The Effects of Inclusive Preschools on the Development of Children with Disabilities: A Longitudinal Study*

Abstract
This study presents the results of the Preschool Inclusion Project investigating the effects of inclusive preschools on the development of children with disabilities (CWDs) and without disabilities (CWODs) over the two years and determining predictors of the development of both groups of children. The participants were 61 pairs of CWDs and CWODs attending 53 inclusive preschool classrooms, in Ankara, Turkey. Data were collected on three occasions over two years, with fall and spring measurements with six months apart in the first year of the study and then again one year later, in the spring data point of the second year. The results showed that the developmental scores of the CWODs are higher than those of the CWDs at all measurement points, and the differences between the developmental scores of the two groups of children tended to close gradually in the second and third measurements. We found no significant longitudinal changes in problem behaviors and the student-teacher relationships of the CWDs and CWODs over the two years. In addition, the findings from canonical correlation analysis revealed that social skills provided the greatest contribution to the development of CWDs for the first and second measurements and the second-highest contribution in the third measurement.

Keywords: Inclusive preschools, children with disabilities, longitudinal study

Introduction
The early years are valuable for all children and being in an inclusive environment with same-age, typically developing children is essential for the development of young children with developmental disabilities. Preschools are significant inclusive environments in which children with different levels of ability simultaneously play and learn together, and engage in social exchanges with each other during daily activities. High quality preschools are associated with positive outcomes for all children including those with disabilities, and have been shown to foster improved attention span, social skills and cognitive skills, and better performance in future learning (Odom & Diamond, 1998; Odom, Zercher, Li, Marquart, Sandall, & Brown, 2006). Children with disabilities (CWDs) may have various levels of ability in social, cognitive and emotional skills,
and problems in physical well-being, although the results of studies investigating the effects of inclusive environments, in other words preschools, in the early years, appear to be promising regarding the developmental outcomes of CWDs (Holahan & Costanbader, 2000). In the present study, we share the results of a three-year project to determine the effects of inclusive preschools on the development of young children with disabilities, their teachers, and parents, and to identify predictors of the development of not only CWDs but also children without disabilities (CWODs).

Background
Inclusion is defined as an educational model, in which students with disabilities attend school with their typically developing peers, and an inclusive system integrates special education and all related services into all aspects of its program. A review of previous studies reveals that inclusion in early childhood to be an effective form of early intervention, and that preschool education leads to positive outcomes for all children (Guralnick, 2001; Gupta, Henninger, & Vihn, 2014; Pianta, Barnett, Burchinal, & Thornburg, 2009; Odom, 2000; Strain & Bovey, 2011). Researchers have emphasized that high-quality inclusive settings with appropriate support and accommodation results in more effective learning and development for not only in typically developing children but also CWDs (Burchinal, Vandergriff, Pianta, & Mashburn, 2010; Holahan & Costanbader, 2000; Frauzer-Cross, Traub, Hutter-Pishgahi, & Shelton, 2004; Odom, Buysse, & Soukakou, 2011). In addition, the behaviors of CWDs are positively affected by participation in activities in inclusive classrooms alongside typically developing children (Guralnick, Connor, Hammond, Gottman & Kinnish, 1996; Hauser-Cram, Bronson & Upshur, 1993). Moreover, when the children are given opportunities to interact with their higher functioning peers, it would be beneficial for them. (Hanushek, Kain, Markman, & Rivkin, 2003; Justice, Potscher, Schatschneider, & Mashburn, 2011). Based on the results of the previous studies revealing the positive effects of early inclusion on children development, and with the efforts of the volunteer organizations, inclusion in early settings is endorsed and supported in many countries, including the United States, Portugal, Italy, and Turkey, and it is mandated by the laws and regulations that protect the rights of CWDs in these countries.

