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Early Intervention Services for Young Children with Down Syndrome and Their Families: Recent Trends in the World and Turkey*

Abstract

Children with Down syndrome (DS) usually pass through the same stages in the same order in all areas of development, just like other typically developing children. However, this development occurs more slowly and with some differences in children with DS. At this point, it is very important to start early intervention services for these children and their families as soon as possible. Nowadays, family participation, parent-child interaction, natural setting practices, and the teaching of functional skills emerge as important issues in the early intervention programs presented to young children with DS and their families. In this context, it is observed that studies on parent-implemented early intervention practices have increased, especially in recent years. These practices aim to teach evidence-based strategies to parents, to support the development of young children at the maximum level by transferring these strategies to daily routines and implementing them, to increase parental competencies and strengthen them. These practices are observed to vary according to the needs of children and their families and be included in different application models. In Turkey, early intervention studies have been conducted on young children with DS and their families. However, these studies are very limited. In this study, it was aimed to reveal the trends changing from past to present with regard to early intervention studies performed for young children with DS and their families in the world and in Turkey. It is thought that this study will contribute to researchers and practitioners working with children with DS and their families and will guide the planning of future studies.

Keywords: Down syndrome, early intervention, parent-child interaction, naturalistic teaching, parent-implemented interventions

Introduction

"No one can predict what the future will bring for an infant with Down syndrome, and early intervention is not a magical treatment, however, studying on development from early infancy is very important for the infant to achieve its maximum potential."

L. Diamond (2013)

The early and certain diagnosis of children with Down syndrome (DS) can generally be confirmed by chromosome analyses performed at or shortly after birth.

Thus, the screening and diagnosis process, which is the primary and basic step of early intervention, can be achieved in a shorter time and easily compared to other developmental disability groups. In the next stage, both the child and the family are expected to access early intervention services as earliest as possible (Guralnick, 1991). This process may vary depending on the legal policies of the countries. In this context, all countries provide education, care and health services to these children and their

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families in accordance with their legal regulations (Spiker & Hopmann, 2000). It is observed that different therapy and intervention processes are performed in many fields, especially in the fields of health and education, for children with DS. Basically, it is observed that physiotherapy, language and speech therapy, occupational therapy, and emotional and behavioral therapies are included in early intervention programs presented to these children (National Down Syndrome Society-[NDSS], 2016). When the disabilities experienced by children with DS in motor and language development are considered, interventions are performed for the motor development of these children through physiotherapy services provided to them, and interventions are performed for the language development of children through language and speech therapies. In many countries, intervention services are provided to these children by occupational therapists to improve their daily life skills in line with their needs and abilities. Apart from this, it is observed that children with DS are provided with interventions based on a behavioral approach to ensure that these children develop in the social-emotional area and acquire behavioral control (NDSS, 2016).

Drugs, cell therapy, plastic surgery, and cranial osteopathy are among the main therapies or interventions in the field of health provided to children with DS. Through cell therapy, it is aimed to inject frozen cells obtained from fetal tissues of rabbits or sheep into the individual. Injected fetal cells are considered to reach the target organs and ensure that biochemical tissues and enzymes are active by repairing the defective gene. With this treatment, which is provided at high costs, it is suggested that improvement will be achieved with the repaired cells, and thus, cognitive, social, and language skills will be improved. It appears that this intervention, which is legal in European countries, is illegal in the United States (Newton, Puri & Marder, 2015; Roizen, 2005). With plastic surgical intervention, which was commonly defended in European countries until 20 years ago, it is aimed to prevent the recognition of individuals with DS as Down syndrome by performing an operation on faces of these individuals. Moreover, it is suggested that the deformation of the language structures of individuals with DS

can be repaired, and, thus, language problems of these individuals can be prevented by plastic surgical interventions. However, nowadays, although it is observed that such a surgical intervention has not been approved, it is argued that surgical intervention should be preferred in vital cases such as resolving the medical health problems of these individuals (Newton, Puri & Marder, 2015; Roizen, 2005). Cranial osteopathy therapy is an intervention method aimed at detecting the mechanical problems in the body in order to treat the whole body, such as sleep problems as well as problems in the respiratory system and large and small muscle motor development of children with DS, and resolving these problems with palpable applications. Nowadays, although scientific studies on this intervention process are limited, it is observed that this intervention is not among evidence-based practices (Newton, Puri & Marder, 2015). Besides all these, it is observed that many different intervention processes, such as music therapy, massage therapy, water therapy, aromatherapy, neurological based movement program, and animal therapy, are provided to children with DS. The major problem related to these intervention processes is that more scientific studies are needed so that they can be accepted as evidence-based practices (Newton, Puri & Marder, 2015; Roizen, 2005).

The developmental and skill levels of children with DS include significant individual differences. The strengths and weaknesses of all children play a significant role in determining the area to be intervened and the strategies to be used in the intervention process. Therefore, nowadays, early intervention services presented to children with DS and their families are observed to vary according to children's age, developmental level, strengths and weaknesses, the type and intensity of the support received, and the needs of both children and their families (Davis, 2008; Roberts, Price & Malkin, 2007). It is remarkable that studies including parent-implemented interventions based on the naturalistic teaching approach have been conducted in early intervention services for children with DS and their families, especially as a result of various views on early intervention services that have been accepted nowadays (Fey et al., 2006; Kaiser & Roberts, 2013; Meadan et al., 2014a; Wright &

Kaiser, 2017; Yoder & Warren, 2002). In this context, it is observed that early intervention practices have focused on the acquisition of basic cognitive, social, and communication skills that will support children's integration with society and coexistence with their peers. Indeed, the studies reveal that the fact that children with DS are acquainted with early intervention services in the first years of their lives has significant effects on their integration into society as independent and productive individuals, as well as their behavioral, social, and academic development (Davis, 2008; Van-Riper & Cohen, 2001). In this regard, in this study, it was aimed to reveal how early intervention services provided to young children with DS and their families have changed from past to present, and the recent trends in early intervention services provided for these children and their families in the world and in Turkey. Based on this aim, the developments directing early intervention services are included in the next section, and then, the reflections of these developments on the education processes of young children with DS and their families are discussed. Furthermore, parent-implemented early intervention studies based on the naturalistic teaching approach for young children with DS and their families are included. At this point, it is thought that this study will contribute to researchers and practitioners working with children with DS and their families and will guide the planning of future studies.

Developments Directing Early Intervention Services

Early intervention is the process of providing intervention to children aged between 0 and 5, who have a developmental disability or are at risk, through an interdisciplinary service mentality. With the interventions provided in this process, it is aimed to support the development and health of children who have a developmental disability or are at risk, to increase the existing competencies, to eliminate or reduce the limitations, to prevent a potential disability, and to develop parenting skills and general family functions. These goals are achieved through the supports planned within the child's family, as well as individualized developmental, educational, and therapeutic services for the child (Dunst, 2007; Shonkoff & Meisels, 2000). Guralnick (2005)

defined early intervention as a system aimed at strengthening the family on how they will offer their children experiences and opportunities by focusing on parent-child interactions so that they will be able to support the development, health, and safety of their children in the best possible way.

Interventions with scientific foundations that start with home visits in the first years of life, including the prenatal period, and envisage that children will continue their high-quality center-based early childhood education are performed with the early intervention process (Karoly, Kilburn & Cannon, 2005). Nevertheless, interventions planned by a group of professionals with an interdisciplinary approach that addresses the child as a whole by including the child's family and environment are also provided (Guralnick, 2005, p. 185; Shonkoff & Meisels, 2000). These interventions can be listed as permanence, providing information and suggestion, periodic evaluation, home visits, parent support groups, home or center-based practices, coaching, family counseling, or other specialized therapies provided by well-educated professionals (Bryant & Graham, 1993). In this regard, it is possible to define the early intervention process as a system that aims to develop an individualized program for each child with different characteristics, and in this context, keeps service providers, law developers, researchers and parents responsible for planning and conducting the services to be provided by working cooperatively (Bryant & Graham, 1993).

It is argued that the early intervention services provided nowadays should be functional for children and their families, should reveal all available potential of children, and should support children for their full participation in the family and school environments and society and having a good quality of life (Spiker, 2011). In this regard, especially nowadays, it is emphasized that it is necessary to develop effective and qualified programs for children in the younger age group who have a developmental disability or are at risk and for their families, the transitions in the child's life should be successfully planned, and integrated/comprehensive approaches combining all theories that will benefit a child should be included, instead of discussing the effectiveness of early intervention

(Guralnick, 2005; Meisels & Shonkoff, 2000; Odom & Wolery, 2003). Moreover, it is suggested that successful and effective results can be achieved if the services or practices provided within the scope of early intervention are of high quality. At this point, it is indicated that comprehensive interventions that include especially developmentally appropriate practices, are evidence-based and take into account the child's natural setting will provide effective results (Odom, Boyd, Hall & Hume, 2010). In this context, it is of great importance that the effectiveness of the services to be provided to children and their families during the early intervention process should be based on evidence by scientific research and should include the recommended practices.

Meisels and Shonkoff (2000) argued that many events and developments affected the development of the field of early intervention and the access to modern intervention practices (Meisels & Shonkoff, 2000). It is observed that developments in these countries, especially in the United States and European countries, have significant effects on the formation of the field of early intervention. However, the political, economic, social, and scientific developments of the countries can be said to cause differences among the countries in the historical development and implementation of the field of early intervention. It is indicated that the developments and studies related to the field of early intervention gained momentum and importance in many countries, especially in the USA, in the 1960s (Guralnick, 1997; Odom & Wolery, 2003). It is observed that the field of early intervention has been shaped and improved, especially with the effects of developing and changing theories or approaches related to the field of child development. Indeed, Dunlap (2005) mentioned that some theorists conducting important studies and investigations, especially on child development, played a significant role in the shaping of early intervention practices. Ivan Pavlov (1849-1936), John Dewey (1859-1952), Maria Montessori (1870-1952), John Broadus Watson (1878-1958), Jean Piaget (1896-1980), Lev Vygotsky (1896-1934), Burrhus Frederic Skinner (1904-1990) and many others are among the most important of these theorists.

Along with changes in the perspective and attitudes towards individuals with developmental disabilities after the 1960s, it is claimed that important developments started in the services provided to these individuals, especially in the education of these individuals (Meisels & Shonkoff, 2000). It is indicated that modern, optimistic, and creative programs began to be developed in the field of early intervention after the 1960s. It appears that developmental and medical evaluation, diagnosis, and treatment services came to the forefront in the United States, especially in 1965. Accordingly, it is stated that the Social Security Act was re-reviewed, and with this law, these services began to be provided to all children under the age of 21 (Meisels & Shonkoff, 2000). It appears that early intervention programs started to be developed for poor children and their families in the same years, and the oldest early intervention program developed was Head Start. It is indicated that this program was developed in 1965 to provide poor children aged 4-5 years and their families with services for health, education, social service, and parent participation (Dunlap, 2005).

