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The Effectiveness of the Responsive Teaching Parent-mediated Developmental Intervention Programme in Turkey: A pilot study

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The case study was conducted to examine the feasibility of an early intervention curriculum called Responsive Teaching with two five-year-old children from Turkey who had significant developmental delays. This study determined whether Turkish mothers might be successful in learning to become more responsive to their children, and whether this would result in significant improvements in their children's development. Both dyads received 28 individual parent–child intervention sessions which were conducted over a four-month period of time. Pre-, mid-, and post-assessments indicated improvements in the mothers' responsiveness to their children and the children's levels of engagement with their parents. There were also improvements in the children's language and personal social development. Mothers reported that Responsive Teaching helped them learn to interact more effectively with their children and that this resulted in longer and more enjoyable interactions with them. Results from this investigation are discussed in terms of their implications for providing developmental services to preschool-aged children with disabilities in Turkey.

Keywords: developmental disability; developmental intervention; early intervention; parent–child interaction; pilot study; Responsive Teaching Programme; Turkish children; Turkish mothers

Introduction

Relationship-focused intervention (RFI) is an approach to enhancing the developmental functioning of young children with developmental delays or risks by encouraging parents to engage in highly responsive interactions with their children throughout the course of their daily routines. This approach to early intervention was derived from child development research that attempted to identify the parenting qualities which influenced children's developmental and social emotional well-being. Over the past 30 years this research has produced consistent evidence that, given that parents are providing their children with adequate amounts of stimulation, parents' responsiveness appears to be the main quality that is associated with children's cognitive (Landry, Smith, Swank, Assell, & Vellet, 2001), language (Tamis-LeMonda, Bornstein, & Baumwell, 2001; Tamis-LeMonda, Bornstein, & Damast, 1996), and socio-emotional functioning (Kochanska, Aksan, & Carlson, 2005; Kochanska, Forman, & Coy, 1999; van den Boom, 1994). These findings have been reported for diverse populations including parents of middle and low socio-economic status (Beckwith & Cohen, 1989), teenage

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mothers (Fewell, Casal, Glick, Wheeden, & Spiker, 1996) as well as Caucasian (Tamis-LeMonda et al., 1996) and Black mothers (Bradley, 1989) from North America, Europe (Vereijken, Riksen-Walraven, & Kondo-Ikemura, 1997) and Japan (Bornstein, 1989). They have been reported for typically developing children, children at-risk due to prematurity or environmental conditions, as well as children with developmental disabilities (Mahoney, Finger, & Powell, 1985) including autism (Siller & Sigman, 2002).

Several studies have been published in the United States and Europe indicating that parents of children with developmental risks and disabilities can learn to become more responsive to their children through the use of RFI procedures in which professionals coach parents to use responsive interaction strategies (cf., McCollum & Hemmeter, 1997; Trivette, 2003). These strategies are guides or suggestions that support various elements of responsive interactive behaviour, including reciprocity (e.g., interactions that are characterised by a balanced, "give and take" relationship), contingency (e.g., interactions that have an immediate and direct relationship to a child's previous behaviours that support and encourage the child's actions, intentions, and communications), affect (e.g., expressive, animated and warm interactions that are characterised by enjoyment or delight with the child) and interactive match (e.g., interactions and requests that are adjusted to the child's developmental level, interests, and behavioural style or temperament). In addition, parents' use of these strategies has been shown to enhance children's interactive engagement (e.g., McCullom, 1984) and, when implemented for six months or longer, they also influence children's developmental functioning (e.g., Landry, Smith, & Swank, 2003, 2006; Mahoney & Powell, 1988; Seifer, Clark, & Sameroff, 1991).

The purpose of this study is to examine the feasibility of an RFI called Responsive Teaching (RT) (Mahoney & MacDonald, 2007) with two mothers from Turkey and their preschool-aged children with disabilities. RT is a manualised RFI curriculum that is specifically designed to enhance the development and social–emotional functioning of children with disabilities who are younger than six years old. The curriculum includes 65 responsive interaction strategies that were derived from previously published RFI curricula—e.g., Hanen (Sussman, 1999), the Ecological Communication (ECO) Program (MacDonald, 1989), Floor Time (Greenspan & Weider, 1998), and Interactive Learning Strategies—INREAL (Weiss, 1981). RT is organised around several "pivotal behaviours" that are targeted to promote changes in the child's developmental functioning (e.g., social play, initiation exploration, practice, joint attention, intentionality, cooperation, self-regulation). For each pivotal behaviour, the curriculum provides five to eight RT strategies that parents can use to promote the behaviour as well as several discussion topics that can be used to help parents understand the role that the pivotal behaviours play in developmental learning.