Existing studies have strongly emphasized that to gain the expected benefits from the preschool inclusion for children with and without disabilities, the stage should be set in terms of school preparedness, the professional development of teachers and the supports to be provided to the CWDs (Buysse & Hollingsworth, 2009; Frauzer-Cross et al., 2004). Previous studies of preschool inclusion in recent decades have revealed that mere inclusion, in another words, sharing regular classroom with typically developing peers, is not enough for successful inclusion, and that both schools and teachers should be prepared to work with CWDs. Accordingly, support systems for teachers, parents and CWDs should be established.

Motivation for the study
In Turkey, inclusion in the early years is mandated by laws and regulations, according to which, all the needs of young CWDs must be met in special education preschools and public preschools, along with the provision of the necessary support services (Ministry of National Education [MoNE], 2018). It is mandated that if young CWDs aged 3-6 are accepted as eligible to attend regular preschools, based on the decision of the Guiding and Research Centers affiliated with MoNE and the approval of the parents. In such cases, preschool teachers are expected to support their development through adaptations and modifications to the curriculum, teaching methods and teaching materials. In Turkey, the body of literature focusing on aspects of inclusion has seen a marked growth in recent years, revealing that parents, teachers, and CWDs in practice encounter many challenges in inclusive preschools. As such, although the attitudes of teachers toward the inclusion of teachers are generally positive, most are unwilling to have CWDs in their classrooms as a result of their lack of knowledge, experiences and also skills related to inclusive practices (Akalin, Demir, Sucuoglu, Bakaloglu, & Iscen-Karasu, 2014). In addition, both teachers and CWDs cannot be provided with the necessary support and
thus the needs of CWDs are not met to be expected extent in inclusive preschools (Akalin et al., 2014). Moreover, preschool teachers frequently state that CWDs are generally not accepted by their typically developing peers (Bakkaloglu, Sucuoglu, & Özbek, 2019), and the teachers are unable to increase the relationship between CWDs and CWODs in their classrooms. As for the parents of CWDs, they want their children to be with same-age typically developing children; although they may be concerned that the teachers may not fully meet their children’s needs, and that their children may be rejected by their peers in preschool classrooms (Bayraklı & Sucuoglu, 2018). Although preschool inclusion has an almost 30 year history in Turkey, there has to date been no study tracking the development of CWDs and also their same age peers during the time spent in inclusive preschools. On the other hand, despite the physical conditions of preschools are generally inadequate, the support services for both teachers and CWD are insufficient, and preschool teachers have only limited skills in inclusive practices, the number of CWDs enrolled in preschool classrooms increases each year (Diken, Rakap, Diken, Tomris, & Çelik, 2016; Gök & Erbaş, 2011). Consequently, we are concerned that all stakeholders including teachers, parents, policy makers and the community may begin to believe that inclusion means placing CWDs in regular classrooms without establishing the necessary systems which would be an unsuccessful model for CWDs, leading to acceptance that separate schools and special education classrooms are the best options for children with a variety of disabilities (Sucuoglu, Bakkaloglu, Akalin, Demir, & Iscen-Karasu, 2015). On the basis of existent literature, although many challenges, prejudices and difficulties have been faced pertinent to inclusive preschools in Turkey, a three-year inclusive preschool project (IPP) was commenced in 2015, with the aim of identifying what is happening in our inclusive preschools in terms of the development of CWDs and CWODs and also other specific issues regarding inclusion.