In the 1970s, it is observed that the development of interdisciplinary education programs for children with developmental disabilities in universities and the training of staff to work with these children began to be supported by the funds provided by the Bureau of Education for the Handicapped and Maternal and Child Health Organization (Meisels & Shonkoff, 2000). It appears that official and legal studies on the field of early intervention were initiated along with the Public Law-P.L. 94-142 The Education for All Handicapped Children Act (FAPE) that came into force in the United States in 1975. With this law, it is indicated that free and general education for all school-aged children with developmental disabilities were guaranteed by the state. However, it was argued that this service was not made compulsory for children aged 3-5, early intervention services for young children were not included, and financial support was not provided in this law (Bailey et al., 1999; Meisels & Shonkoff, 2000). In 1986, important changes regarding this law were brought to the agenda, and the name of the law was changed to the Individuals with Disabilities Education Improvement Act (IDEA) in 1990 (Bailey et al., 1999; Pletcher &

Younggren, 2011; Raver & Childress, 2015). With these legal regulations, early intervention services were guaranteed by the state in many states of the United States, and significant budgets were allocated. This law introduced legal sanctions to provide services to be presented within the scope of early intervention services within a system, with an interdisciplinary approach and in a coordinated manner between organizations and to include evidence-based comprehensive interventions. Nevertheless, these developments contributed to the increase in scientific studies on the improvement and implementation of important developments in the field of early intervention and different early intervention programs for children who had a developmental disability or were at risk, and on testing the effectiveness of these programs (Meisels & Shonkoff, 2000).

In the 1980s, it is observed that significant developments and changes occurred in the theoretical foundations of the field of early intervention and that practices involving new approaches, as well as traditional behavioral approaches, began to be included in the early intervention process. It is argued that the Ecological Theory developed by Bronfenbrenner (1979) and the Transactional Model of Sameroff and Chandler (1975) had significant effects on these developments (Perera, 2011). When these two theories are considered, with the Ecological Theory developed by Bronfenbrenner (1979), it appears that the view that the child cannot be considered separately from his/her environment was defended and that the effects of environmental conditions on the development of the child were emphasized. Bronfenbrenner (1979), who emphasized the importance of relationships between children, family and environment, indicated that the most basic process for early education services provided to the child to be successful and effective was possible by ensuring the participation of individuals who are in close relation with the child (mother, father, sibling, teacher, etc.) in the education process. With the Transactional Model (mutual relationship model) based on the social response of the environment and the nature of mutual interaction between the child and the environment, depending on not only the effect of the environment on the child but also mutual effects of the child and the

environment, it was necessary to attach equal importance to these two components (Sameroff & Fiese, 2000). Furthermore, it appears that it was suggested with this model that there was a mutual interaction between the child and the environment and that both the development of the child and the effects of the family should be evaluated from a holistic view in order to systematically determine the child's developmental performance (Sameroff & Fiese, 2000). Based on these developments, it is observed that early intervention programs were transformed from child-centered programs to family-centered programs, and especially some principles were included in legal regulations introduced in the United States. In this regard, it is observed that the Individuals with Disabilities Education Act (IDEA, P.L. 105-17) was updated in 1997.

It is indicated that important provisions with regard to the fact that the early intervention system takes the family to the center, supporting the family and child in their natural environment as much as possible, the least restrictive environment, early diagnosis and education process with the "child-finding system," individualized intervention, individualized education plan, and family service plan were introduced with the new regulation (Guralnick, 1997; 2005; Pletcher & Younggren, 2011). It is observed that the role of families was attempted to be strengthened with this legal regulation. Thus, it is observed that the principles for ensuring families' full participation in the decisions about their children and their education were included (Dunlap, 2005; Meisels & Shonkoff, 2000). With this legal regulation, it is also observed that important decisions were made regarding the field of early intervention and that general early education was made compulsory for these children so that all children in the younger age group with developmental disabilities could receive education together with their peers. However, it is argued that this law was limited on how these principles would be applied in the field and how qualified personnel would be provided (Dunlap, 2005; Raver & Childress, 2015).

It is observed that the IDEA was revised again in 2004 and that the limited issues were clarified. In this regard, it is indicated that the evaluation of the child and

family, determination of the services to be provided, by whom the individualized education plan would be prepared, who would be involved in this process, at which intervals a regular evaluation would be made, and how to plan the transition process were clarified with this legal regulation. Especially with this legal regulation, it is observed that the description of "high-quality teacher" and the principles regarding this issue were included (Dunlap, 2005; Pletcher & Younggren, 2011). It can be said that all these legal developments in the United States affected the legal regulations in other countries in the world. Indeed, it is observed that important decisions on these key issues were included in the legal regulations of many countries and that early intervention studies were conducted accordingly. Nevertheless, it is emphasized that this field depends on the changing and developing dynamic developments of science, politics, economy, implementation, and legal rights (Meisels & Shonkoff, 2000).

Developments in Turkey

In Turkey, the studies in the field of early intervention started with the studies of a group of academics in 1982. In this context, it is observed that the Early Support Project, which is the first early education program in Turkey, was put into practice. With this project, the Maternal Support Program and the Cognitive Development Support Program, which were executed both center and home-based for children from families with low income and education, were developed and implemented (Kagıtcıbası et al., 2005). Following these studies, it is observed that an important step was taken for the field of early intervention with Law of Children who Needs Special Education No. 2916, which was enacted in 1983. In this law, it is indicated that it is essential to start the education of children with developmental disabilities early (Article 4/c). However, it is claimed that this law could not be properly understood and implemented (Akcamete, 1998).

In 1989, it is observed that the Portage Early Education Program was adapted to the conditions of Turkey under the leadership of Hacettepe University for evaluating the developmental skills of children in early childhood and preparing a development and education program in line

with their needs and that this program started to be implemented. In 1996, the Small Steps Early Education Program, the copyrights of which on its use in Turkey and its Turkish edition were obtained from Macquarie University by the Association for Supporting the Mentally Handicapped, was introduced to Turkey. It can be said that studies on the field of early intervention in Turkey were limited to individual studies of universities and non-governmental organizations until the 1990s.

It appears that the first and important legal development related to early intervention and especially the field of special education in early childhood in Turkey was Decree Law on Special Education No. 573, which was enacted in 1997. With the decisions of "*Special education services in early childhood are conducted in the homes and centers based on informing and supporting the family.*" (Article 6) and "*Pre-school education is compulsory for diagnosed children requiring special education.*" (Article 7) included in the first part of the decree, important steps were taken for the field of special education in early childhood. With the Law on Disabled, which was enacted in 2005, important decisions were made on early diagnosis and preventive services. With this law, it was decided that the studies on "*monitoring physical, auditory, sensory, social, psychological and mental development of newborn, early childhood and every period of childhood, ensuring the early diagnosis of genetic diseases and diseases that may cause disability, the prevention of disability, reducing the severity of the existing disability to the lowest possible level and stopping its progress*" would be conducted by the Ministry of Health (Article 11). In the same law, decisions were made on ensuring the active participation of individuals and their families in all stages, including making, planning, executing, and terminating the educational decisions to be provided to individuals with developmental disabilities (Article 10).

It is observed that the legal regulations developed until that period were limited in the procedures and principles regarding the field of application, and it was not clear how the decisions taken, especially in legal regulations, would be put into practice. In this regard, with the Special Education Services Regulation, which was

enacted in 2006 and was last amended in 2012, it was attempted to clarify the procedures and principles regarding the field of application of legal decisions. Especially in this regulation, decisions were made within the context of the services to be provided to young children aged between 0-6 with developmental disabilities. Furthermore, it is observed that important decisions on family education were made in the regulation. It was legally guaranteed that family education services would be conducted in the centers and also could be provided at home in case of need. However, it can be said that limitations regarding the implementation and supervision of these services in Turkey continue to occur.

When it came to the 2000s, it is observed that there was an increase in studies on the development and adaptation of early intervention programs for children who had a developmental disability or were at risk in Turkey. In this context, it is observed that the Behavioral Education Program for Autistic Children was introduced in Turkey in 2006. It appears that educator training with regard to this program is continuing nowadays and scientific studies have been carried out (Gulec-Aslan, 2008). Between 2007 and 2010, the First Steps to Success Early Education Program was adapted to Turkey. Between 2010 and 2012, studies on the pre-school education version of this program were conducted (Celik, 2012; Karaoglu, 2011; Tomris, 2012). In 2013, it is observed that the Responsive Teaching Intervention Program based on strengthening parent-child interaction was adapted to Turkey and that scientific studies on this program were conducted (Diken, 2013; Gurel-Selimoglu, 2015; Karaaslan, Diken & Mahoney, 2013; Topper-Korkmaz, 2015). In 2014, the Developmental Support Program (DSP) was introduced in Turkey for 0-36-month-old children with developmental risk within the scope of the cooperation of the Presidency of the European Union and Anadolu University (Diken et al., 2014).

On the other hand, early intervention programs for children in different disability groups are developed or adapted every day in Turkey, and scientific studies are conducted to determine the effectiveness of these programs. The activity-based intervention program developed by

Bakkaloglu (2004), the Multipurpose Unit Early Classroom Intervention Program developed by Celebioglu-Morkoc (2011) for children in the 4-5 age group at a lower socio-economic level, the early intervention program applied to 5-6-year-old children carrying special learning difficulties risk developed by Dogan (2012), the home-based early intervention program developed by Aytekin (2014), the Incredible Years Intervention Program which was adapted by Uysal (2016) and aimed at preventing children's problem behaviors, the Mother-Child Education Programs introduced by the Mother-Child Education Foundation, and the early intervention program based on naturalistic teaching developed by Tomris (2019) for children with DS and their families can be shown as examples of these studies.

When legal regulations and developments for the field of early intervention in the historical process in Turkey are considered, it is observed that the laws in force are strong in providing important rights to children with developmental disabilities and their families. However, there are limitations regarding the implementation of the laws. Nevertheless, it is observed that early intervention programs developed are implemented with the support of universities and non-governmental organizations. However, there are limitations with regard to keeping these programs with scientific validity under state guarantee, providing financial support for their implementation throughout the country, and introducing sanctions in this regard. Indeed, Diken et al. (2012) argue that there is a lack of system in the field of early intervention in Turkey, and, therefore, there are gaps between theory, practice, and legal regulations. However, the fact that early intervention services or programs that are theoretically strong and presented within a system and in which legal sanctions are developed for their implementation will provide more effective and successful results is an important view put forward nowadays (Guralnick, 2005; Odom et al., 2010).

Young Children with Down Syndrome and Their Families: A Past Perspective on Their Education

The views that "they would be a threat to the society," "they would never be able to do anything," "they would not be useful,"

and "they would have a negative impact on family and society" were dominant for children with DS before the 1970s, and it is observed that these children and their families were excluded from the society (Pueschel, 1983). Nevertheless, it is claimed that families with a child with DS were encouraged to leave the care of their children to health officers in government-run health institutions (Spiker, 2011; Van-Riper & Cohen, 2001). It is argued that these children who were cared for in health institutions during that period were allowed to die due to reasons such as the lack of nutritional standards, insufficient immunization system, widespread infections, failure to treat chronic health problems properly, and failure to provide appropriate intervention to children with surgically correctable lesions (Pueschel, 1983). On the other hand, Turnbull et al. (2011) claimed that families were exposed to social pressure during that period due to the fact that having a child with special needs was perceived as "the end of life, unhappy days, destruction." In particular, it is observed that families did not have a say in the education of their children during that period. It is claimed that the intervention process implemented was mostly focused on experts and that the needs and decisions of the child and family were not prioritized. Nevertheless, families were expected to comply with and accept the decisions and recommendations provided by experts (Turnbull et al., 2011, p. 99). Indeed, Spiker (2011) emphasized that official, standardized, and universal methods for early intervention services provided to children with DS were not yet determined fifty years ago.

