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# A GENERAL OVERVIEW OF EVIDENCE-BASED PRACTICES FOR AUTISM SPECTRUM DISORDER

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**Abstract:**
Various practices are applied to make the education of children with autism spectrum disorder (ASD) qualified. These practices should be evidence based to be effective for the children with ASD and their families. In this study, evidence based practices applied in the education of the children with ASD and their families are explained within the frame of the literature. The most effective practices are applied in terms of the applied practices and practitioners' competence in the evidence based practices, and the laws and policies lay emphasis for utilizing these practices. When examining the practices evidence based applied for the children with ASD, most of them are seen to be based on Applied Behavior Analysis (ABA) approach. ABA approach focuses on the skills needed by the children with ASD, when they are compared to their normally growing peers, and lays emphasis on the structured and individualized teaching. The most important behavior principles of the approach are negative reinforcement, punishment, result and formalizing. ABA methods decrease the negative methods; increases the communication, learning level and positive behavior. However, ABA also has some limitations, as every practice does. Mostly emphasized among these is that ABA based practices are applied mostly in clinical environments or classrooms. The existing interventions regarding ASD vary the practices and bring the discrete trial teaching approach, the relational approach, the unified approach and the developmental responsive approach into light. In the discrete trial teaching approach, new communication styles are taught effectively. This approach is based on that the behavior is learned by the individual, if the adult responds to the target behavior appropriately and consistently. In the relational approach, the skill wanted to be acquired in the interaction environment created within game context that develops social interaction is taught by disintegrating into steps. This approach is based on the assumption that the child should be directed to utilize an advanced and a higher level

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communicative behaviors. In the unified approach, the components of the discrete trial teaching approach and the relational approach have been combined. It utilizes the components of these approaches all together. In the developmental responsive approach, there is an intervention group named interaction based education and developmental, individual differences relationship based model. The most important priority of the approaches including these models is the positive emotional relations arising between the specialist and the child. It is based on the assumption that the positive emotional relation between the specialist and the child increases the child's motivation for social communication and eases following the clues regarding social interaction. In the interventions executed with the children with ASD, families are seen as partners and it is seen that the relation based approaches are utilized in supporting child's development and family-child interaction. The relation based approach depends on the parental modelling and asserts that families and other caretakers have a fundamental psycho-social effect in the development of all children.

**Keywords:** autism spectrum disorder, evidence based practices, intervention level

## 1. Introduction

There are numerous practices aimed specifically at the education of children with autism spectrum disorder (ASD). Children with ASD, their parents, and health providers consider the current practices to be constructive because they are evidence-based. Evidence-based practices (EBP) refer to practices rooted in the integration of the best research evidence, practitioner's expertise, target groups' opinions and the selection of effective practices (Trinder & Reynolds, 2000). Today's laws and policies tend to be grounded on the use and dissemination of evidence-based practices (Ünlü, 2012). The quest for evidence-based practices was first developed in the medical field and then adopted over time by all applied fields, and it became influential in the fields of applied social sciences in the 1990s (Kurt, 2012).

Institutions in the USA, such as the National Autism Center (NAC) and the National Professional Development Center (NPDC), have played an active role in determining the evidence-based practices for ASD in recent years. A great variety and growing number of educational, therapeutic, and treatment methods are used in ASD. The NAC (2009) classifies ASD practices under four categories: 1) established, 2) emerging, 3) unestablished, 4) ineffective/harmful.

A vast majority of practices classified as established are based on applied behavior analysis (ABA) (Reffert, 2008). Studies on early intervention approaches for children with ASD show a transition from traditional behavioral approaches to modern behavioral and relationship-based approaches, with the latter being among emerging practices (NAC, 2009).