Project on effects of preschool Inclusion on Children’s development

The three-year inclusive preschool project was launched by The Scientific and Technological Research Council of Turkey (TÜBITAK), and was significant in being the first longitudinal study designed for the collection of data to gain an understanding of the current situation in preschool inclusion. The resulting report was intended to serve as a guide for future studies and practices aimed at increasing the benefits of inclusive practices for both CWDs and CWODs, focusing on changes related to not only the children but also, the qualities of their classrooms and their homes. The project sought further to determine the predictor variables affecting the development of CWDs and CWODs. To achieve the objectives of the project, data was collected on three occasions over a two-year period, with fall and spring measurements made six months apart in the first year of the study and then again one year later, in the spring data point of the second year. During the course of the project, several studies into specific aspects of inclusive practices were carried out based on the two years of collected data. To begin with, the psychometric properties of The Turkish version of certain instruments (Abilities Index, Teacher Rating Scale of School Adjustment, and the Home Screening Questionnaire) were investigated and found to be reliable and valid for the collection of data from the participants (Sucuoglu & Bakkaloglu, 2018; Bakkaloglu & Sucuoglu, 2018; Sucuoglu & Demir, 2018). Secondly, whether attending in preschools had affected of the quality of the home environment of the two groups of children at the end of the first year was investigated. The analysis revealed that the home quality of CWDs was less favorable than that of the CWODs, and that inclusive preschools had a significant effect on the home environment of the participant children, with the effect size for CWDs being greater than that of the CWODs (Sucuoglu, Bakkaloglu, & Demir, 2018). According to another study, the school adjustment and social skills of the CWDs as well as their relationships with their teachers were found to be less than their peers without disabilities, whereas their problem behaviors and Abilities Index scores were greater than the other group, in both the first and second measurements. Problem behaviors

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were identified as the main predictor of the social acceptance of the two groups of children (Bakkaloglu et al., 2019). Furthermore, at the end of the first year of the project, the developmental gains made by both groups of children were calculated for each group of children, revealing that the CWDs, somewhat unexpectedly had learned more skills than those of the CWODs in the language, socio-emotional and psychomotor developmental domains (Sucuoglu, Bakkaloglu, Demir, & Atalan, 2019). Finally, the overall quality of the inclusive preschools was found to be in the inadequate to poor range in the first year of the study, with the teacher's opinions of inclusive practices, their access to pre-service courses about CWDs and inclusion, and their relationships with the CWDs were found to be predictors of the quality of the inclusive preschool classrooms (Bakkaloglu, Sucuoglu, & Yilmaz, 2019). All of these preliminary studies provided us with a broad picture of inclusive preschool practices and the changes in the development of children, as well as other specific issues related to inclusive preschool practices, the qualities of preschool classrooms, and the home environment and the student-teacher relationship, at the end of the first year of the project. Consequently, we aimed to determine the developmental progress of participant children over the two years and effects of inclusive preschools on the other measured parameters in the face of the challenges related to inclusion practices, and also to identify the predictors of the development of the two groups of children. The intention in this regard was to obtain an accurate picture of inclusive preschool practices and to identify any predictor variables affecting the development of young children in inclusive environments. We believe that the results of this longitudinal study will have impact on the understanding of researchers, teachers, principals, and the policy makers of the issue of inclusion, and will lead them to put significant effort into improving the quality of preschool inclusion and to increase the benefit to all children. The study addresses the following questions:

1. How is the developmental progress of children with and without disabilities in inclusive preschools over two years?
2. Have any significant changes taken place in the social skills, problem behaviors, student-teacher relationships and school adjustments of children with and without disabilities between the three measurement points over the two years?
3. Does attending an inclusive preschool have a significant effect on the quality of the home environment of the participant children?
4. Was any change noted in the qualities of inclusive preschool classrooms between the three measurement points over the two years?
5. Does a multivariate shared relationship exist between the five children variables as predictors (social skills, problem behaviors, school adjustment, student-teacher relationship and proficiency index) and the developmental scores of children in the language, cognitive, socio-emotional and psycho-motor domains?