After the 1960s, during which developments for early intervention services started, it is observed that what the services to be provided to children with DS and their families should be was among the issues discussed. It is indicated that important studies were initiated in early intervention practices along with the persistent right seeking of families with these children and experts working with these children, and the importance attached to early intervention practices by lawmakers (Spiker, 2011). Especially after this date, it is observed that there was an increase in studies for the development and implementation of early intervention programs for these children and their families and for

testing their effectiveness (Brinkworth, 1975; Connolly et al., 1980; Connolly, Morgan & Russell, 1984; Dmitriev, 1988; Sloper, Glenn & Cunningham, 1986). At this point, Project EDGE (Expanding Developmental Growth through Education) and the Model Preschool Program are indicated to be the first early intervention programs developed for children with DS (Spiker, 2011). Project EDGE is an early education program that started in 1968 and aimed to provide education to children with DS and their families during the period from infancy to kindergarten. Within the scope of this program, it was aimed to provide enriched language education to children by parents and to perform family training in this context. Thus, it was believed that children would be more prepared for reading, writing, and academic skills to be provided in primary school, which would help them become more independent and find jobs in the future. Indeed, it is observed that scientific studies on this program with control and longitudinal groups were conducted, and positive results were obtained. The Project EDGE early intervention program was tested with an experimental study conducted with children with DS, 17 of whom were in Minnesota and constituted the experimental group and 18 of whom were in Chicago and constituted the control group (Rynders & Horrobin, 1975). As a result of the study, it was found that there was a significant improvement in the IQ scores and natural language outputs of the children in the experimental group compared to the children in the control group.

The Model Preschool Program was developed in 1975 as a result of the efforts of a group of researchers and educators in order to increase the admission of children with DS to general education schools and to support these children in receiving education together with their peers. This program was implemented as a program that was based on the principles of applied behavior analysis, included the individualized education of the child in the general education class and attached importance to teacher-expert cooperation. Through scientific studies, it was revealed that the program had significant effects on children's reading, writing, and academic skills (Spiker, 2011). Spiker (2011) argued that it was mainly focused on the development of language, communication, and motor

skills in the first early intervention practices for children with DS especially between the 1960s and 1970s and that these programs were based on principles of applied behavior analysis on the basis of a behavioral approach (Spiker, 2011). Indeed, nowadays, applied behavior analysis is among important approaches that are extensively used in the development of social, language, communication, and cognitive skills in which children with DS are inadequate and in the prevention of problem behaviors. Moreover, it is observed that discrete trial teaching and errorless teaching methods that are based on a behavioral approach are commonly used in the education of these children (Duffy & Wishart, 1994; Feeley & Jones, 2006). After the 1980s, it is observed that the Portage Program (Shearer-Marsha & Shearer, 1972) and the Small Steps Early Education Program (Pieterse & Treloar, 1989) were commonly used in the early education of children with DS (Graaf, 1993).

Young Children with Down Syndrome and Their Families: A Current Perspective on Their Education

Along with the Individuals with Disabilities Education Act (IDEA), which takes an extremely important place in the United States, legal sanctions were imposed to implement early intervention programs as family-based practices. Thus, family-based or family-centered approaches began to be provided as home-based, center-based, and both home-based and center-based services in the education process of young children with DS in many states in the United States (Stray-Gundersen, 2013). In home-based early intervention programs, members of the early intervention program (special education teacher, physiotherapist, language and speech therapist, etc.) make home visits depending on a program to work with the child with DS and his/her family. Although it is observed that home-based early intervention services usually include the age of 0-3, such services can also be provided to children with good health, as well as children with DS having health problems, depending on the family's preference. In home-based early intervention programs, experts periodically and alternately visit the child and family in their natural setting.

During these visits, recommendations are made to the parent in line with the needs of the child and the parent, both the child and the parent are observed and evaluated, and coaching services are provided to the parent regarding the goals determined. The advantages of home-based programs can be listed as follows: (a) education occurs in a natural setting, (b) it is individualized, (c) it supports direct participation of all family members, and (d) it includes direct observation of parent-child interaction. Moreover, it is also mentioned that such programs have advantages in terms of preventing possible problems that may occur in family relations and enabling the home setting to be arranged in a way to support the development of the child. In center-based programs, it is observed that early intervention services are provided to both the child and the parent individually or as a group within a certain program (Stray-Gundersen, 2013).

It is observed that the early intervention services provided to young children with DS and their families vary from country to country and include different implementation processes in line with the legal processes of that country. Indeed, the process of early intervention or special education in early childhood for young children with DS and their families in Turkey starts when the child receives a Special Needs Report for Children from any public hospital. After receiving this report, the family is directed to the Counseling and Research Center in the city where they live, and the education process for the child starts along with the educational diagnosis process. In Turkey, the education of young children with DS or other developmental disabilities is carried out in special education schools, pre-school education institutions, education institutions with a nursery school, and special education and rehabilitation centers with special practice settings as a result of the special education services board's decision. In these institutions, which are affiliated to the Ministry of National Education (MoNE), free rehabilitation services are provided within the hours determined by the child's report. In Turkey, the period of education provided by the state is limited to a total of eight hours in a month, two hours a week. If the family wishes to receive more education or to receive services from a private institution which is not affiliated to the MoNE, the

family can receive it in line with their own means, by making payment according to the fees determined by that institution. Especially in Turkey, it is observed that the Small Steps Early Education Program (KAEEP) (Pieterse & Treloar, 1989) was commonly used as a home and center-based program in the education of young children with DS and that studies were conducted to extend this program. However, there are no legal sanctions for the implementation of this program across the country, and studies are limited to the efforts of the relevant institutions, organizations, and individuals.

There cannot be a single intervention approach that will be suitable for all children, and it is also not possible to talk

about a single intervention process that is the most suitable or accurate for all children with DS. However, nowadays, it is observed that evidence-based and recommended practices for the education process of these children are suggested as a result of scientific studies. Indeed, in the report entitled "Report of the Recommendations: Assessment and Intervention for Down Syndrome Young Children with Down Syndrome" developed by the New York State of Department of Health (NYSDOH, 2006) in the United States, recommendations on early intervention practices for children with DS and their families are included. Some of these recommendations are summarized in Table 1.

Table 1.
Recommendations on Early Intervention Practices for Children with Down Syndrome and Their Families

Importance of early identification and intervention	<ul style="list-style-type: none"> It is recommended that appropriate assessment and intervention be provided as soon as possible after a diagnosis of Down syndrome has been made.
Initiating intervention	<ul style="list-style-type: none"> When Down syndrome is diagnosed, it is important to initiate assessments to determine appropriate interventions to address all developmental domains. It is appropriate to begin this process at the time of diagnosis. It is not necessary to wait for a developmental delay to initiate an ongoing assessment and intervention process.
Individualizing interventions based on information from the assessment	<ul style="list-style-type: none"> It is important to recognize that while young children with Down syndrome may share many common characteristics, they differ in terms of their individual strengths and needs, as well as their responses to specific intervention methods or techniques. There is no one specific intervention approach or plan that is effective for all children with Down syndrome. It is recommended that the use of any intervention for a child with Down syndrome be based upon an assessment of the specific strengths and needs of the child and family.
Selecting intervention strategies and targets	<ul style="list-style-type: none"> It is important to work with the parents to determine appropriate and acceptable ways to include the parents/family and other caregivers in facilitating progress towards the intervention goals. A comprehensive model of intervention strategies is recommended for most young children with Down syndrome. A comprehensive model includes the opportunity for both home and/or community/center-based services, as well as family support services. It is important to develop strategies specific to the needs of the child and family.
Determining the intervention setting	<ul style="list-style-type: none"> In determining the most appropriate settings for interventions, it is important to consider the following factors: <ul style="list-style-type: none"> ✓ The child's home environment ✓ The family's readiness ✓ The cognitive, social, communication, and motor development of the child (ability to follow directions, sit still, interact with peers, etc.) ✓ The child's response to the current intervention ✓ Health status and associated health conditions
Ongoing monitoring and appropriate modification of the intervention	<ul style="list-style-type: none"> It is recommended that parents be provided with the knowledge that the types of intervention and frequency of intervention may change over time. It is important for parents to understand that interventions may need to be adjusted based on an ongoing reassessment of the child's progress and needs.
Periodic in-depth reassessment and evaluation	<ul style="list-style-type: none"> In addition to ongoing monitoring and reassessment, it is important to perform periodic comprehensive evaluations to assess the child's individual progress. It is recommended that a child's progress be considered with respect to age-expected development for both children with Down syndrome and typically developing children.
Collaboration, coordination, and integration	<ul style="list-style-type: none"> When planning a comprehensive intervention program for a child with Down syndrome, it is recommended that if multiple intervention components are used, then careful consideration be given to integrating the intervention approaches and/or components to make sure they are compatible and complementary.

In the light of all this information, it can be said that the intervention process of the family is considered as the most important key point in the early intervention services provided to children with DS and their families. Therefore, the fact that the family cannot be ignored in the early intervention services to be provided to the child with a developmental disability is among the most important points accepted. Indeed, it is suggested to be of great importance for a successful and effective intervention process to take into account the developmental characteristics of each child individually in the planning and providing early intervention services to these children and their families along with the developing approaches nowadays and to evaluate the strengths and needs of both children and their families (NYSDOH, 2006). In this regard, it is argued that functional goals should be determined for children and their families and practices based on the natural setting of the child and family should be included in early intervention services to be provided to children with DS (Spiker & Hopmann, 2000). In other words, nowadays, no matter what method, approach or technique to be used in the education of these children, it appears that the most important point is that the interaction between adults, children, and the environment should be taken into consideration (Guralnick, 2010; Perera, 2011). At this point, it is suggested that studies on strengthening parent-child interaction are of great importance in early intervention practices to be developed for children with DS or other children with developmental disabilities. Therefore, strengthening the communication and interaction between the child and individuals in the child's environment plays a key role in the integration of the child with a developmental disability with society. Indeed, ensuring that these children receive education in general education schools, together with their typically developing peers, and integrate with society by gaining independence is among the main goals accepted for these children. The studies once again indicate that the primary focus of early intervention practices for these children and their families is the family (Buckley & Sacks, 2012; Davis, 2008; Mahoney & Perales, 2011; McWilliam, 2010; Van-Riper & Cohen, 2001). Therefore, it is of great importance for the family to actively participate in all

processes. At this point, it can be said that parent-implemented early intervention programs aiming at families' active participation in the development and education of their children in early intervention practices are highly important.

Parent-Implemented Early Intervention Studies for Young Children with Down Syndrome and Their Families

Nowadays, it is observed that there are legal regulations regarding the provision of early intervention services based on a family-based approach or practices and that services and supports should be provided on this basis (Turnbull et al., 2011). In this context, the fact that the child cannot be addressed separately from his/her family or his/her environment constitutes one of the basic principles of early intervention (Bailey et al., 1999; Dunst, 2007; Guralnick, 2005). To facilitate the adaptation of parents and all family members to the child's situation, and to enable them to have a qualified interaction with the child and to provide appropriate developmental experiences to support the child in all areas of development are among the main objectives of early intervention (Perera, 2011). When it is considered from this point of view, nowadays, one of the main accepted views on early intervention practices is the view that it is necessary to educate the family for the education of the child (Division for Early Childhood, [DEC], 2014). Indeed, the family-centered approach constitutes the primary focus of early intervention practices, and family education constitutes the primary focus of this approach (Mahoney et al., 1999).