Mahoney and Perales (2003, 2005) published two outcome studies with children with disabilities who were under three years of age that provide partial support for the effectiveness of RT. In the first study, Mahoney and Perales (2003) evaluated the effects of RT on the social emotional functioning of 20 children with autism. Pre–post comparisons indicated significant improvements in mothers' responsiveness and affect as well as in the children's pivotal developmental behaviours. In addition, there were overall improvements in children's regulatory behaviours as well as their social competence. In the second study, Mahoney and Perales (2005) evaluated the developmental changes made by 50 children who participated in RT for 12 months. Pre–post comparisons indicated improvements in children's developmental functioning. Compared with their rate of development prior to intervention, children made a 120% increase in their rate of

cognitive development and a 190% increase in their rate of communication development during intervention.

It is important to note that while these studies reported dramatic intervention effects, in both studies there was considerable variability in the ability of the mothers to use RT strategies to modify their interactions with their children. This was strongly associated with the impact that the intervention had on their children's development. Approximately one-third of the mothers made no changes in responsiveness, one-third made moderate changes and one-third made substantial changes. While no variables were identified as being associated with parents' response to this intervention, Mahoney and Perales (2003, 2005) speculated that parents' attitudes about playing an active role in their children's intervention as well as the compatibility of the intervention with their child-rearing beliefs may have contributed to these differences.

Because early intervention services are not universally available to preschool children with disabilities and their parents in Turkey, partly due to the limited amount of funding that is available for this endeavour, there is an urgent need to develop and demonstrate early intervention procedures. These procedures need to be cost-effective and compatible with Turkish cultural and child-rearing norms. Due to the few professional resources that are available to address this issue, parents need to play an important role in carrying out their children's intervention. The study described in this article examines whether RFI, such as RT, is feasible for Turkish parents to use with their children at home, and what effect, if any, this intervention might have on the children's development and functioning.

This pilot study was conducted to address three issues related to the use of RT with preschool-aged children with disabilities and their mothers in Turkey. First, would Turkish mothers be able to use responsive interaction strategies as a means of modifying their interactions with their children? Since mothers in Turkey are seldom expected to participate actively in their children's intervention, we wanted to determine whether mothers whose children were currently receiving intervention services in Turkey would be willing or able to accept this role. Second, would RT be effective at promoting the development of children with disabilities who were older than three years of age? As noted previously, the evaluations of RT promoted by Mahoney and Perales included children who were all under three years of age at the start of the intervention. Third, would the responsive/child-oriented philosophy underlying RT be compatible with the cultural and parenting beliefs of Turkish mothers? That is, while Turkish mothers may not have difficulty learning responsive interaction strategies, might they have reservations about using these strategies during routine interactions with their children? Might they perceive the strategies as promoting a parenting style that was incompatible with their child-rearing or cultural beliefs?

Method

Participants

Participants were recruited in the town of Eskisehir, Turkey based upon three criteria: the children were under six years of age; they had a diagnosed developmental disability; and the mothers had not been involved with any special training focusing on parent–child interaction. Out of four dyads that were identified, two mother–child dyads agreed to participate. Child A (male, 66 months) had a diagnosis of autism, while Child B (male, 65 months) had a diagnosis of Down syndrome. The mothers of both children were high school graduates and housewives. Mother A was 30 years old and Mother B was 36 years

old. The children's current level of development was assessed using the Denver Developmental Screening Inventory (Yalaz & Anlar, 1996). Child A's personal social and language functioning were both at the 11-month level of development, indicating that this child had severe levels of developmental delay. Child B's levels of personal–social and language functioning were assessed at 23 and 33 months, respectively, indicating moderate levels of developmental delay. Neither of these children had medical or health conditions that might impede their development during the course of the study.

