months in terms of personal-social skills, 6 months in linguistic skills, and 13 months for gross motor skills. The results he was re-evaluated at the age of 4, placed his development at around 22 months for personal-social skills, 3.5 years for fine motor skills, 5 years for linguistics, and 2.5 years for gross motor skills.

Ahmet's Progress and Ongoing Program at the Conclusion of the 2-Year Case Study

This paper comprises findings obtained from the first two years of Ahmet's education program. As at January 7, 2013, he was 4 years, 3 months, 12 days old. He was still participating in the program described in this study with play, family, and at-home tasks. The support he was then receiving in an institutional setting was limited to 45 minutes per week. He was continuing his education with the special education student at home for two 90-minute sessions each week. The family, in their natural setting, was supporting the study topics of the special education teacher with the use of games. During this period, a total of 2 hours and 15 minutes of a play-based educational program was being delivered, for which the family witnessed the program but did not participate unless necessary.

Discussion

In this report I presented information on the first two years of the play-based home education program of a child who was at high risk for autism and had been diagnosed with impulse control disorder. In light of the qualitative and quantitative data collected, some inferences related to the child's development during training are presented.

Study Strengths and Limitations

There are many studies in which the importance of early education for children with autism spectrum disorders is emphasized. The play techniques used with Ahmet were based largely upon those developed by Maurice et al. (1996), along with specific behavioral scales and studies on development of play among children. The data collected throughout the process show that Ahmet progressed in performing the targeted skills during the program. In addition, the symptoms of autism lessened and his ability to communicate improved. The clear evidence of his developmental progress based on the scores recorded for the various

developmental inventories indicates the benefits for Ahmet of the play-based home-supported education program. Further, the collaboration of educators and parents in working with the child appeared to have had a positively effect on the program outcomes. This supports previous findings in the literature that the involvement and participation of the family in the education process along with their cooperation with the specialists is important (Sucuoglu, 2009).

The positive effects for Ahmet that are reported in the study are supported by the findings, my observations, and improvement in his scores on the developmental scales used. However, as this was not an experimental study, I cannot draw conclusions about a causal relationship between the educational outcomes and the program provided. The lack of an interrater reliability test is a further limitation to this study.

Directions for Future Research

The findings related to the present case study report emphasize the positive role of early guidance and early education in the development of children at risk for disorders, particularly autism. The present study could be a guide in planning future play-based home-supported education programs with a special emphasis on the importance of evaluating the natural learning settings available through cooperation with families. Further studies in which experimental research methods are used are needed in order to study the effectiveness of such educational programs.

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