Family education is a process that aims at the active participation of parents in the education of their children and the process of supporting the development of their children, and the acquisition of knowledge and skills that will enable them to achieve specific goals related to their children through the activities carried out systematically by experts (Mahoney et al., 1999). Within this process, many different methods are used by experts, from group activities to direct teaching, and educational activities are conducted by addressing various subjects in order to contribute to the acquisition of new knowledge and skills by parents (Dinnebeil, 1999; Heward, 2013). When the orientation of early

intervention services from child-centered services to family-centered services is considered, nowadays, supporting not only the development of the child but also the development of all family members is considered as one of the basic processes in the early intervention programs to be developed for these children and their families. Especially when it is considered that parents having children with developmental disabilities need information about their children's disability and developmental characteristics, what services they can benefit from for both themselves and their children, how they can interact with their children and how they can support their children's development, it is observed that family education is extremely important for these parents (Bronfenbrenner, 1979; Heward, 2013; McWilliam, 2010). Indeed, studies reveal that children's behaviors can change more easily and their development will progress more when parents having children with developmental disabilities are informed about their children's behaviors desired to be changed and the intervention process implemented (Kaminski et al., 2008; Meadan et al., 2014a; Mobayed et al., 2000; Moore, Barton & Chironis, 2014).

Nowadays, it is observed that parent education-implemented models and programs based on different approaches for children with developmental disabilities and their families are developed and implemented within the scope of family-centered practices. Family education programs are defined as interventions that aim to teach parenting skills to parents and that include different teaching methods in this context (Kaminski et al., 2008). Families should be educated in a systematic and planned manner so that family education will provide effective and successful results. In this regard, family education programs take an important place for families to learn the necessary knowledge and skills on how they can be involved in the education process of their children. Education services to be provided within the scope of family education programs vary depending on the developmental stage of the child with a developmental disability and according to the changing needs of parents. Therefore, it is suggested that family education programs may vary according to the needs of the child and family and that effective education programs that

will meet the needs of the family will undoubtedly contribute to achieving more successful results (McWilliam, 2010). At this point, the family's participation in the process is of great importance to implement early intervention services effectively and successfully. In particular, parents' participation in the education of their children is needed in supporting all areas of development of the child in a healthy way. On the other hand, it is observed that family participation has almost become a necessity so that consistency and continuity can be ensured between the institution where the child is educated and his/her natural setting during the education process and the gains acquired are permanent. At this point, it is possible to say that ensuring family participation through family education programs is a legal right of both the child and the parent and that experts are responsible to parents in this regard. In the light of all this information, nowadays, it is observed that various family education programs have been developed to support the child with developmental disabilities and his/her family and that these programs are presented with different implementation models.

Family education programs can be prepared in accordance with many different purposes. With the family education programs prepared, the knowledge or skills desired to be acquired by parents may vary depending on the purpose and content of the program. At this point, it is observed that family education programs aimed at educating parents as mothers and fathers and as advocates and educators/practitioners were developed in the literature (Turnbull, 1983). In family education programs aimed at educating parents in terms of parenting roles, it is aimed to provide parents with information, support and resources with regard to the adaptation process to the disability of their children, the child's socialization, relations with siblings, and legal actions (Turnbull, 1983). Studies indicated that when parents had a child with a developmental disability, their parenting skills and their roles and responsibilities differed, and parents needed information on some key issues (Bronfenbrenner, 1979; McWilliam, 2010). At this point, it is indicated that parents need support and counseling on these key issues, including the child's disability status, what the appropriate services are, child

care and development, and information that helps support their child's development (McWilliam, 2010).

In the programs aimed at educating parents as volunteers/advocates, parents are educated as legal advocates, experts in the education of their children, and volunteer individuals in finding social institutions and economic resources. It can be said that such studies usually start when families with the same type of disability come together. With the programs aimed at educating parents as advocates, it is aimed to raise awareness of families of many different issues, including political, economic, social, and educational issues, on a voluntary basis, and to ensure their participation in legal rights and special education services (Turnbull, 1983).

Parent-Implemented Early Intervention Programs

In family education programs aimed at educating parents as educators/practitioners, it is aimed to increase the competencies of parents on issues such as child-raising approaches, contributing to the development of the child in all areas of development, and teaching/acquiring various behaviors and independent life skills to the child. In family education programs aimed at educating parents as educators/practitioners, educational support is provided by experts through direct teaching methods for families, interactive methods, or ensuring access to information (Turnbull, 1983). Studies indicate that the learning opportunities created by parents in their children's natural setting take an important place in their children's ability to reinforce the skills they have acquired, or acquire new skills and generalize these skills to different settings (Brown & Woods, 2015; Kaiser et al., 1996; Kashinath, Woods & Goldstein, 2006; McDuffie et al., 2013; Meadan et al., 2014a; Moore et al., 2014). Moreover, it is observed that the programs aimed at educating parents as educators that are developed to ensure that parents are active participants in the education of their children are important for increasing the quality of life of families, ensuring that they enjoy their family life together and ensuring that they can achieve meaningful goals for themselves (Turnbull et al., 2011).

Nowadays, parent-implemented early intervention programs appear to take an

important place within the scope of family education programs aimed at educating parents as educators/practitioners. Parent-implemented interventions are interventions aimed at supporting the development of young children with developmental disabilities at the maximum level, increasing parental competencies and strengthening them by ensuring that evidence-based strategies are taught to parents by a therapist, expert, or researcher and that strategies are transferred to daily routines and implemented (Roberts & Kaiser, 2011). In parent-implemented intervention programs, the main purpose is to ensure that parents are primary practitioners or people providing the intervention. Although it is observed that parent-implemented intervention programs are among evidence-based practices (Roberts & Kaiser, 2011), it is observed that many systematic review studies demonstrating that this intervention is effective in developing language and communication skills were conducted (DeVeney, Hagaman & Bjornsen, 2017; Lang et al., 2009; Meadan et al., 2009; Rakap & Rakap, 2014; Roberts & Kaiser, 2011). It is remarkable that some of these analysis studies focused on a single type of a developmental disability (autism spectrum disorder) (Lang et al., 2009; Meadan et al., 2009) or a research methodology (single subject research models) (Rakap & Rakap, 2014). However, it is remarkable that there has been a significant increase in the number of parent-implemented early intervention programs implemented with different disability groups and research models in recent years and that the results of these studies include promising results (Akamoğlu & Meadan, 2018; Roberts & Kaiser, 2011).

It is observed that parent education is carried out in line with a certain process in parent-implemented early intervention programs. In these programs, parents work directly with the expert. Parents and the expert determine the target skills they will include in the intervention process by working cooperatively and develop an intervention plan together. This process can also be performed directly under the leadership of the expert. The fact that the plan to be developed will respond to the needs of the parent is of great importance at this point. In the next stage, the expert observes how parents implement the goals determined during their interaction with the

child and provides feedback and/or coaching for the development of the practice. At the end of the practice, the parents and the expert evaluate the effect of the intervention on the child's development together (Kaiser, Hancock & Hester, 1998). It is observed that an attempt to make parents acquire knowledge and skills on many different issues is made through parent-implemented early intervention programs. Among them, most importantly, it is remarkable that parent-implemented naturalistic teaching intervention programs have been developed for strengthening the parent-child interaction and especially teaching strategies based on the naturalistic teaching approach, which has been among the evidence-based practices for parents in recent years (Brown & Woods, 2015; Kaiser et al., 1996; Kaiser & Roberts, 2013; Kashinath et al., 2006; McDuffie et al., 2013; Meadan et al., 2014b; Meadan et al., 2016; Mobayed et al., 2000; Moore et al., 2014; Peterson, Carta & Greenwood, 2005). The results of these studies indicate that parents can be active participants in the education of their children and can support their children's development in their daily lives and that this process plays a significant role in achieving important outcomes on the development of the child.

Parent-Child Interactions

The studies reveal that addressing the young child as a whole with his/her family and especially focusing on parent-child interaction play a significant role in achieving successful results in the early intervention process (Dinnebeil, 1999; Mahoney & MacDonald, 2007). Parent-child interaction is generally defined as a process that affects the quality of the interaction between the parent and the child. The interactional processes established by parents with their children are directly associated with later social, cognitive, and language development of children, especially in early childhood. At this point, many studies indicate that qualified parent-child interaction has positive effects on a child's development (Girolametto, 1988; Landry, Smith & Swank, 2006; Mahoney et al., 2006; Mahoney & MacDonald, 2007). Indeed, the fact that parents (a) follow the child's leadership, (b) use a developmentally appropriate language, (c) establish joint

attention with the child, (d) appreciate the child's experiences, (e) are sensitive and responsive to the child's communication and interaction, and (f) include behaviors that facilitate social communication is among the issues that are basically expected during qualified parent-child interaction (Hancock & Kaiser, 2002; Mahoney & MacDonald, 2007).

The studies revealed that the forms of interaction of parents having children with developmental disabilities with their children were different from the interactions of parents with typically developing children. These studies indicate that parents of children with developmental disabilities are less sensitive and responsive and are highly success-oriented and directive towards their children and that their behaviors of enjoying, being warm, accepting and being influential are not at the desired level during their interactions with their children (Blacher, Baker & Kaladjian, 2013; Gilmore et al., 2009; Phillips, Conners & Curtner-Smith, 2017; Pino, 2000). In the study in which Gilmore et al. (2009) compared the interactions of parents having children with DS with their children to those of parents having typically developing children with their children, it was revealed that parents having children with DS exhibited the role of teacher towards their children more, directed their children's behaviors more and were less sensitive and responsive. Blacher, Baker and Kaladjian (2013) indicated that parents having children with DS exhibited more negative parental behaviors (low level of acceptance, directing, etc.) compared to parents with typically developing children. However, it is argued that parents having children with DS exhibited more positive attitudes towards their children, were more accepting, warm and loving compared to parents having children with other developmental disabilities (autism spectrum disorder, cerebral palsy, etc.). Indeed, it is observed in the literature that parents having children with DS are described as "Directive but Warm" (Cebula, Moore & Wishart, 2009). Therefore, it can be said that the studies for ensuring qualified parent-child interaction in early intervention practices to be developed for young children with DS and their families are among the most important and recommended practices (Sandall, McLean & Smith, 2000).

Naturalistic Teaching Approaches

The fact that children with developmental disabilities have limitations in transferring the behaviors or skills they have acquired through traditional teaching principles and methods to their daily lives was among the important discussion topics of the 1960s. Indeed, Hart and Risley (1968) indicated that this topic was among the main topics discussed during that period. It is observed that they emphasized that traditional methods, used especially in the field of preschool education, were limited in supporting and changing children's daily speech. At this point, it can be said that the main starting point of naturalistic teaching approaches was based on the limitation of traditional methods used in the acquisition and generalization of language and speaking skills. Therefore, it is observed that various interventions, methods and techniques were developed on the basis of naturalistic teaching approaches for many years in order to ensure that these skills were acquired in the child's natural setting and to facilitate their generalization (Allen & Shaw, 2011; Halle, Alpert & Anderson, 1984; Peterson, 2009). In this regard, the naturalistic teaching approach is not a single educational strategy that basically develops to ensure that skills are generalized to daily life or the natural setting, it is an approach formed by combining many different teaching methods (Meadan et al., 2016; Wolery, 1994). The main characteristics of the naturalistic teaching approach are indicated as follows: (a) language and communication skills should be taught in the child's natural setting, (b) teaching should be presented in contexts, (c) it is essential to follow the child's interest and leadership, (d) it is important to use functional or natural reinforcers in line with the child's interest and attention (Halle, Alpert & Anderson, 1984; Moore et al., 2014; Warren & Kaiser, 1986).