Procedures

The participants received individual parent–child sessions that were based upon the RT curriculum (Mahoney & MacDonald, 2007). The curriculum was translated into Turkish by the first two authors. Translations were verified by a group of professionals including speech and language therapists and special educators. The intervention was provided in a centre-based setting during bi-weekly sessions over a four-month period of time. Following the prescribed procedures outlined in this curriculum, during each session the mothers were taught to use one or two responsive interaction strategies to promote pivotal developmental intervention objectives related to their children's needs. Sessions lasted approximately 1–1.5 hours. After each session, a family action plan was developed to encourage the mothers to follow through with the content during their daily routine activities with their children.

Data Collection

Data on mother–child interactions were collected at three points: prior to the intervention, at the midpoint of the intervention and after the completion of the intervention. Child development data were collected prior to and at the completion of the intervention. A parent interview was conducted both before and after the completion of the intervention. The following describes each of the instruments that were used.

Mother–Child Interaction

Children and their parents were video-recorded while playing together for 20 minutes with a set of developmentally appropriate toys. Parents were instructed to play with their children as they typically do.

Turkish Version of the Maternal Behavior Rating Scale. Observations of the videotapes of mother–child play were used to evaluate the changes in the mothers' style of interacting with their children. Global assessments of the mothers' style of interaction were assessed with the Turkish Version of the Maternal Behavior Rating Scale (TV-MBRS) (Diken, 2009). The TV-MBRS includes 12 items (sensitivity, responsivity, effectiveness, acceptance, enjoyment, expressiveness, inventiveness, warmth, achievement, praise, directiveness, and pace) assessing interactional behaviours of parents. Factor analyses of the TV-MBRS with 123 children with various delays/disabilities revealed that TV-MBRS has three subscales: Responsiveness (sensitivity, responsivity, effectiveness and inventiveness); Affect (acceptance, enjoyment, expressiveness, warmth, and praise); and Achievement orientation (achievement, defectiveness, and pace). The Kaiser–Myer–Olkin value was 0.84. The reliability of each subscale was assessed using Cronbach's alpha and was 0.86, 0.87, and 0.61, respectively. After observing the complete observation, mothers were assessed with each of these items using a 5-point Likert scale.

Turkish Version of the Child (Pivotal) Behavior Rating Scale. The Turkish Version of the Child (Pivotal) Behavior Rating Scale (TV-CBRS) (Diken, 2009) was used to determine the children's pivotal behaviours from the observations of mother–child interactions. The Child (Pivotal) Behavior Rating Scale was originally developed by Mahoney and Wheeden (1998) and translated into Turkish by Diken (2009). The TV-CBRS involves the use of a 5-point Likert-type scale (1 = *Very low* to 5 = *Very high*). The TV-CBRS includes seven items (attention, persistence, interest, cooperation, initiation, joint attention and affect) assessing interactional (pivotal) behaviours of targeted children. A factor analysis of the TV-CBRS with 123 children with various delays/disabilities revealed that the TV-CBRS had two subscales: Attention (attention, persistence, interest, and cooperation); and Initiation (initiation, joint attention, and affect). The Kaiser–Myer–Olkin value was 0.82. Reliability of each subscale was assessed by examining Cronbach's alpha and was 0.79 and 0.91, respectively.

Child Development

The children's development was assessed with the Turkish version of the Denver Developmental Screening Test—II (Denver II) (Yalaz & Anlar, 1996) and the Ankara Developmental Screening Inventory (Savaşır, Sezgin, & Erol, 2005). These instruments were administered by two clinicians who were certified to administer these tests.

Turkish Version of the Denver Developmental Screening Test—II. The Denver II is a developmental screening instrument for children between the ages of zero and six years. It was originally developed by Frankenburg and Dodds in 1967, and then revised as the Denver II in 1990. The Denver was adapted into Turkish first by Yalaz and Anlar in 1980 and then revised by Yalaz and Anlar in 1996.

Ankara Developmental Screening Inventory. The Ankara Developmental Screening Inventory is designed to assess the development of young children between zero and six years of age by gathering information from mothers or other principal caregivers. It includes 154 items organised into four sub-domains that assess children's cognitive language, fine motor, gross motor, and social skill self-care.