Method

Participants
The data was collected from 53 inclusive preschool classrooms in 13 public preschools located in a middle-class neighborhood of Ankara, Turkey. All schools were affiliated with the Ministry of National Education (MoNE) and had similar characteristics in terms of staff, physical conditions and also materials. An early childhood curriculum that has been approved by MoNE is used by all preschools, although it may be adapted by each school, in accordance with the characteristics of the neighborhood and the school itself. Accordingly, the participant schools are accepted as representative of the public preschools in Turkey. Each classroom contains one or two children with such diagnoses as autism spectrum disorder (n=13), intellectual disability (n=16), motor/health problems (n=12), hearing or visual impairment (n=5) and speech and language disorders (n=15). Since our laws (MoNE, 2018) mandate that only children with mild disabilities can be enrolled in public preschools, the researchers considered that all children with disabilities had milder forms of impairments. The participants were 61 pairs of preschool children with (CWDs) and without disabilities (CWODs), as well as their mothers and their teachers.
The majority of CWDs were receiving 2 hours/week of additional special education supports in related rehabilitation centers, free of charge, in accordance with the Special Education Services Regulation. The CWDs and CWODs in the same classes were matched in terms of chronological age and gender by their teachers, and there were no significant differences between the mean ages of the two groups of children. Additionally, any differences between the developmental functions of the CWDs and their matched peers were investigated through a comparison of the Abilities Index scores of the two groups of children, from which it was found that the developmental functions of the CWDs were significantly higher than those of the CWODs (Higher AI scores indicate lower developmental functions). Since the outliers were excluded from the data set related to each variable, the number of participant children and mothers included in the analysis carried out for each independent variable was different.

**Instruments**

An instrument battery across the developmental domains was used to understand the effects of inclusive preschools on children and both the quality of the home and preschool classroom outcomes. The Turkish forms of all instruments were completed by the teachers, parents and the trained research assistants, all of whom were graduate students of the Ankara and Hacettepe Universities in Ankara. Demographic information on the children, parents and teachers was obtained from the Information Forms.

a. **The data related to children**

Firstly, the development of the children was evaluated in two dimensions. Developmental skills, being those that children gain over time, were assessed using the Gazi Early Childhood Assessment Tool (GECAT; Temel, Ersoy, Avci & Turla, 2005), which was applied by three graduate students individually, and involved observations of the children in play situations and interviews with the mothers in the same setting. For the other dimension, developmental functions (degree of disability), referring to the basic aspects of child functioning and the characteristics of children with various disabilities, rather than developmental milestones, were assessed using the Ability Index (AI; Simonsen & Bailey, 1988), applied by the teachers of the two groups of children. Secondly, the social skills, problem behaviors and school adjustment of children with and without disabilities, along with their relationships with their teachers, were evaluated using such self-report instruments as the Preschool and Kindergarten Behavior Scales (PKBS; Merrell, 1996), the Teacher Rating Scale of School Adjustment (TRSSA; Betts & Rotenberg, 2007) and the Student-Teacher Relationship Scale (STRS; Pianta, 2001). The psychometric characteristics of the Turkish Forms of all instruments have been assessed in previous studies (Sucuoglu & Bakkaloglu, 2018; Bakkaloglu & Sucuoglu, 2018; Sucuoglu et al., 2018).

b. **Data related to home quality**

Since the pace and level of development of young children is influenced by the family environment, the Home Screening Questionnaire (HSQ; Frankenburg & Coons, 1986) was used to analyze the home environments of CWDs and CWODs and to identify any significant effects of inclusive preschools on the quality of the family environment of the groups. The Turkish Forms of the HSQ has been found to be psychometrically valid and reliable (Sucuoglu & Bakkaloglu, 2018; Sucuoglu et al., 2018).