It is observed that different teaching methods or strategies were developed within the scope of naturalistic teaching approaches. The main ones of them are listed as incidental teaching (Hart & Risley, 1975), *mand-modeling* (Rogers-Warren & Warren, 1980), *time-delay education* (Halle, Marshall and Spradlin, 1979) (Halle, Alpert & Anderson, 1984; Peterson, 2009). Apart from this, it is observed that teaching methods such as *environmental*

arrangements, expansion, asking right questions, making choice, and using prompts were also used in naturalistic teaching interventions. Naturalistic teaching strategies are used as very effective and useful strategies in developing social communication skills of children with many different types of developmental disabilities. These strategies can be embedded in many learning opportunities of both experts and parents during the day and throughout the day and allow for repeating practices to ensure the permanence and generalization of the skill (Meadan et al., 2016).

Nowadays, it is observed that interventions that are aimed at strengthening parent-child interaction and ensuring that parents or experts working with children have information about supporting the child's development by creating learning opportunities in routines, activities and transitions that occur during the day have been developed based on eclectic/hybrid approaches (Allen & Shaw, 2011; Fey et al., 2006; Peterson, 2009). PiCS-Parent-Implemented Communication Strategies (Meadan et al., 2014a), HANEN-Early Language Parent Program-It Takes Two to Talk (Manolson, 1992), LAPE-Language and Play Everyday (Moore, Barton and Chironis, 2014), PRT-Pivotal Response Treatment (Koegel & Koegel, 2012), ABA-An Activity-Based Approach to Early Intervention (Pretti-Frontczak & Bricker, 2007), MT-Milieu Teaching (Warren & Kaiser, 1986), RE/PMT-The Responsivity Education/Prelinguistic Milieu Teaching (Yoder & Warren, 2002), Project ImPACT-Teaching Social Communication to Children with Autism (Ingersoll & Dvortcsak, 2010), PALS-The Play and Learning Strategies Program (Wheeden & Fewell, 1995), RTP-Responsive Teaching Program (Mahoney & MacDonald, 2007) can be shown as examples of the interventions that are prepared by using different approaches based on a holistic approach and include naturalistic teaching strategies. Although it is observed that many scientific studies on the strategies discussed within the scope of naturalistic teaching approaches or on naturalistic teaching interventions have been carried out for many years, it is observed that naturalistic teaching approaches are among evidence-based practices nowadays (Meadan et al., 2016; Roberts & Kaiser, 2011). The studies indicated that

parents with children in the younger age group with developmental disabilities learned naturalistic teaching strategies, could effectively implement them with high implementation reliability and continued to use the strategies they learned over time (Brown & Woods, 2015; Fey et al., 2006; Kaiser et al., 1996; Kaiser & Roberts, 2013; Kashinath et al., 2006; McDuffie et al., 2013; Meadan et al., 2014a; Meadan et al., 2016; Mobayed et al., 2000; Moore et al., 2014; Peterson et al., 2005). At this point, it is observed that parent-implemented naturalistic teaching interventions that are especially aimed at teaching specific strategies on how parents can support their children's development in their daily lives and focus on parents being the primary practitioner of the intervention process have been developed (Meadan et al., 2014a; Meadan et al., 2016).

Parent-Implemented Naturalistic Teaching Early Intervention Programs for Young Children with Down Syndrome and Their Families

In the literature, it is observed that studies on strengthening qualified parent-child interaction and teaching naturalistic teaching strategies were conducted for parents with children in the younger age group with developmental disabilities within the scope of parent-implemented early intervention programs. At this point, systematic analysis studies were conducted to evaluate the studies, including naturalistic teaching language and communication interventions based on parent-implemented early intervention practices. The common feature of these studies is that parents were considered as the primary practitioner of the intervention during the intervention process. The results of these studies revealed that responsive interaction and naturalistic teaching language strategies that were aimed to be acquired by parents through parent-implemented early intervention programs were implemented by parents with high implementation reliability and that these programs were effective in achieving positive outcomes in children's development (Akamoglu & Meadan, 2018; DeVeney, Hagaman & Bjornsen, 2017; Land et al., 2009; Meadan et al., 2009; Rakap & Rakap, 2014; Roberts & Kaiser, 2011). Moreover, nowadays, it is observed that parent-implemented naturalistic

teaching interventions are among evidence-based practices (Roberts & Kaiser, 2011). The studies that were conducted with young children with DS and their parents (mother, father, primary caregiver, etc.) and that discussed the teaching of responsive interaction and naturalistic teaching strategies, aiming at strengthening qualified parent-child interaction, to parents are included in this section. In Table 2, the relevant studies are described within the context of participant characteristics, research design, the strategies used in the studies, and the main results.

When the research and studies aimed at teaching responsive interaction and natural teaching strategies for young children with DS and their families in Table 2 are analyzed in terms of certain components, it is observed that these studies were generally designed in the group experimental design or single-subject research methods. When the studies are analyzed in detail, it is observed that three of the studies were conducted with an experimental design with the pretest-posttest control group (Fey et al., 2006; Kaiser & Roberts, 2013; Yoder & Warren, 2002), and four studies were conducted with single-subject research models (Brown & Woods, 2015; Meadan et al., 2014a; Wright & Kaiser, 2017; Yoder et al., 1994). In this regard, it can be said that most of the studies were designed with single-subject research methods with a limited number of participants and thus contained a limited number of participants. The research was conducted with mothers in all these studies as in many studies; however, in five studies, the research was conducted with grandmother, foster mother and fathers (Fey et al., 2006; Kaiser & Roberts, 2013; Meadan et al., 2014a; Wright & Kaiser, 2017; Yoder & Warren, 2002).

In recent years, it is remarkable that "coaching" studies have increased, especially in research on parent education (Meadan & Daczewitz, 2015). On the other hand, it is observed that online, internet-based, or distance education practices have also gradually gained importance in parent education (Meadan et al., 2016). In particular, it is observed that "coaching" practices were included in all three of these studies (Brown & Woods, 2015; Meadan et al., 2014a; Wright & Kaiser, 2017). These coaching practices aim to

increase the capacity of families to be able to support their children's development, by taking into account the needs and values of families, by raising awareness of creating naturalistic learning opportunities in daily routines and activities, and by using scientific-based adult learning strategies (McWilliam, 2010; Moore, Barton & Chironis, 2014; Rush & Shelden, 2011). In the study conducted by Meadan et al. (2014a), it was aimed to investigate the effectiveness of a parent education/coaching program regarding the use of naturalistic teaching and visual teaching strategies by parents having children with DS in order to support and develop these children's social-pragmatic communication skills. The major difference between this research from other studies was the process of coaching one parent to another parent. In the study, environmental arrangements, modeling, mand-modeling, and time-delay teaching strategies were taught to parents within the scope of the program called Parent-Implemented Communication Strategies (PICS). As a result of this study, it was determined that there was an increase in the frequency of using naturalistic teaching strategies of all parents and that parents implemented them with high implementation reliability. Nevertheless, as a result of the coaching practices presented in other two studies, it was reported that parents learned to use naturalistic teaching strategies, their frequency of using strategies increased, they implemented the strategies with high implementation reliability and continued to use them (Brown & Woods, 2015; Wright & Kaiser, 2017).

In a study conducted by Brown and Woods (2015) with nine mothers and their children with DS aged 12-18 months, an attempt to determine the effects of the parent-implemented early intervention process on the use of naturalistic teaching strategies by parents and the targeted communication outcomes of children was made. The study was conducted by an inter-participant multiple-baseline model. In the study, environmental arrangement strategies, modeling, expansion, time-delay education, waiting for turn-taking, and responsive interaction strategies, which are among extended natural context-based teaching strategies, were taught to parents. At the end of the study, it was determined that the frequency of using strategies increased in all parents and that

parents also continued to use the strategies in the maintenance stage. In the study conducted by Wright and Kaiser (2017), four parents and their children with DS aged 28-33 months were studied. In the study conducted with the inter-behavior multiple-baseline model, the parent-teaching model was developed, and parents were taught natural context-based language teaching strategies with this model. In this context, parents were taught time-delay, expansion and responsive interaction strategies. At the end of the study, an increase was observed in the frequency of using strategies of all parents, and it was determined that parents implemented these strategies with high implementation reliability.

The study by Yoder et al. (1994) was conducted with two children with DS and two children with developmental delay aged between 21-27 months. In this study in which an inter-subject multiple-baseline level was used, it was intended to increase targeted communication behaviors through social routines based on mutual turn-taking and time-delay, which make intentional requesting easier, by using the environmental arrangement, monitoring the child's leadership, using direct prompt techniques, which are among milieu teaching strategies. The obtained results indicated that there was an increase in parents' intentional requesting skills as a result of the intervention and that parents and teachers could generalize using strategies in their interactions with children. In their study, Yoder and Warren (2002) investigated the effect of responsivity education for parents and prelinguistic milieu teaching for children (RE/PMT) on parental responsiveness and children's communication and language development. The study was conducted with 39 toddlers with mental disabilities in the prelinguistic period and their primary caregivers (35 mothers, two grandmothers, one foster mother, one father). In the study, it was found that RE/PMT increased parental responsiveness after implementation. It was concluded that RE/PMT had a significant effect on child-initiated comments (e.g., initiating joint attention). On the other hand, it was concluded that RE/PMT had an effect on child-initiated requests (e.g., initiating behavior regulation), and this effect varied by the presence or absence of Down syndrome in children. The study by Fey et al.

(2006) was conducted with 51 children aged between 24-33 months and their primary caregivers (50 mothers, 1 father). Thirteen of the children were diagnosed with Down syndrome. In the study, an attempt to seek answers to some basic questions was made. In the study, RE/PMT teaching was provided to the experimental group for six months. As a result of the study, it was observed that there was significant progress in intentional communication, requesting, commenting, vowel-syllable combinations, verbal imitation outcomes, receptive and expressive language levels in the experimental group included in RE/PMT teaching compared to the control group that was not included in it. It was determined that the results obtained did not vary according to the presence of Down syndrome, unlike the results obtained by Yoder and Warren (2002). It was concluded that the intervention implemented had no effect on parents' stress and that it did not vary by the presence or absence of Down syndrome.

Conclusion

It can be said that early intervention programs for young children with DS and their families have been developed under the

influence of the events that have shaped the field of early intervention from past to present. Especially in recent years, it is observed that parent-implemented early intervention studies have been included in the early intervention practices for these children and their families. With parent-implemented early intervention programs, families are expected to play an active role in the development and education of their children. In this context, nowadays, it is observed that studies have been conducted with these children and their families with regard to teaching responsive adult behaviors and naturalistic teaching strategies, which are among evidence-based practices, to parents.

In conclusion, the results of this study, which was conducted with young children with DS and their parents, indicate that parents can learn adult behaviors and naturalistic teaching strategies supporting qualified parent-child interaction, and they can use them in their daily lives. Moreover, nowadays, it can be said that there is still a need for studies designed with different research models on developing different family education models, testing their effectiveness, comparing models with each other, and their effects on children's development.

Table 2.