Intervention Interviews

To determine what the mothers thought about the TV-RT and the changes in their children's behaviours and skills and their own interactional behaviours, pre- and post-semi-structured interviews were carried out with mothers. Four questions were asked of the mothers: What do you think about your child's developmental status? What do you think about your interactional behaviours with your child during daily routines? What do you think about your child's interactional behaviours with you during daily routines? What do you think about the TV-RT? Interviews took approximately one hour and were carried out in the mothers' homes.

Reliability

A total of three mother–child observations were video-recorded. Video-taped sessions were independently evaluated using the TV-MBRS and the TV-CBRS. Following procedures described in previous studies of the Maternal Behavior Rating Scale, the

maternal behaviours were coded with the TV-MBRS by the first author and a trained independent coder. The same procedure was used for the TV-CBRS. Both coders received training on the TV-MBRS and TV-CBRS. After attaining 80% agreement on training, they started to code the data. Inter-coder reliability was computed by assessing percentage of intercoder agreement as "number of agreements/number of agreements + number of disagreements x 100" (Richards, Taylor, Ramasamy, & Richards, 1999) for the TV-CBRS and the TV-MBRS. Overall exact agreement was 90% ranging from 80% to 100% for the TV-MBRS, and was 90% ranging from 80% to 100% for the TV-CBRS.

Treatment Integrity

Data were also collected to assess whether the TV-RT was implemented as intended using the RT Intervention Session Guide. All intervention sessions were video-taped. Ten sessions (about 30% of all sessions) were evaluated by an independent coder using a Treatment Integrity Data Form. The coder gave a plus (+) when any item on the form was followed as intended and gave a minus (–) when any item on the form was not followed as intended. Treatment integrity was 100% for all sessions.

Results

In the following section we examine the effects of RT on each of the two dyads based upon the model of this curriculum. We first present results related to examining the impact that this intervention had on the mothers' style of interaction. Then we present results related to the impact of the intervention on the children's pivotal behaviour, and then we present the results related to the impact of the intervention on the children's development. At the end of this section we summarise the mothers' comments about RT from the parent interviews.

Influence of TV-RT on the Interactional Behaviours of the Mothers

As indicated in Figures 1 and 2, both mothers displayed a highly directive and relatively non-responsive pattern of interaction with their children pre-intervention. This was indicated by scores on the directiveness/achievement orientation that were at or

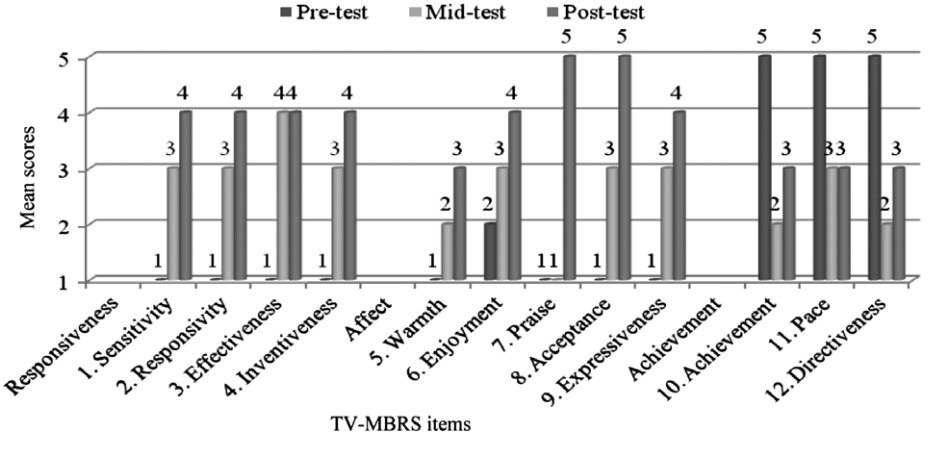

Figure 1. Changes in Mother A's interactional behaviours.