## 2. Applied Behavior Analysis (ABA)

Applied behavior analysis (ABA) emphasizes structured and individualized teaching where the focus is on specific cognitive and language skills that may be absent in children with ASD when compared with their normal developing peers (Mahoney, 2009). The ABA is based on the hypothesis that children's developmental delay may be conceptualized on the cognitive, language, and social behaviors and competences that children are expected to have at their chronological age. Therefore, children with developmental delay may make progress if they are systematically taught specific skills and concepts characterizing their delay (Hartford, 2010). The ABA is influenced by positivism, one of the many philosophical movements developed in the 19th century (e.g. Darwin's functionalism, Pavlov's classical conditioning, Thorndike's connectionism, Watson's behaviorism, and Skinner's operant conditioning). Significant principles of the ABA include positive reinforcement, negative reinforcement, punishment, consequences, and shaping (Alberto & Troutman, 2006). According to a report put out by the U.S. Surgeon General's office, in ABA studies involving children with ASD, the ABA techniques were shown to reduce negative behaviors and increase communication, learning level, and positive behaviors (Rosenwasser & Axelrod, 2001). It is also important to note that the ABA is an intervention approach that supports child development, is empirically supported and uses directive techniques.

Despite the basic data and the awareness that specialists in the field of ABA have about children with ASD, there are some limitations to the ABA approach. For instance, the related literature presents conflicting findings on language development. Early ABA intervention programs were reported to help language acquisition; however, the progress was quite slow and poor results were obtained (Rosenwasser & Axelrod, 2001). The main reported problem involved children with ASD who had severe language and communication issues. Therefore, it is important to investigate whether other early intervention programs would be better able to permanently contribute to children's language skills. While ABA mostly uses clinical or classroom environments, there is a large number of intervention programs that support parents in their natural and daily routines. Mahoney (2009) suggests that the ABA focuses on teaching children only cognitive, language, or social skills through individualized instruction in structured environments. ABA-based practices are mostly used in clinical environments or in classrooms although there are numerous curricula that encourage parents to teach certain skills to their children with developmental disability in their home and during their natural and daily routines by using ABA processes (Mahoney, 2009).

The theoretical orientation of existing interventions, intervention strategies, and intervention objectives for children with ASD diversifies the implementation results. The most critical issue of the field which has been discussed for over 60 years is whether to adopt a developmental responsive approach or a behavioral approach (e.g. discrete trial teaching) (Grandin, 1995; Quill, 1995; Prizant et al., 2000). The developmental responsive approach includes interventions that are similar to the naturally occurring interactions between parents and children (e.g. Mahoney & Macdonald, 2003;

Greenspan & Wieder, 2000). Discrete trial teaching (DTT), on the other hand, is based on the behavioral approach and involves teaching by dividing target skills into small steps and repeating them one by one until the child learns. These two approaches (behavioral approach and developmental responsive approach) and the transactional (Prizant et al., 2000) and combined approaches (Whalen & Schreibman, 2003) that lie between them share the same opinion on the structure and symptoms of ASD but support quite different opinions and intervention methods on the learning process necessary for teaching communication skills to children with ASD. Similar to the behavioral approach, the transactional approach directs children to use communicative behaviors at a higher level. The combined approach, on the other hand, combines the components of the transactional and behavioral approaches (Prizant et al., 2000). Figure 1 shows the positions of the four approaches in the early intervention teaching model of ASD.