Description of the relevant studies

References	Participants	Purpose and Research Method	Strategies Used in the Study	Results	
				For Parents	For Children
Yoder, Warren, Kim & Gazdag (1994)	<ul style="list-style-type: none"> • 4 mothers • Mother's age range: 24-45 years • 4 children • The sex of the children is not specified • Children age range: 21-27 months • DS (n=2) • DD (n=2) 	<ul style="list-style-type: none"> • Documenting that increased intentional requesting generalized to sessions with the children's mothers, • Demonstrating that mothers who were naive to the purposes of the study were more likely to linguistically map their children's prelinguistic communication after the intervention than before the treatment, • That mothers and teachers who were naive to the purposes of the study linguistically mapped the children's intentional communication more than the children's preintentional communication. • A multiple-baseline design across subjects 	<ul style="list-style-type: none"> • Linguistic mapping • Requests for communication • Requesting • Other intentional communication (comments, greeting, protests, and yes-no questions) • Preintentional signal 	<ul style="list-style-type: none"> • It has been found that there are significant increases in the frequency of using strategies in the interactions of parents and teachers with children. 	<ul style="list-style-type: none"> • All of the child participants were found to have made progress in the targeted communication outcomes.
Yoder & Warren (2002)	<ul style="list-style-type: none"> • 35 mothers, 2 grandmothers, 1 foster mother, 1 father • Age range is not specified • The sex of the children is not specified • Children's age range: 22 months • DS (n=17) • WS (n=2) • CP (n=1) • ASD (n=1) • DD (n=18) 	<ul style="list-style-type: none"> • This study tested the effect of a method of facilitating prelinguistic communication on parents' responsiveness and children's communication and productive language development. • The method involved the Responsivity education for parents and Prelinguistic Milieu Teaching for children (RPMT). • A randomized group design study 	RPMT strategies: <ul style="list-style-type: none"> • Joint attention • Prelinguistic vocalizations • Vocal imitation • Requesting • Modeling • Linguistic mapping 	<ul style="list-style-type: none"> • It was found that RE / PMT increased parental responsiveness after implementation. 	<ul style="list-style-type: none"> • The effect of RPMT on the growth rate of child-initiated comments (i.e., the most common type of initiating joint attention) varied by the pretreatment measures of that variable. • The effect of RPMT on the growth rate of child-initiated requests (i.e., the most common type of initiating behavior regulation) varied by the presence or absence of Down syndrome. • The effect of RPMT on the growth of productive language varied by the pretreatment frequency of canonical vocal communication

DS: Down syndrome **WS:** William syndrome **CP:** Cerebral palsy **DD:** Developmental delay **ASD:** Autism spectrum disorder

Table 2.
Description of the relevant studies (cont.)

References	Participants	Purpose and Research Method	Strategies Used in the Study	Results	
				For Parents	For Children
Fey, Warren, Brady, Finestack, Bredin-Oja, Fairchild, Sokol & Yoder (2006)	<ul style="list-style-type: none"> 50 mothers, 1 father Age range and gender are not specified. Children's age range: 24-33 months DS (n=13) DD (n=38) 	<ul style="list-style-type: none"> To evaluate the efficacy of a 6-month course of responsivity education/prelinguistic milieu teaching (RE/PMT) for children with developmental delay and RE/PMT's effects on parenting stress in a randomized clinical trial. 	RE/PMT strategies: <ul style="list-style-type: none"> Following the child's lead, Recasting of the child's verbal and linguistic mapping of nonverbal communication acts, To encourage parents to wait for their children to produce interpretable behaviors, To provide appropriate verbal and nonverbal consequences to their children's acts, Establish routines to serve as the context for communicative acts (imitate, modeling, vocalization, gesture, eye gaze, etc.) 	<ul style="list-style-type: none"> There were no effects on parenting stress associated with the intervention or the presence or absence of Down syndrome. 	<ul style="list-style-type: none"> The RE/PMT group exhibited superior gains in communication compared with the no-treatment group. The treatment effect for the overall use of intentional communication acts in the child-examiner context was significant. There were no effects on child outcomes due to the presence or absence of Down syndrome. RE/PMT led to modest increases in the recoding of child acts by parents of children who did not have Down syndrome.
Kaiser & Roberts (2013)	<ul style="list-style-type: none"> 77 children and their primary caregivers (34 mothers, 5 fathers, 38 other primary caregivers) 55 boys, 22 girls Children's age range: 30-54 months DS (n=18) DD (n=43) ASD (n=16) 	<ul style="list-style-type: none"> The purpose of this study was to compare the effects of the Enhanced Milieu Teaching (EMT) implemented by parents and therapists versus therapists only on the language skills of preschool children with intellectual disabilities (ID), including children with Down syndrome and children with autism spectrum disorder (ASD). A randomized group design study 	EMT strategies: <ul style="list-style-type: none"> Developmentally appropriate responsive interaction strategies (contingent responsiveness, language modeling, expansions of child utterances), Behavioral strategies include: (a) arranging the environment, (b) selecting and teaching specific language targets, (c) responding to the child's initiations with prompts, (d) functionally reinforcing the child's communicative attempts, (e) expansions and confirmations of the child's utterances 	<ul style="list-style-type: none"> Parents in the parent + therapist group demonstrated the greater use of EMT strategies at home than untrained parents in the therapist only group, and these effects were maintained over time. 	<ul style="list-style-type: none"> Children learned to use more targets, longer sentences, and a greater number of different words during play activities in which their parents were trained, it is likely that children required this level of language learning support to be able to produce language at higher levels.
Meadan, Angell, Stoner & Daczewitz (2014a)	<ul style="list-style-type: none"> 4 mothers, 1 father Parent's age range: 32-48 years 3 girls, 2 boys Children's age range: 37-60 months DS (n=5) 	<ul style="list-style-type: none"> The feasibility and effectiveness of a home-based parent training and coaching program on the use of naturalistic and visual teaching strategies by parents of children with Down syndrome to promote and enhance these children's social-pragmatic communication skills. A single-case multiple-baseline design 	PiCS (Parent-Implemented Communication Strategies): <ul style="list-style-type: none"> Naturalistic teaching strategies: Environmental arrangement, joint attention, modeling, mand-model, time delay, Visual teaching strategies: Visual mini-schedule, task analysis, reminder cards. 	<ul style="list-style-type: none"> Parents learned the new teaching strategies, implemented them with high fidelity, and were satisfied with intervention procedures and outcomes. 	<ul style="list-style-type: none"> Parents reported improvement in their children's social-pragmatic communication skills.

DS: Down syndrome **DD:** Developmental delay **ASD:** Autism spectrum disorder

Table 2.
Description of the relevant studies (cont.)

References	Participants	Purpose and Research Method	Strategies Used in the Study	Results	
				For Parents	For Children
Brown & Woods (2015)	<ul style="list-style-type: none"> • 9 mothers • Mother's age range: 24-45 years • 4 boys, 5 girls • Children's age range: 12-18 months • DS (n=3) • ASD (n=3) • SD (n=1) • PB (n=1) 	<ul style="list-style-type: none"> • The purpose of this study was to examine the effect of the triadic parent-implemented intervention on the parents' use of embedded intervention strategies and on children's targeted communication outcomes. • A series of three multiple-baseline single-case studies 	<p>Enhanced Milieu Teaching Strategies:</p> <ul style="list-style-type: none"> • Modeling • Responsive interactions (contingent imitation, mirroring and mapping, expansions) • Prompting (expectant pause, open-ended question, choice question, direct prompt) 	<ul style="list-style-type: none"> • All nine mothers demonstrated increases in responsive and modeling strategies. 	<ul style="list-style-type: none"> • All nine children increased at least one of their targeted communication levels with differing amounts of variability from the baseline to the intervention phase and maintained at least the second target's level into the maintenance phase.
Wright & Kaiser (2017)	<ul style="list-style-type: none"> • 3 mothers, 1 father • Parent's age range: 30-46 years • 3 boys, 1 girl • Children's age range: 28-33 months • DS (n=4) 	<ul style="list-style-type: none"> • The purpose of the present study was to replicate and extend previous studies using multiple adult learning strategies by assessing the effects of the TMCR parent-teaching model (Kaiser & Roberts, 2013) on parents' use of EMT strategies when teaching both spoken and signed words. • Single-case multiple-baseline design 	<p>Enhanced Milieu Teaching Strategies</p> <ul style="list-style-type: none"> • Time Delay • Expansion • Responsiveness/responsive interaction strategies 	<ul style="list-style-type: none"> • The implementation of parent training was completed with high fidelity. • In addition, there was a functional relation between the implementation of the parent training and parents' use of the specific EMT intervention strategies. 	<ul style="list-style-type: none"> • There was an increase in the level of children using words and signs.

DS: Down syndrome **DD:** Developmental delay **ASD:** Autism spectrum disorder

References

- Akamoğlu, Y., & Meadan, H. (2018). Parent-implemented language and communication interventions for children with developmental delays and disabilities: A scoping review. *Review Journal of Autism and Developmental Disorders, 5*, 294–309.
- Akcamete, G. (1998). Special education. In S. Eripek (Ed.). *Special education in Turkey* (pp. 197–201). Eskişehir: Anadolu University Publications.
- Allen, K. D., & Shaw, S. B. (2011). *Naturalistic teaching*. Retrieved from <https://www.researchgate.net/profile/Naturalistic-Teaching.pdf>.
- Aytekin, Ç. (2014). *Developing the home-based early intervention program: A case study*. Unpublished Doctoral Thesis. Ankara: Hacettepe University, Institute of Health Sciences.
- Bailey, D. B., Aytch, S. L., Odom, S. L., Symons, F., & Wolery, M. (1999). Early intervention as we know it. *Mental Retardation and Developmental Disabilities, 5*, 11–20.
- Bakkaloglu, H. (2004). *The Effectiveness of activity-based intervention program on the transition skills of children with development delays aged between 3 and 6 years*. Unpublished Doctoral Thesis. Ankara: Ankara University, Institute of Educational Sciences.
- Blacher, J., Baker, B. L., & Kaladjian, A. (2013). Syndrome specificity and mother child interactions: Examining positive and negative parenting across contexts. *Journal of Autism and Developmental Disorders, 43*, 761–774. Doi: 10.1007/s10803-012-1605-x
- Brinkworth, R. (1975). Early treatment and training for the infant with Down's syndrome. *Royal Society of Health, 2*, 75–78.
- Bronfenbrenner, U. (1979). *The ecology of human development: Experiments by nature and design*. Cambridge: Harvard University Press.
- Brown, J. A., & Woods, J. J. (2015). Effects of a triadic parent-implemented home-based communication intervention for toddlers. *Journal of Early Intervention, 37*(1), 44–68. Doi: 10.1177/1053815115589350
- Bryant, D. M., & Graham, M. A. (1993). *Implementing early intervention: From research to effective practice*. NY: The Guilford Press.
- Buckley, S., & Sacks, B. (2012). *An overview of the development of infants with Down Syndrome (0-5 years)*. E-book Edition: Down Syndrome Education International.
- Cebula, K. R., Moore, D. G., & Wishart, J. G. (2009). Social cognition in children with Down's Syndrome: Challenges to research and theory building. *Journal of Intellectual Disability Research, 54*(2), 113–134. Doi: 10.1111/j.1365-2788.2009.01215.x
- Celebioglu-Morkoc, Ö. (2011). *Determination of the effectiveness of early intervention program prepared for the children at age 4-5: The case of Canakkale city*. Unpublished Doctoral Thesis. Canakkale: On Sekiz Mart University, Institute of Social Sciences.
- Celik, S. (2012). *The effectiveness of pre-school version of first step to success early intervention program intended for preventing the problem behaviours*. Unpublished Master Thesis. Eskişehir: Anadolu University, Institute of Educational Sciences.
- Connolly, B., Morgan, S., & Russell, F. F. (1984). Evaluation of children with Down Syndrome who participated in an early intervention program. Second follow up study. *Physical Therapy, 64*(10), 1515–1519.
- Connolly, B., Morgan, S., Russell, F. F., & Richardson, B. (1980). Early intervention with Down Syndrome children: Follow-up report. *Physical Therapy, 60*(11), 1405–1408.
- Davis, A. S. (2008). Children with Down Syndrome: Implications for assessment and intervention in the school. *School Psychology Quarterly, 23*(2), 271–281. Doi: 10.1037/1045-3830.23.2.271
- DeVeney, S. L., Hagaman, J. L., & Bjornsen, A. L. (2017). Parent-implemented versus clinician-directed interventions for late-talking toddlers: A systematic review of the literature. *Communication Disorders Quarterly, 39*(1), 293–302. Doi: 10.1177/1525740117705116
- Diken, H. I., Bayhan, P., Turan, F., Sipal, F. R., Sucuoglu, B., Ceber-Bakkaloglu, H., Kerem-Gunel, M., & Kaya Kara, O. (2012). Early childhood intervention and early childhood special education