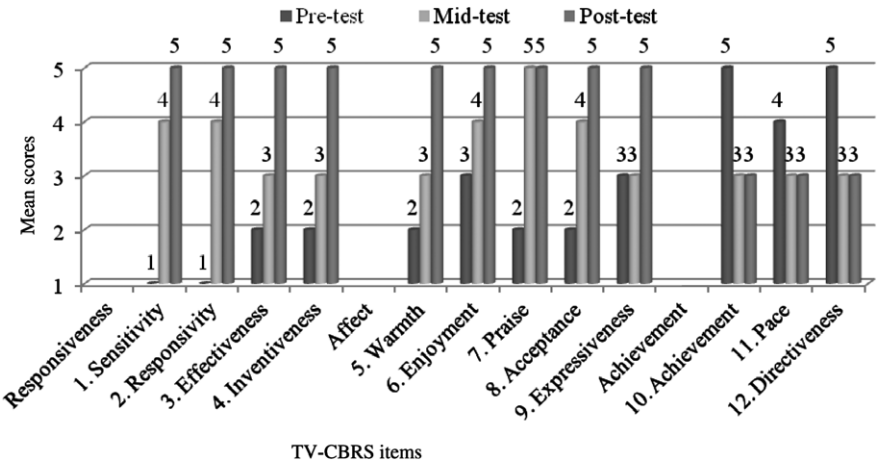

Figure 2. Changes in Mother B's interactional behaviours.

near the ceiling level as well as scores on responsiveness that were at or slightly above the floor level at pre-test. After two months, or 14 intervention sessions, Mother A's interactive behaviour was rated near the midpoint on Responsiveness, and below the midpoint on Affect and Achievement/Directiveness. Mother A continued to change her style of interaction over the next two months of the intervention, such that by the end of the intervention she had high scores on Responsiveness and Affect and midpoint range scores on Directiveness.

Similar to Mother A, Mother B also became highly responsive and relatively non-directive towards her child during the intervention, achieving ceiling level scores on Responsiveness and Affect and midpoint scores on Achievement Orientation/Directiveness by the completion of the intervention. However, the pattern of change for Mother B was different from that of Mother A insofar as most of the changes that this mother made occurred by the end of the second month of intervention.

Influence of the TV-RT on the Pivotal Behaviours of the Children

The children's pivotal behaviour ratings at pre-, mid- and post-intervention are depicted in Figures 3 and 4. Both children had low ratings of their pivotal behaviours at pre-intervention, but Child A had an average pivotal behaviour rating that was almost two times greater than that observed for Child B (2.6 vs. 1.3). As indicated in Figure 3, Child A had a sharp increase in all seven pivotal behaviour ratings from pre-intervention to the mid-point, with an average pivotal behaviour rating of 4.7, which was maintained until the completion of the intervention. Child B also showed substantial improvements in his pivotal behaviour, and he achieved an average pivotal behaviour rating of 4.0 by the end of the intervention. However, Child B's rate of improvement was more gradual than that reported for Child A, with Child B achieving only an average pivotal behaviour rating of 2.7 by the middle of the intervention.

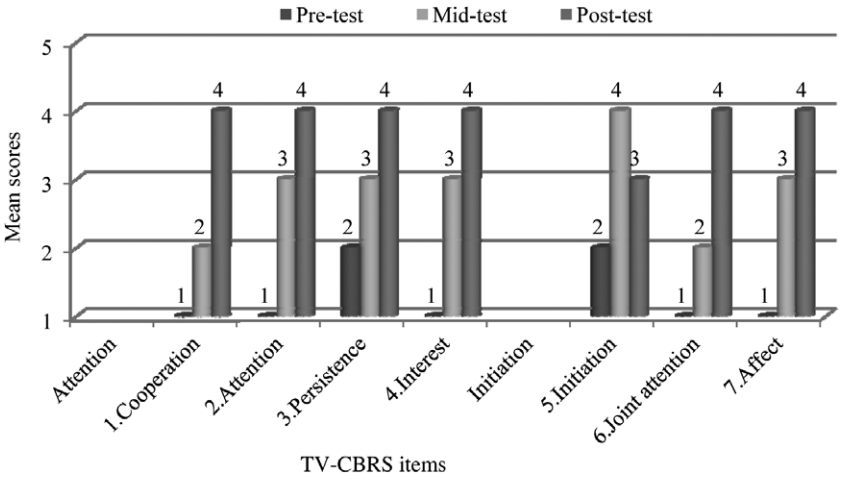

Figure 3. Changes in Child A's pivotal (interactional) behaviours.