c. **Data related to the quality of classrooms**

The Inclusion Classroom Profile (ICP; Soukakou, 2012) was used to determine the overall quality of the inclusive preschool classrooms. A graduate student trained in the ICP in the United States gathered data from 47 inclusive preschool classrooms through approximately 3 hours of observations in each classroom, interviews with the teachers and also examinations of documents provided by the teachers related to the children and parents. The validity and reliability of the Turkish Form of the ICP has been assessed in two studies, and has been deemed appropriate for the assessment of the quality of the Turkish inclusive preschool classrooms (Yilmaz, 2014; Bakkaloglu et al., 2019).
Data analysis
To answer the first four questions posed in this study, the GECAT scores, the scores of social skill scores, problem behaviors, student-teacher relationships, school adjustment and home quality of CWDs and CWODs, as well as the ICP scores of the preschool classrooms obtained during the first, second and third measurements were compared with a mixed model MANOVA and a repeated measures ANOVA. For the fifth question, due to the small size of our data and the number of variables, the canonical correlation analyses were conducted separately for the three measurement points using the five children variables as predictors of the four developmental variables to evaluate the multivariate shared relationship between the two variable sets. Before each of these analyses, the data sets were examined and corrected to address the missing data and the outliers. A preliminary analysis revealed no missing data patterns or mechanisms to observe, and so the data imputation was executed by using expectation-maximization algorithms, with the completed data sets subjected further analysis. Furthermore, the multivariate outliers were checked by using the Mahalanobis distance for each analysis. Any observed outliers were removed from the data sets, and for the last step prior to the MANOVA and ANOVA tests, the normality of data, the homogeneity of variances according to the groups, autocorrelations, linearity, sphericity etc. were investigated through graphical and descriptive methods and hypothesis tests. No significant violations were observed, and all data was accepted as normally distributed.

Results
Developmental outcomes of children with and without disabilities 1 (Progress over the two years in preschools)
The development of CWDs and CWODs in the cognitive, psychomotor, language and social-emotional domains was assessed using the GECAT, the data garnered at the three points over the two years was compared, and an analysis was made of whether longitudinal changes had occurred in the development of the two groups of children, investigated with a mixed model MANOVA.

According to the results, the difference between groups as a between-subject effect is statistically significant (Pillai’ trace = .424, F(4, 83) = 15.295 and p < .05). The differences among the repeated measures as a within-subject effect are found also to be statistically significant as well (Pillai’ trace = .831, F(8, 79) = 48.724 and p < .05). Furthermore, the interaction of the repeated measures and the group was determined to be significant (Pillai’ trace = .346, F(8, 79) = 5.223 and p < .05). In order to clarify the source of the differences, pairwise comparisons with a Bonferroni Adjustment were employed among the repeated measures and between the groups for each developmental domain. The results showed all differences to be statistically significant, aside from the first and second measurements of the socio-emotional skills of the CWODs. In order to understand the direction of these differences, the related profile graphics (Figure 1) are presented below.

As shown in the graphs for all developmental domains, the mean scores of the GECAT increase monotonically increasing for both CWDs and CWODs. The scores of the CWODs are higher than those of the CWDs at all measurement points, and no parallelisms were determined between the scores of the two groups of children. Surprisingly, the increases in the scores of the CWDs were found to be greater than that of the CWODs. Finally, although there were significant differences between the GECAT scores of the CWDs and CWODs at the three data points, the graphs clearly show that the differences between the developmental scores of the two groups of children tended to close gradually in the second and third measurements.
Developmental Outcomes 2 (Differences in social skills, problem behaviors, student-teacher relationships and school adjustment of children with and without disabilities at the first, second and third data points)

A mixed model MANOVA was used to test the differences between the social skills, problem behaviors, student-teacher relationships and school adjustment test scores at all three measurement points between the CWDS and CWODs. As can be seen from the results, the difference between groups as the between-subject effect was statistically significant (Pillai’s trace = .445, F(4, 106) = 21.278 and p < .05) and similarly the differences among repeated measures as a within-subject effect, were statistically significant (Pillai’s trace = .379, F(8, 102) = 7.780 and p < .05). On the other hand, the interaction of the repeated measures and groups was found not to be significant at a 99% confidence interval (Pillai’s trace = .158, F(8, 102) = 2.388 and p > .01). In order to clarify the source of the differences, pairwise comparisons with a Bonferroni Adjustment were employed among the repeated measures and between groups for each domain. Figure 2 shows the changes occurring in the social skills and school adjustment scores for CWDS and CWOD from the first to the third data point.
As can be seen from the graphs, there were statistically significant differences between the social skills, problem behaviors, student-teacher relationships and school adjustment test scores at all measurement points, in favor of the CWODs. In addition, the changes in the social skills of the two groups of the children were found to be similar, and in positive way, whereas there were no significant longitudinal changes in problem behaviors and the student-teacher relationships of the CWDs and CWODs. Furthermore, different longitudinal changes in the school adjustment of the CWDs and CWODs were identified, with the school adjustment of CWDs increasing over the two years, and a significant and positive change occurring between the first and second measurements in the school adjustment of the CWODs, although, their school adjustment scores decreased between the second and third data points.