- in Turkey within the scope of the developmental system approach. *Infants & Young Children*, 25(4), 346–353. Doi: 10.1097/IYC.0b013e318268541d
- Diken, H. İ. (2013). *Responsive teaching early intervention program (ETECOM)*.
- Diken, H. İ., Vuran, S., Yanardag, M., Diken, Ö., Ulke-Kurkuoglu, B., Bozkurt, F., Tosun, Y., Celik, S., & Tomris, G. (2014). *Developmental Support Program*. Retrieved from http://eae.anadolu.edu.tr/assets/yazili/20140823143949_ksun.pdf.
- Dinnebeil, L. A. (1999). Defining parent education in early intervention. *Topics in Early Childhood Special Education*, 19(3), 161-164.
- Division for Early Childhood. (2014). DEC recommended practices in early intervention/early childhood special education. Retrieved from <https://www.dec-sped.org/dec-recommended-practices>.
- Dmitriev, V. (1988). Cognition and the acceleration and maintenance of developmental gains among children with Down Syndrome: Longitudinal data. *Down's Syndrome: Papers and Abstracts for Professionals*, 11(1), 6-11.
- Dogan, H. (2012). *Analysing the effect of early intervention educational program applied to 5-6-year-old children carrying special learning difficulties risk*. Unpublished Doctoral Thesis. Istanbul: Marmara University, Institute of Educational Sciences.
- Duffy, L. A., & Wishart, J. G. (1994). The stability and transferability of errorless learning in children with Down's Syndrome. *Down Syndrome Research and Practice*, 2(2), 51-58. Doi:10.3104/reports.30
- Dunlap, L. L. (2005). *An introduction to early childhood special education: Birth to age five*. New Jersey: Peason Education.
- Dunst, C. J. (2007). Early intervention for infants and toddlers with developmental disabilities. In S. L. Odom, R. H. Horner, M. E. Snell and J. Blacher (Eds.) *Handbook of Developmental Disabilities* (pp. 161-180). New York: The Guildford Press.
- Feeley, K. M., & Jones, E. A. (2006). Addressing challenging behaviour in children with Down syndrome: The use of applied behaviour analysis for assessment and intervention. *Down Syndrome Research and Practice*, 11(2), 64-77.
- Fey, M. E., Warren, S. F., Brady, N., Finestack, L. H., Bredin-Oja, S. L., Fairchild, M., ... Yoder, P. J. (2006). Early effects of responsivity education/prelinguistic milieu teaching for children with developmental delays and their parents. *Journal of Speech, Language and Hearing Research*, 49(3), 526-547.
- Gilmore, L., Cuskelly, M., Jobling, A., & Hayes, A. (2009). Maternal support for autonomy: Relationships with persistence for children with Down syndrome and typically developing children. *Research in developmental disabilities*, 30(5), 1023-1033. Doi:10.1016/j.ridd.2009.02.005
- Girolametto L. (1988). Improving the social-conversational skills of developmentally delayed children: An intervention study. *Journal of Speech Hearing Disorders*, 53, 156-167. Doi.org/10.1044/jshd.5302.156
- Graaf, E. (1993). Early intervention in the Netherlands: The struggle of a syndrome specific organisation. *Down Syndrome Research and Practice*, 1(3), 123-128.
- Gulec-Aslan, Y. (2008). *The implementation and outcomes of an intensive behavioural home intervention program (OCİDEP) for children with ASD*. Unpublished Doctoral Thesis. Eskişehir: Anadolu University, Institute of Educational Sciences.
- Guralnick, M. J. (1991). The next decade of research on the effectiveness of early intervention. *Exceptional Children*, 58, 174-183.
- Guralnick, M. J. (2005). *The developmental systems approach to early intervention*. Baltimore: Brookes.
- Guralnick, M. J. (2010). Early intervention approaches to enhance the peer-related social competence of young children with developmental delays: A historical perspective. *Infants and Young Children*, 23(2), 73–83. Doi:10.1097/IYC.0b013e3181d22e14
- Guralnick, M. J. (Eds.). (1997). *Second generation research in the field of early intervention: The effectiveness of early intervention*. Baltimore: Brookes.
- Gurel-Selimoglu, Ö. (2015). *The efficacy of Responsive Teaching (RT) program on social interaction skills and mother-child interactions of children with autism spectrum disorder*. Unpublished

- Doctoral Thesis. Ankara: Gazi University, Institute of Educational Sciences.
- Halle, J. W., Alpert, C. L., & Anderson, S. R. (1984). Assessment and intervention with severely impaired preschoolers. *Topics in Early Childhood Special Education, 4*(2), 36-56. Doi: 0271-1214/84/0042-0036\$2.00
- Halle, J. W., Marshall, A. M., & Spradlin, J. E. (1979). Time Delay: A technique to increase language use and facilitate generalization in retarded children. *Journal of Applied Behavior Analysis, 12*(3), 431-439.
- Hancock, T. B., & Kaiser, A. P. (2002). The effects of trainer-implemented enhanced milieu teaching on the social communication of children with autism. *Topics in Early Childhood Special Education, 22*(1), 39-54.
- Hart, B. M., & Risley, T. R. (1968). Establishing use of descriptive adjectives in the spontaneous speech of disadvantaged preschool children. *Journal of Applied Behavior Analysis, 1*, 109-120.
- Hart, B., & Risley, T. R. (1975). Incidental teaching of language in the preschool. *Journal of Applied Behavior Analysis, 8*, 411-420.
- Heward, W. L. (2013). *Exceptional children: An introduction to special education* (10th ed.). USA: Pearson Education Publishing.
- Ingersoll, B., & Dvortcsak, A. (2010). *Teaching social communication to children with autism*. USA: The Guilford Press.
- Kagıtcıbası, Ç., Sunar, D., Bekman, S., & Cemalcılar, Z. (2005). *Ongoing effects of early intervention in adulthood: Preliminary findings of the second follow-up survey of the early support project*. İstanbul: Mother-Child Education Foundation Publications.
- Kaiser, A. P., & Roberts, M. Y. (2013). Parent-implemented enhanced milieu teaching with preschool children who have intellectual disabilities. *Journal of Speech, Language and Hearing Research, 56*, 295-309. Doi:10.1044/1092-4388(2012/11-0231)
- Kaiser, A. P., Hancock, T. B., & Hester, P. (1998). Parents as co-interventionists: Research on applications of naturalistic language teaching procedures. *Infants & Young Children, 10*, 4-12.
- Kaiser, A. P., Hemmeter, M. L., Ostrosky, M. M., Fischer, R., Yoder, P., & Keefer, M. (1996). The effects of teaching parents to use responsive interaction strategies. *Topics in Early Childhood Special Education, 16*(3), 375-406.
- Kaminski, J. W., Valle, L. A., Filene, J. H., & Boyle, C. L. (2008). A meta-analytic review of components associated with parent training program effectiveness. *Journal of abnormal child psychology, 36*(4), 567-589. Doi: 10.1007/s10802-007-9201-9
- Karaaslan, O., Diken, I. H., & Mahoney, G. (2013). A randomized control study of responsive teaching with young Turkish children and their mothers. *Topics in Early Childhood Special Education, 33*(1), 18-27. Doi: 10.1177/0271121411429749
- Karaoglu, M. (2011). *The effects of the first step to success early intervention program on 5-6 years old children's problem behaviours, social skills, and academic engagement time*. Unpublished Doctoral Thesis. İstanbul: Marmara University, Institute of Educational Sciences.
- Karoly, L. A., Kilburn, M. R., & Cannon, J. S. (2005). *Early childhood interventions: Proven results, future promise*. USA: Pittsburgh, RAND Corporation.
- Kashinath, S., Woods, J., & Goldstein, H. (2006). Enhancing generalized teaching strategy use in daily routines by parents of children with autism. *Journal of Speech, Language, and Hearing Research, 49*(3), 466-485. Doi: 1092-4388/06/4903-0466
- Koegel, R. L., & Koegel, L. K. (2012). *The PRT pocket guide: Pivotal response treatment for autism spectrum disorders*. Baltimore: Paulh Brookes Publishing.
- Landry, S. H., Smith, K. E., & Swank, P. R. (2006). Responsive parenting: establishing early foundations for social, communication and independent problem-solving skills. *Developmental Psychology, 42*, 627-642. Doi: 10.1037/0012-1649.42.4.627
- Lang, R., Machaliecek, W., Rispoli, M., & Regester, A. (2009). Training parents to implement communication interventions for children with autism spectrum disorders (ASD): A systematic review. *Evidence-Based Communication Assessment and Intervention, 3*, 174-190. Doi: 10.1080/17489530903338861
- Mahoney, G., & MacDonald, J. D. (2007). *Autism and developmental delays in*