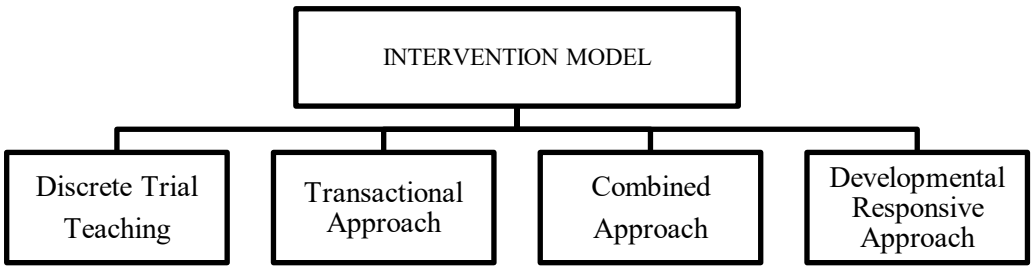


**Figure 1:** Positions of the four intervention approaches in the teaching model (Prizant et al., 2000)

## 3. Discrete Trial Teaching (DTT)

As can be seen from the chart above, discrete trial teaching (DDT) is the exact opposite of the developmental responsive approach. The potential advantage of the DTT is that it can effectively teach new ways of communication (Yoder & Mcduffıe, 2006). The DTT, which was first applied by Lovaas (1987), follows the traditional behavioral approach frequently used in educating children with ASD and has been stated by different researchers to bring positive outcomes (Buffington, Krantz, McClannahan, & Poulson, 1998; Roxburgh & Carbone, 2013; Smith, 2001). With this technique, an adult, for example, would provide a discriminative stimulus that features both verbal (e.g. "Let's talk about ...") and nonverbal components (e.g. finding a small toy). The desired reaction of the child is well-defined in teaching (e.g. saying ''Look!'' while pointing to the toy and looking at it). If the answer is incorrect or incomplete or the child fails to answer, the practitioner gives the right answer. If the child still does not answer, the practitioner physically directs the child with assisted gestures (e.g. pointing the child's hand to the toy) and asks the child to imitate the intended verbal response (e.g. says "Look!"). Verbal cues and reinforcers (e.g. token reinforcement system) are also provided depending on the correct and complete answers (Yoder & Mcduffıe, 2006). The underlying hypothesis of DTT is that individuals learn the target behavior when an adult gives answers which are coherent and compatible with that behavior. This

hypothesis, however, has not yet been tested on children with ASD experiencing severe limitations in social interaction skills (Yoder & Mcduffıe, 2006).

**4. Transactional Approach**

The transactional approach combines the advantages of the developmental responsive approach and the DTT approach. It involves teaching target skills in a step-by-step manner in an interactive environment created within a context of a game which develops social interaction. This approach was designed to effectively teach skills in initiating joint attention in particular. Social communication, emotional regulation, and transactional support (SCERTS) (Prizant et al., 2000) and enhanced milieu teaching (EMT) are two interventions used in the transactional approach (EMT; Yoder & Warren, 2002). Both models remark that the effectiveness of the intervention models depends on the sensitivity of the primary social partners to the child's communication style (Prizant et al., 2000; Yoder & Warren, 2002). Similar to the developmental responsive approaches, the transactional approaches determine target skills by using the development literature to identify a set of possible target skills, monitor the child's interests and games, and seek to establish turn taking routines with the child in the context of games. Regarding the DTT approaches, the transactional approaches are similar in the sense that they direct the child to use communicative behaviors at a higher step which is more developed (Prizant et al., 2000).

**5. Combined Approach**

The last of the approaches, the combined approach, merges the components of the transactional and the DTT approaches. The relevant interventions are referred to collectively as the combined approach since they explicitly use the components of these two approaches together. In an effort to develop a new method, the DTT and transactional approaches are combined by using different components of each (Whalen & Schreibman, 2003) or by using different techniques from each during the same intervention session (Kasari, Freeman, & Paparella, 2000). To cite two separate examples, Whalen and Schreibman (2003) combined the components of pivotal response training and DTT, while Kasari et al. (2000) first used DTT, followed by the language teaching method.

**6. Developmental Responsive Approach**

The intervention group described as developmental responsive approaches is positioned at the endpoint of the model shown in Figure 1. These interventions have two forms, namely, responsive teaching (RT) (Mahoney & McDonald, 2003; Mahoney & Perales, 2003) and the developmental, individual-difference relationship-based model (DIR) (Greenspan & Wieder, 2000). In the literature, the RT model, as compared to the DIR model, has been studied in greater detail. The authors of the RT reported the

following intervention strategies to be used: (1) Get into your child's world; (2) Observe your child's behaviors; (3) Imitate your child's actions and communication styles; (4) Accompany communication with intonation, pointing and nonverbal gestures; (5) Repeat activities your child enjoys; (6) Read your child's behavior as an indicator of interest; (7) Follow your child's lead in those things that attract their attention; and (8) Be sensitive to your child's sensations. Mahoney and McDonald (2003) present the process in the following way: (1) Following the child's sources of attention, games, and interests helps to facilitate eye-contact; (2) Being sensitive to the child's communication behaviors increases the effectiveness and frequency of intentional communication; (3) Using more than one cue concomitantly helps adults to follow the cues related to the child's source of attention.