**The effects of inclusive classrooms on the quality of the home environment**

The difference in the quality of the home environment between CWDs and CWODs over the three measurement points was tested by using a mixed model ANOVA design. The results revealed that, the difference between groups as a between-subject effect, to be statistically significant (F(1, 109) = 20.669 and p < .05); and the differences among the repeated measures, as a within-subject effect also to be statistically significant (Pillai’s trace = .185, F(2, 108) = 12.266 and p < .05). On the other hand, the interactions of the repeated measures and group were not significant at a 95% confidence interval (Pillai’s trace = .053, F(2, 108) = 3.044 and p >
In order to clarify the source of the differences, pairwise comparisons with a Bonferroni Adjustment were considered among the repeated measures and between groups for each domain. The findings showed that significant differences existed between the qualities of the home environments of the two groups of children, in favor of the CWODs at all three measurement points. In addition, the quality of the home environments of both CWDs and CWODs increased in a similar and positive way over the two years, after their attending inclusive preschools. However, considering the differences between the HSQ-T scores obtained from the first and second measurements, Figure 3 shows that the quality of the home environment of CWDs had improved much more than that of CWODs by the second data point, although the increases in the scores became more stable over time.

The changes in the qualities of inclusive preschool classrooms over the two years

To determine the changes in the quality of the inclusive preschools classrooms over the two years, the data collected at three time points using The ICP were compared with an ANOVA for repeated measures. The findings found no significant differences between the mean ICP scores obtained at the first, second and third data points (Pillai' Trace = .065, F(2, 48) = 1.674 and p > .05), and the mean scores and standard deviation of the ICP obtained from the three measurements were found to be very close to each other. In other words, the profiles of the classrooms remained the same, and no longitudinal changes were observed between the three measurement points.

The shared relationship between children’s variables as predictors and their developmental scores

A canonical correlation analysis was conducted to evaluate the multivariate shared relationships between the two variables set (The GECAT scores of developmental domains and child characteristics) both for CWDs and CWODs, and separately for the three data sets (Figure 4).

The analysis used the five child characteristics as predictors of the four developmental scores, and showed that the canonical models were significant for CWDs at all three measurements (for the 1st measurement: Pillai' Trace = .8742, Approx.F (20, 220) = 3.076 and p < .05; for the 2nd measurements: Pillai' Trace = .9223, Approx.F (20, 216) = 3.2365 and p < .05; for the 3rd measurements: Pillai' Trace = .8905, Approx.F (20, 128) = 1.8327 and p < .05). According to the canonical functions for the CWDs, (1) the canonical correlations between the developmental scores and predictor variables were significant for all measurements and, (2) the explained variance of the canonical variables were around 50%. The canonical correlation coefficients between dependent and predictors are presented in Table 1.

![Figure 3.](image)

*The changes in the mean scores of the home environment quality for CWDs and CWOD at the three data points.*
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Figure 4.
Theoretical canonical model which tested separately for CWDs and CWODs.