- young children: *The responsive teaching curriculum for parents and professionals*. Austin, Texas: Pro-Ed An International Publisher.
- Mahoney, G., & Perales, F. (2011). The role of parents of children with Down syndrome and other disabilities in early intervention. In J. Rondal, J. Perera and D. Spiker (Eds.) *Neurocognitive rehabilitation of Down Syndrome. The early years* (pp. 205-224). Cambridge: Cambridge University Press.
- Mahoney, G., Kaiser, A., Girolametto, L., MacDonald, J., Robinson, C., Safford, P., & Spiker, D. (1999). Parent education in early intervention: A call for a renewed focus. *Topics in Early Childhood Special Education*, 19(3), 131-140.
- Mahoney, G., Perales, F., Wiggers, B., & Herman, B. B. (2006). Responsive teaching: early intervention for children with Down syndrome and other disabilities. *Down Syndrome Research and Practice*, 11(1), 18-28.
- Manolson, A. (1992). *It takes two to talk: A parent's guide to helping children communicate*. Canada, Toronto: A Hanen Center Publication.
- McDuffie, A., Machalicek, W., Oakes, A., Haebig, E., Weismer, E. S., & Abbeduto, L. (2013). Distance video-teleconferencing in early intervention: Pilot study of a naturalistic parent-implemented language intervention. *Topics in Early Childhood Special Education*, 20(10), 1-14.
- McWilliam, R. A. (2010). *Working with families of young children with special needs*. New York: The Guilford Press.
- Meadan, H., & Daczewitz, M. E. (2015). Internet-based intervention training for parents of young children with disabilities: A promising service-delivery model. *Early child development and care*, 185(1), 155-169. Doi: 10.1080/03004430.2014.908866
- Meadan, H., Angell, M. E., Stoner, J. B., & Daczewitz, M. E. (2014a). Parent implemented social-pragmatic communication intervention: A pilot study. *Focus on Autism and Other Developmental Disabilities*, 29(2), 1-16. Doi: 10.1177/1088357613517504
- Meadan, H., Stoner, J. B., Angell, M. E., Daczewitz, M. E., Cheema, J., & Ruggitt, J. K. (2014b). Do You See a Difference? Evaluating outcomes of a parent implemented intervention. *Journal of Developmental and Physical Disabilities*, 26, 415-430. Doi: 10.1007/s10882-014-9376-2
- Meadan, H., Meyer, L. E., Snodgrass, M. R., & Halle, J. W. (2013). Coaching parents of young children with autism in rural areas using internet-based technologies: A pilot program. *Rural Special Education Quarterly*, 32(3), 3-10.
- Meadan, H., Ostrosky, M. M., Zaghlawan, H. Y., & Yu, S. (2009). Promoting the social and communicative behavior of young children with autism spectrum disorders: A review of parent-implemented intervention studies. *Topics in Early Childhood Special Education*, 29(2), 90-104. Doi: 10.1177/0271121409337950
- Meadan, H., Snodgrass, M. R., Meyer, L. E., Fisher, K. W., Chung, M. Y., & Halle, J. W. (2016). Internet-based parent-implemented intervention for young children with autism: A pilot study. *Journal of Early Intervention*, 38(1), 3-23. Doi: 10.1177/1053815116630327
- Mobayed, K. L., Collins, B. C., Strangis, D. E., Schuster, J. W., & Hemmeter, M. L. (2000). Teaching parents to employ mand-model procedures to teach their children requesting. *Journal of Early Intervention*, 23(3), 165-179.
- Moore, H. W., Barton, E. E., & Chironis, M. (2014). A program for improving toddler communication through parent coaching. *Topics in Early Childhood Special Education*, 33(4), 212-224. Doi: 10.1177/0271121413497520
- National Down Syndrome Society (2016). *Down Syndrome*. <http://www.ndss.org/Down-Syndrome/>. (Date accessed: 25.12.2019).
- New York State of Department of Health (NYSDOH, 2006). *Report of the recommendations down syndrome assessment and intervention for young children*. Retrieved from https://www.health.ny.gov/community/infants_children/early_intervention/docs/guidelines_down_syndrome_assessment_and_intervention.pdf
- Newton, R. W., Puri, S., & Marder, L. (2015). *Down Syndrome: Current Perspectives*. London: Mac Keith Press.
- Odom, S. L., & Wolery, M. (2003). A unified theory of practice in early

- intervention/early childhood special education: Evidence-based practices. *The Journal of Special Education*, 37(3), 164–173.
- Odom, S. L., Boyd, B. A., Hall, L. J., & Hume, K. (2010). Evaluation of comprehensive treatment models for individuals with autism spectrum disorders. *Journal of Autism and Developmental Disorder*, 40, 425–436. Doi: 10.1007/s10803-009-0825-1
- Perera, J. (2011). Early rehabilitative intervention: Definition, objectives, models and challenges. In J. Rondal, J. Perera and D. Spiker (Eds.), *Neurocognitive rehabilitation of Down Syndrome* (pp. 1-15). NY: Cambridge University Press.
- Peterson, P., Carta, J. J., & Greenwood, C. (2005). Teaching enhanced milieu language teaching skills to parents in multiple risk families. *Journal of Early Intervention*, 57(2), 94-109.
- Peterson, P. (2009). Promoting generalization and maintenance of skills learned via natural language teaching. *Journal of Speech Language Pathology & Applied Behavior Analysis*, 4, 90-131.
- Phillips, B. A., Conners, F., & Curtner-Smith, E. M. (2017). Parenting children with down syndrome: An analysis of parenting styles, parenting dimensions, and parental stress. *Research in Developmental Disabilities*, 68, 9-19. Doi: 10.1016/j.ridd.2017.06.010
- Pieterse, M., & Treloar, R. (1989). *Küçük adımlar gelişimsel geriliği olan çocuklara yönelik erken eğitim programı [Small steps early education program for children with developmental delay]*. G Kırcaali-İftar (Çev. Ed.). İstanbul: Zihinsel Engellilere Destek Derneği.
- Pino, O. (2000). The effect of context on mother's interaction style with Down's syndrome and typically developing children. *Research in developmental disabilities*, 21(5), 329-346. Doi: : S0891-4222(00)00046-9
- Pletcher, C. L., & Younggren, N. (2011). Early intervention-IDEA Part C: Service delivery approaches and practices. In C. Groark & S. P. Maude (Eds.), *Early childhood intervention: Shaping the future for children with special needs and their families* (pp. 1-39). USA: ABC-CLIO, LLC.
- Pretti-Frontczak, K., & Bricker, D. (2007). *An activity-based approach to early intervention* (3rd ed.). Baltimore: Paul Brooks Pub.
- Pueschel, S. M. (1983). *An overview of Down's syndrome*. USA: Arlington Association of Retarded Citizens of the United States.
- Rakap, S., & Rakap, S. (2014). Parent-implemented naturalistic language interventions for young children with disabilities: A systematic review of single-subject experimental research studies. *Educational Research Review*, 13, 35–51. Doi: 10.1016/j.edurev.2014.09.001
- Raver, S. A., & Childress, D. C. (2015). *Family-centered early intervention: Supporting infants and toddlers in natural environments*. Paul H. Brookes Publishing Co.
- Roberts, J. E., Price, J., & Malkin, C. (2007). Language and communication development in Down Syndrome. *Mental Retardation and Developmental Disabilities*, 13, 26-35. Doi: 10.1002/mrdd.20136
- Roberts, M. Y., & Kaiser, A. P. (2011). The effectiveness of parent-implemented language interventions: A meta-analysis. *American Journal of Speech-Language Pathology*, 20, 180-199. Doi: 10.1044/1058-0360(2011/10-0055)
- Rogers-Warren, A., & Warren, S. F. (1980). Mands for verbalization facilitating the display of newly trained language in children. *Behavior Modification*, 4, 361-382. Doi: 10.1177/014544558043006
- Roizen, N. J. (2005). Complementary and alternative therapies for Down Syndrome. *Mental Retardation and Developmental Disabilities, Research Reviews*, 11, 149-155. Doi: 10.1002/mrdd.20063
- Rush, D. D., & Shelden, M. L. L. (2011). *The Early Childhood Coaching Handbook*. Brookes Publishing Company. PO Box 10624, Baltimore, MD 21285.
- Rynders, J. E., & Horrobin, J. M. (1975). Project EDGE: The University of Minnesota's communication stimulation program for Down's syndrome infants. *Exceptional infant: Assessment and intervention*, 3.
- Sameroff, A. J., & Fiese, B. H. (2000). Transactional regulation: The developmental ecology of early intervention. In J. P. Shonkoff and S. J. Meisels (Eds.), *Handbook of early childhood intervention* (pp. 135-160). NY: Cambridge University Press.
- Sandall, S., McLean, M. E., & Smith, B. J. (2000). *DEC recommended practices in*

- early intervention/early childhood special education. Sopris West, 4093 Specialty Pl., Longmont, CO 80504.
- Shearer-Marsha, S., & Shearer, D. E. (1972). The Portage Project: A model for early childhood education. *Exceptional Children*, 39(3), 210-225. Doi: 10.1177/001440297203900304
- Shonkoff, J. P., & Meisels, S. J. (2000). *Handbook of early childhood intervention* (2nd ed). USA: Cambridge University Press.
- Sloper, P., Glenn, S. M., & Cunningham, C. C. (1986). The effect of intensity of training on sensori-motor development in infants with Down's Syndrome. *Journal of Mental Deficiency Research*, 30(2), 149-162.
- Spiker, D. (2011). The history of early intervention for infants and young children with Down syndrome and their families: Where have we been and where are we going? In J. Rondal, J. Perera & D. Spiker (Eds.), *Neurocognitive rehabilitation of Down Syndrome* (pp. 1-15). NY: Cambridge University Press.
- Spiker, D., & Hopmann, M. R. (2000). The effectiveness of early intervention for children with Down Syndrome. In M. J. Guralnick, *The effectiveness of early intervention* (pp. 271-307). Baltimore: Paulh Brookes Publishing.
- Stray-Gundersen, K. (2013). *Babies with Down Syndrome: A New Parents' Guide*. Woodbine House Publishing.
- Tomris, G. (2012). The views of the teacher, the parents and the counsellors about the preschool edition of the first step to success early education program in preventing the problem behaviours. Unpublished Master Thesis. Eskişehir: Anadolu University, Institute of Educational Sciences.
- Tomris, G. (2019). *The effectiveness of an early intervention program based on naturalistic teaching for parents of children with down syndrome on parents and their children*. Unpublished Doctoral Thesis. Eskişehir: Anadolu University, Institute of Educational Sciences.
- Toper-Korkmaz, Ö. (2015). Effectiveness of home-based responsive teaching (RT) early intervention program on children with autism spectrum disorder and their mothers. Unpublished Doctoral Thesis. Eskişehir: Anadolu University, Institute of Educational Sciences.
- Turnbull, A. P. (1984). Parent professional interactions. In M. Snell (Ed.) *Systematic Instruction of the Moderately and Severely Handicapped*, (2nd edition), (pp. 17-44). USA: Ohio, Merrill Publication.
- Turnbull, A., Turnbull, R., Erwin, E. J., Soodak, L. C., & Shogren, K. A. (2011). *Families, professionals and exceptionality: Positive outcomes through partnership and trust*. New Jersey: Pearson Education Inc.
- Uysal, H. (2016). *Adaptation of incredible years intervention program child training and investigation of the effectiveness of the program*. Unpublished Doctoral Thesis. Ankara: Hacettepe University, Institute of Educational Sciences.
- Van-Riper, M., & Cohen, W. I. (2001). Caring for children with down syndrome and their families. *Journal of Pediatric Health Care*, 15(3), 123-131. Doi: 10.1067/mpg.2001.110627
- Warren, S. F., & Kaiser, A. P. (1986). Incidental language teaching: A critical review. *Journal of Speech and Hearing Disorders*, 51, 291-299. Doi: 0022-4677/86/5104-0291501.00/0
- Wheeden, C., & Fewell, R. (1995). *The Play and Learn Strategies (PALS) program*. Miami, FL: The Debbie Institute of the University of Miami Miller School of Medicine. Unpublished manuscript.
- Wolery, M. (1994). Instructional strategies for teaching young children with special needs. In M. Wolery and J. S. Wilbers (Eds.), *Including children with special needs in early childhood programs* (pp. 119-140). Washington, DC: National Association for the Education of Young Children.
- Wright, C. A., & Kaiser, A. P. (2017). Teaching parents enhanced milieu teaching with words and signs using the teach-model-coach-review model. *Topics in Early Childhood Special Education*, 36(4), 192-204. Doi: 10.1177/0271121415621027
- Yoder, P. J., & Warren, S. F. (2002). Effects of prelinguistic milieu teaching and parent responsivity education on dyads involving children with intellectual disabilities. *Journal of Speech, Language and Hearing Research*, 45, 1158- 1174. Doi: 1092-4388/02/4506-1158
- Yoder, P. J., Warren, S. F., Kim, K., & Gazdag, G. E. (1994). Facilitating prelinguistic communication skills in young

children with developmental delay II:
Systematic replication and extension.
Journal of Speech, Language,

and Hearing Research, 37(4), 841-85.
Doi: 0022-4685/94/3704-0841