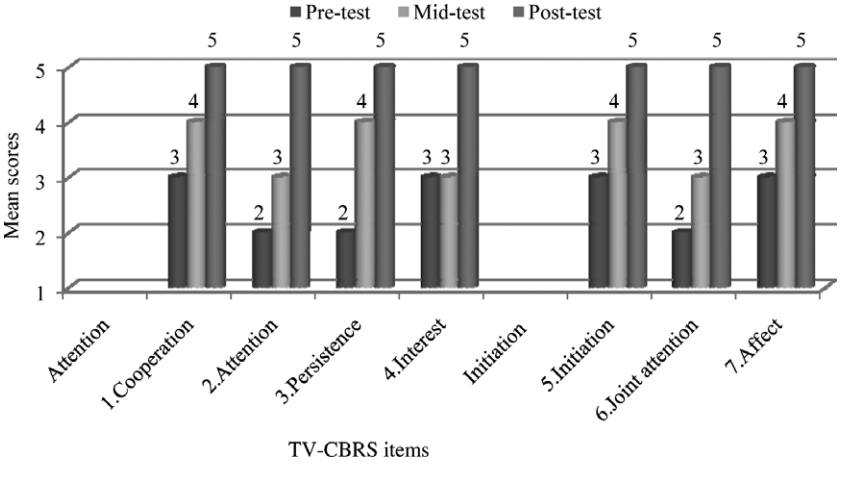

Figure 4. Changes in Child B's pivotal (interactional) behaviours.

The Influence of the TV-RT on Children's Developmental Skills

Results of the children's performance from the Denver II and Ankara Developmental Screening Inventory are presented in Table 1. Both Child A and Child B had substantial delays in all domains of both scales. For example, Denver II pre-test results indicated that Child A showed language and personal–social skills at the 11-month level at pre-intervention, whereas Child B's functioning in these domains was at 23 and 33 months, respectively. On the Ankara Developmental Screening Inventory, Child A's language and social skills were assessed at the 15-month and 20-month levels while Child B's development was assessed at the 22-month and 17-month levels.

At post-intervention, both children displayed dramatic improvements in their developmental functioning. To illustrate the magnitude of these improvements, for each developmental domain of the Denver and Ankara we calculated a proportional change

Table 1. Child development results for Child A and Child B.

Developmental domain	Child A			Child B		
	Pre-test	Post-test	Rate of improvement[a]	Pre-test	Post-test	Rate of improvement[a]
Denver II						
Personal–Social	11 months	27 months	2.5	23 months	27 months	2.4
Language	11 months	24 months	2.3	33 months	36 months	1.5
Fine motor	57 months	57 months	None	39 months	45 months	2.5
Gross motor	30 months	45 months	8	22 months	36 months	10.6
Ankara Developmental Screening Inventory						
Social skill self-care	20 months	30 months	8.3	17 months	26 months	6.5
Language cognitive	15 months	20 months	5.7	22 months	30 months	6
Fine motor	23 months	36 months	9.3	13 months	33 months	25
Gross motor	33 months	33 months	None	20 months	33 months	10.5

Note: [a]Proportional change.

index (Wolery, 1983) by dividing children's rate of development during intervention (DA2 – DA1) / (CA2 – CA1) by their rate of development prior to intervention (DA1/ CA1). These results are listed in Table 1 under the column "Rate of Improvement". Thus, for example, a score of 2.4 would indicate that the child's rate of development during intervention was 2.4 times greater than his rate of development prior to intervention. Using the most conservative estimate from these two developmental tests, these data suggest that Child A's rate of language development increased by 5.7 times and his rate of social development increased by 8.3 times. Using the same method, Child B's rate of language development increased 1.5 times and social development 2.4 times.

Mothers' Interviews

The following summarises the comments mothers made about RT at the beginning and end of the intervention.

Mothers' Views Regarding the TV-RT

Both mothers reported seeing improvements in their children's cognitive, communication and social functioning. For example, at the beginning of the intervention, both mothers stated that their children were able to match objects or pictures (e.g., matching socks or shoes, or pictures of objects), categorise (e.g., putting animals in a place and cars in another place) and make basic discriminations (e.g., small/big, cold/hot) while they were being taught these skills, but that neither of these children used these skills functionally during daily routines. However, after the intervention, both mothers observed that their children spontaneously produced these behaviours during their daily routines.

At the beginning of the intervention, Mother A stated that her child could only understand communicative intents related to his essential needs. At the completion of the intervention, she reported that her child understood much more language and was communicating mostly with vocalisations and single-word utterances, using at least 13

different words. She also noted dramatic improvement in his ability to remain engaged in long episodes of reciprocal patterns of interaction.