Table 1.
Shared Correlations between children variables (predictors) and dependent variables (the developmental scores of children)

<table>
<thead>
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<th>Canonical Variables</th>
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<th>2</th>
<th>3</th>
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<td></td>
<td></td>
<td></td>
<td>Correlations</td>
<td>Explained Variance (%)</td>
<td>Correlations</td>
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<td>-9225</td>
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</tbody>
</table>

The Table 1 indicates the positive and significant relationships between the development of CWDs and the predictors (social skills, problem behaviors, school adjustment, relationships with teachers, and developmental functions) for over the three measurement points. As for the four developmental domains, the predictor variables explained approximately 50% of the variance in the development in four developmental domains of CWDs. The findings of the canonical analysis are summarized in the following paragraphs:

At the three measurements, the canonical relations were strong, positive and significant, meaning that strong and positive relationships exist between all of the developmental domains of the CWDs and the predictor variables. As for each separate developmental domain (cognitive, social-emotional, language and psychomotor scores) separately, the correlations are in the same direction. That is, the four development scores are positively correlated with each other and in the same directions. Language and cognitive development make the greatest contributions to the explained variance in the first and second measurements, whereas, in the third measurement, psychomotor and cognitive developments are the greatest contributors.

Table 1 shows that the predictor variables (social skills, problem behaviors, school adjustment, student-teacher relationship and developmental functions) explain over 40% of the characteristics of the CWDs. Considering the three measurement points separately, the problem behaviors of the CWDs and their
developmental functions (AI scores) are inversely related to their social skills, relationship with their teachers and also school adjustment, which are expected findings. Finally, considering the absolute values of the coefficients, social skills provided the greatest contribution to the canonical models for the first and second measurements and the second highest contribution in the last model of the third measurement. Finally, in the model of the third measurement, the developmental functions (AI scores) of the CWDs made the greatest contributions to the development of the children. The differences between the AI scores at the three measurement points were found not to be significant for either CWDs or CWODs (Pillai’s Trace = .068, F(2, 60) = 2.189 and p > .05), while the AI scores between the groups were statistically significant (F(1, 61) = 75.863 and p < .05). That is, the mean AI score for CWDs was higher than that of the CWODs at the three measurements, while the developmental functions of the two groups of children were not affected by their attendance of in the inclusive preschools.

Finally, for the CWODs, the canonical models were not significant at any measurement points (for the 1st measurements: Pillai Trace = .3944,  1.2032 and p > .05; for the 2nd measurements: Pillai Trace = .2406, Approx.F (20, 216) = .6912 and p > .05; for the 3rd measurements: Pillai Trace = .5862, Approx.F (16, 80) = .8585 and p > .05). Accordingly, no correlations were observed between the children characteristics and the developmental domains of CWODs.

Discussion

In Turkey, the government and the MoNE have strived to include inclusive practices at all levels of education, and to improve the quality of inclusion processes, although, there are still challenges to be faced, including the negative attitudes and beliefs of communities, the lack of established standards, the lack of necessary knowledge and skills among teachers to meet the needs of CWDs, and also the limited availability of the economic resources necessary to improve the quality of inclusion in early childhood. This three-year project has showed that, despite these challenges faced in the inclusive system, the CWDs who participated in this study benefited as much as CWODs from being among their typically developing peers. A large amount of data and many findings related to inclusive preschools in Turkey was garnered during the project, the most significant of which will be discussed in this section.