The foremost priority of the RT model and other developmental approaches is to establish a positive emotional relationship between the specialist and the child. The hypothesis governing this priority is that the positive emotional relationship with the specialist would increase the child's motivation towards social communication and make it easier to follow the cues about social interaction. These kinds of approaches serve to prevent families from having recourse to manipulation/commanding to develop a certain target behavior in the child and to punishment of the child due to his/her undesired behavior. Manipulation and punishment techniques may constitute negative emotional impacts insofar as they could disrupt the provision and maintenance of the positive emotional relationship between the family and the child.

Today, relationship-based approaches (RBAs) are utilized in supporting child development and parent-child interactions. The RBAs are among the emerging practices (NAC, 2009), and they focus on the parents, who are at the center of the intervention on children's development and socio-emotional skills. They try to change the focus on the direct instruction activities performed by the specialists in clinics or classrooms. As such, the RBA approach serves to increase the amount of stimulation that children receive and aims to maximize the quality and efficacy of the activities that parents do with their children in their daily routines, rather than simply teach them certain words or behaviors. The RBA is based on the parenting model (Hartford, 2010) of child development, which is based on the idea that parents and other caregivers have the main psychosocial effects on all children, including those affected by disabilities. This is considered an interactive approach, where development is related to the quality of experiences and interactions provided for the child by families or other caregivers during daily routines, as well as to his/her genetic and biological structure (Hartford, 2010; Kelly, Zuckerman & Rosenblatt, 2008; Mahoney, 2009).

The term 'relation-based' derives from the literature on child development studies. Child development specialists have been investigating the effects of parents on their children's development and the quality of these effects' size for the last 30 years (e.g. Hancock & Kaiser, 2006; Munson & Odom, 1996). Most of these studies have investigated how parents interact with their children, with the aim of determining how the diversity of interaction and communication styles between parents and their

children contributed to their children's development and social emotional functions (Kelly et al., 2008; Mahoney, 2009).

Relationship-based practices point to young children's social-emotional and developmental needs and encourage parents to use strategies designed to facilitate interaction with their own children in a more responsive way. There are various experimental studies showing that relationship-based practices are effective in supporting the cognitive and communicative skills of children with different developmental risks (e.g. Cassel et al., 2007; Kim & Mahoney, 2004). Moreover, studies also show that parents can be encouraged to interact with their children in a responsive way by using interactive strategies like "Take a turn and wait", "Follow your child's lead", or "Imitate your child". Interventions lasting six months or more have been shown to have an impact on the progress of children's development (Cassel et al., 2007; Kim & Mahoney, 2004; Mahoney, 2009).

RBA is based on an extremely different conceptual framework compared to most of the developmental interventions used for children affected by disabilities, including the parenting model, which emphasizes the critical role that families play in their children's development through responsive-based interventions and interactions. Interventions based on teaching models, such as approaches generated from the ABA, consider specialists, as opposed to families, the key actors of the intervention. Compared to responsive interaction, these interventions place a greater emphasis on teaching practices that encourage children to learn and adopt higher level skills. RBA and ABA are not always mutually exclusive. In other words, the ABA techniques can still be used while maintaining the communication style of the responsive interaction, which is partially directive. Both become more practical than the other depending on the cases. For instance, the ABA may be more effective in toilet training and in reducing self-harm behaviors than the relationship-based practices (Kroeger & Sorensen-Burnworth, 2009; Hartford, 2010). Relationship-based practices, on the other hand, would be more appropriate for encouraging the initiation of joint attention and interaction skills while maintaining the child's focus of interest (Landry, Smith, Swank, & Guttentag, 2008; Mahoney, Boyce, Fewell, Spiker, & Wheeden, 1998). Both interventions can be effective at different times, for different skills, and in different families.

Included among the relationship-based practices are the PLAY Project (Solomon, Necheles, Ferch, & Bruckman, 2007), the Relationship Development Intervention (Guntstein, Burgess, & Montfort, 2007), the SCERTS Model (Prizant, Wetherby, Rubin, & Laurent, 2003), the Floortime/DIR Model (Greenspan & Wieder, 1999), the Hanen programs (e.g. Pepper & Weitzman, 2004), and RT/ETEÇOM (Diken, 2013; Mahoney & MacDonald, 2007). These programs all have one thing in common; they use responsive teaching strategies and prioritize the parent-child interaction (Selimoğlu, 2015).