Mother B indicated that before intervention her son could only produce four single-words—"*baba* (father), *anneanne* (grandma), *dede* (grandpa), and *otobüs* (bus)"—and that he was not able to communicate his intentions. She stated that after the intervention, he was communicating his intentions more frequently and spontaneously produced several new single-word utterances (e.g., *dondurma* [ice-cream], *at* [horse], *koşalım* [run], *anne* [mom/mother], *koy* [put], *gel* [come], *tamam* [ok]).

Both mothers reported notable improvements in their children's social–emotional functioning. They reported that their children's lack of initiating and maintaining interaction changed dramatically during intervention. Child A's mother indicated that before the intervention her son routinely rejected her attempts to join his play. After beginning to use responsive interaction strategies, she commented that her son started to play with her and let her join in his play. Mother B stated that her son started to join his peers' play in the playground.

Mothers' Views Regarding their Own Interactional Behaviours

During the pre-intervention interviews, both mothers stated that they did not know what to do or how to interact with their children. Both parents said that they often attempted to teach their children skills and behaviours like teachers. They also pointed out that the duration of their interactions with their children, especially their play interactions, was very brief. Moreover, they reported that their children did not enjoy interacting with them. However, during the post-intervention interviews, both mothers stated that they felt much better interacting with their children, because the responsive interaction strategies provided a more effective and enjoyable way of engaging their children. They stated that RT taught them how to interact with their children not only by teaching but by sharing, playing and having fun with their children.

The Mothers' Views of the Interactional Behaviours of their Children

Both mothers reported dramatic improvements in the ability of their children to initiate and maintain interaction with them. For instance, Mother A mentioned that before the intervention her son seldom made direct eye contact with her, did not take turns, and interacted with her only when he needed something. However, as she began using responsive interaction strategies, her son started to interact not only to get his needs met, but also to initiate play or social contact with her. Mother B also pointed out that before the intervention her son only interacted with toys or people whom he really liked. After the intervention, he started to join his peers' play in the playground and had fun with others.

The Mothers' Views on the Effectiveness of the TV-RT

With improvements in their children's interactional behaviours, both mothers indicated that their stress levels had decreased. Both mothers reported that because of the patterns of interaction that they had been using with their children for several years, it was initially difficult to abandon this style of interaction and implement responsive interaction strategies with their children. Mother A stated that she had difficulty using toys and objects functionally and creatively during the first weeks of implementing TV-RT.

However, she stated that after the first month of the intervention she was able to use toys and other objects more functionally and creatively. She mentioned also that the TV-RT was a programme that decreased the stress levels of parents and was easy to use (user-friendly). Mother B stated that she was satisfied with the results of the TV-RT and thought that it should be implemented with all parents.

Discussion

This case study was designed to assess the feasibility of RT as a method for addressing the developmental needs of preschool-aged children with disabilities in Turkey. While the two dyads who participated in this study are clearly not representative of all Turkish children with disabilities and parents, nonetheless the results of this study suggest that this type of intervention may hold promise as a method for early intervention in Turkey.

First, the results indicated that the mothers were highly successful at using responsive interaction strategies as a means of modifying their style of interacting with their children. Observations of the mother–child interactions conducted at pre-intervention showed that both mothers engaged in a highly directive and relatively non-responsive pattern of interaction with their children. This pattern of interaction has been observed frequently among mothers of children with disabilities in western countries (Mahoney, Fors, & Wood, 1990) and is thought to result partly from parents' beliefs that their children's developmental delays can best be addressed by teaching them the skills and behaviours that they do not yet know. Consistent with this notion, both mothers in this study commented that the way they interacted with their children at the beginning of the intervention was the result of their efforts to teach developmental skills and behaviours. This pattern of interaction was remarkable in this study because of its intensity, with both mothers attaining ratings in directiveness that were at the ceiling level for the Maternal Behavior Rating Scale and ratings of responsiveness that were near the lowest levels.

Despite the intensity with which these mothers were teaching and directing their children at the beginning of the intervention, by the end of the second month of this study, or after 14 RT sessions, both mothers had made remarkable progress in learning to use RT strategies with their children. This resulted in their engagement in a much more responsive and less directive style of interaction with their children, which they reported as being more effective and enjoyable. Despite the fact that these mothers found initially that it was difficult to use RT strategies, by the end of the intervention the mothers were engaging in interactions that were characterised by optimal levels of responsiveness and moderate levels of directiveness. Over the four months of the intervention, the mothers' ratings in responsiveness increased by an average of 3.25 Likert-scale points, while ratings in directiveness decreased by an average of 1.85 Likert-scale points. This compares extremely favourably with RT data reported by Mahoney and Perales (2005), in which after 12 months of intervention the average level of improvement in Responsiveness was 0.7 Likert-scale points while the average decreases in Achievement Orientation and Directiveness were approximately 0.1 Likert-scale points. The outcomes in the study then further underscore the feasibility of this intervention with mothers from Turkey.

Second, there were two factors that could have interfered with the ability of the children to benefit from this intervention: the children's age and the severity of their disabilities. RT was initially evaluated with children who were less than three years of

age (e.g., Mahoney & Perales, 2003, 2005), and evidence that this intervention is effective with older preschool-aged children is limited. In addition, most intervention studies have indicated that children with severe developmental delays are less likely to benefit from any intervention when compared with children with higher levels of developmental functioning. Yet despite the older age of the children who participated in this study and the severity of their developmental delays, both children made remarkable improvements in their learning and development. The children's improved learning capabilities were reflected by increases in their pivotal behaviour use. Child A's average pivotal behaviour ratings increased by nearly 200% during intervention while Child B's pivotal behaviour ratings increased by 300%. More importantly, Child A attained an average pivotal behaviour rating of five out of a possible five by the end of the intervention, while Child B attained an average rating of four. Thus both of these children, who displayed very low levels of pivotal behaviour use prior to the intervention, made dramatic improvements in their use of these behaviours and were at, or near, the highest level of pivotal behaviour use by the end of the intervention.

Paralleling improvements in the children's use of developmental learning behaviours were the dramatic improvements in their assessed levels of developmental functioning after only four months of intervention. Using the most conservative estimate of children's developmental improvements as measured by the Denver or the Ankara, Child A's rate of language and social development showed a 700% improvement while Child B's language and social development showed a 200% improvement. Even if children's actual level of improvement was inflated by factors such as regression toward the mean or the mothers' over-estimation of their children's development at the end of the intervention, this intervention could be regarded as successful if the children had attained only some of these developmental improvements.

One of the major issues we wanted to examine in conducting this study was how Turkish mothers would react to this intervention. While we did not ask them directly whether this intervention clashed with their personal or cultural child-rearing beliefs, the interview we conducted provided mothers with an opportunity to express any apprehensions they may have had about using RT as well as difficulties they may have encountered in implementing this intervention with their children at home. The initial discomfort or awkwardness that the mothers reported in using RT strategies did not reflect reservations they may have had about RT, as much as it reflected their struggle to use responsive interaction strategies when their natural instincts were to direct and teach their children. As the mothers grew more comfortable using RT, they noticed how these strategies made it easier for them to interact with their children, and how their children became more social, responsive and enjoyable to be with. While the mothers also noticed the developmental improvements that their children made, they seemed to appreciate RT more because of the impact that it had on their children's ability to socialise with them and others. These comments reflect the mothers' perceptions that one of the main values of RT was the positive impact it had on the children's behaviour at home—a notion that is compatible with the child-rearing and cultural goals of these mothers.

Because of the small sample case-study design of this study, it is not possible to generalise the findings from this study to other Turkish parents and their children. However, the fact that these two mothers were successful in using this intervention, despite the fact that the intervention contrasted sharply with the way they initially interacted with their children, points to RT as a potentially useful intervention for Turkish parents. In addition, the fact that this intervention produced the same pattern of findings as

reported by Mahoney and Perales (2003, 2005), whereby the improvements in the mothers' responsiveness were associated with improvements in both the children's use of pivotal behaviours as well as their rate of developmental functioning, points to the fact that RT may be an effective way of addressing the developmental needs of children with disabilities in Turkey. Clearly, studies of RT with larger and more diverse samples of Turkish parents and children with disabilities are needed to establish the potential of this intervention as an option for providing early intervention services in this country.

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