Studies in Turkey, however, mostly aim to educate parents on how they can teach their children a skill or behavior. The Behavioral Education Program for Children with ASD (OÇİDEP) (Güleç-Aslan, Kırcaali-İftar, & Uzuner, 2009) and the Small Steps Early Intervention Program (KAEEP) (Birkan, 2002; Küçüker, Bakkaloğlu, & Sucuoğlu,

2001) are among the limited interventions applied to children with ASD that have been developed or adapted for the early childhood period. The Portage Early Education Program is among the programs supporting the parent-child relationship, along with the Developmental Support Program (GEDEP) (Diken et al., 2014) and ETEÇOM (Mahoney & MacDonald, 2007), which were developed according to the relationship-based approach. Most of these programs, however, rely on the parents' guidance in building children's developmental skills. It is quite interesting that ETEÇOM is the only program for parent-child interaction.

The ETEÇOM program, which is one of the relationship-based practices, points to children's social-emotional and developmental needs and involves strategies that were developed to support interaction between parents and their children in a more responsive way (Mahoney & Perales, 2005). Time limitations (e.g. one-year intervention) or pauses in providing the service (e.g. school holidays) may occur while practicing some of the early intervention services of the ABA. The ETEÇOM program trains the primary caregiver to be the one who practices the intervention so that continuity will be provided in supporting child development in daily routines.

## 7. Discussion and Conclusion

Although early intervention practices are based on child development stages and support for the parent-child interaction, one of the most discussed issues of the last 30 years is how supportive educational services in early childhood can best be provided for children and their families. Thus, the early education field has been undergoing a dramatic process of change and development in developed countries since 1975. While these changes and development were originally child-centered and based on the individual therapy approach in the 1960s and 1970s, it has since shifted towards a family-centered approach starting from the late 1980s (Mahoney & Bella, 1998). The child-centered approach is based on educating children according to a single package education program provided by specialists from different fields independent of one another, whereas the family-centered approach focuses on the individualized program, where the aim is integration and interdisciplinary interaction is provided in the programs designed according to the family's needs (Guralnick, 1997). The family-centered approach emphasizes that families should be encouraged to actively participate in early education services (Turnbull, Blue-Banning, Turnbille, & Park, 1999), and its theoretical ground is built within an ecological framework and family systems theory that assumes the family's importance in the development and education of children with special needs (Turnbull et al., 1999; Wehman, 1998).

As of the late 1990s, criticisms directed towards the family-centered approach started to increase and emphasis started to be given to the necessity of developing a new approach in the early education field. Mahoney (1999) argued that the literature on the family-centered approach ignored the importance of parent education, which is one of the most significant elements of early education, and that the number of experimental studies on effective parent education practices was limited in the 1990s.

The criticisms also indicated that practices in this field were still child-centered, contrary to what the literature was reporting (Mahoney et al., 1998).

It is noteworthy that family-centered and relationship-based early intervention approach, which is a new early intervention approach superseding both approaches, has emerged out of the discussions shaping the early education field (Mahoney & Bella, 1998; Selimoğlu, 2015). This new approach accepts that children and their families need different things and interact with each other through their current communication skills. The reciprocity in parent-child interaction can be developed in time when both children and their families start to make distinct contributions. The quality of the parent-child interaction significantly affects the child's cognitive, motor, language, and socio-emotional development (Mahoney et al., 1999). The family-centered and relationship-based early intervention approach has taken shape by putting the quality of the parent-child interactions and structure, the priorities, the values, and the lifestyle of the family at the center and by prioritizing the relationship between families and early intervention specialists.

In order to understand the implications of interventions and theory approaches to children with ASD, it is important to pay attention to interventions that combine a single approach or multiple approaches. The participation of the family in education is considered to be the most significant element of the early intervention for children with ASD in terms of developing interaction skills as early as possible to maintain the continuity of the education and the continuity of the development of social interaction skills (McConachie & Diggle, 2007; Wetherby & Prizant, 2000). Finally, one of the most critical problems in the education of children with ASD is, indeed, failure to maintain the continuity of the education. This problem can be overcome by supporting the interaction opportunities between children with ASD and their family in early childhood and by ensuring more progress in their developmental areas.

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