Firstly, both groups of children seemed to benefit from their experiences, with significant changes seen in the psychomotor, cognitive, language and socio-emotional skills of both CWDs and CWODs. The development gains of the two groups of children were noted to decrease over the two years of the study. In short, the CWDs benefited more from the inclusive preschools in terms of their developmental skills than the CWODs. Furthermore, the statements made by some mothers, retrieved from the anecdotal notes of the researchers indicated that their children’s skills and behaviors had changed significantly in preschools, even though the teachers had difficulties in working with CWDs. For example, one mother commented: “Although the teacher was unhappy to have my children in her classroom, attending this preschool affected not only his language skills, but also his all behaviors”. Another mother explained that, for the first time in the life of her child, she was among typically peers in a school environment and had learned many new skills from them. We concluded from this that for CWDs, being with typically developing children with varying levels of skills and knowledge can provide CWDs with many opportunities to interact and communicate with their peers in daily routines and activities. In our previous study comparing the developmental gains of the two groups of children, it was revealed that the developmental gains of CWDs were greater than those experienced by CWODs at the second data point (Sucuoglu et al., 2019). The researchers concluded that this surprising difference between the two groups of children may have been attributable several factors, such as the fact that this project was the first opportunity for the CWDs being among similar-aged children without disabilities, other than their siblings. Our findings seem to concur with the results of the earlier studies showing that CWDs, when
among their same-age peers without disabilities, gain benefits in all developmental areas (Bruder, 2010; Guralnick & Bruder, 2016; Gupta et al., 2014; Holahan & Costenbader, 2000; Odom, 2000; Rafferty, Boettcher, & Griffin, 2001; Warren, Martínez, & Sortino, 2016).

Regarding the second group of developmental outcomes, our results revealed that the social skills and school adjustment scores of CWDs improved in inclusive preschool classrooms, over the two years. In addition, although there were significant differences between the problem behaviors and student–teacher relationship scores of the children, in favor of CWODs at the beginning of the project, the scores of both groups were unaffected by their attendance of inclusive preschools. This finding supports those of studies highlighting the fact that, since CWDs have chances to interact and engage in a more advanced level of play with their peers without disabilities in preschool classrooms, they may acquire and get to practice many social and emotional skills through modeling and observing CWODs (Antia & Levine, 2001; Odom, Zercher, Marquart, Sandall, & Wolfberg, 2002). On the other hand, the finding related to problem behaviors and the student-teacher relationship may be attributable to the difficulties and problems faced by teachers when working with CWDs, as well as the lack of support provided to teacher and CWDs provided by school principals and school psychologists. In two previous studies, preschool teachers were reported to encounter serious difficulties in preventing and decreasing behavioral problems of CWDs, and in establishing successful relationships with CWDs (Hundert, 2007; Sucuoglu et al, 2015). When, however, they participate in programs focusing on inclusion and the characteristics of CWDs, or are provided supports in working with CWDs, not only in-class behaviors, but also their relationships with the CWDs seemed to change in a positive way (Sucuoglu et al., 2015). As such, to improve the quality of inclusive preschool classrooms and to increase the benefits of all children from inclusive schools, preparing preschool teachers for the inclusive system would appear to be a priority issue, as has been emphasized in previous studies (Hundert, 2007; Sucuoglu et al., 2015).

This project has revealed the significance of inclusive preschools on the home qualities of CWDs and their peers without disabilities, although it would appear that the quality of the home environment of CWDs was affected much more than those of the CWODs, through their attendance of preschools. These findings appeared to parallel those of studies indicating that intervention programs for both children (Barrera, Rosenbaum, & Cunningham, 1986; Sucuoglu et al., 2018) and parents (Karaaslan Baç & Bal, 2002; Niklas, Chorssen, & Tayler, 2016) usually result in changes in some aspects of the home environment of young children. In the present study, although the mothers did not join any training programs, we assumed that their interactions with the mothers of typically developing children, could result in changes in parental behaviors in mothers, and as a consequence, the quality of family home environment may be improved. On the other hand, although preschool teachers lack the necessary knowledge and skills to work with CWDs, they may have guided the parents of CWDs on how to interact with their children and how to support their children's development through specific learning activities in the home.

As for the quality of classrooms, our analysis revealed that the overall quality of the inclusive preschool classrooms was in the inadequate to poor range, with the mean ICP scores found to be same at all three data measurement points. Despite the low quality classrooms, the developmental outcomes of CWDs seems to be in favor of inclusive environments for CWDs, given the presence of peers with higher skill levels. Considering the challenges related to inclusion in Turkey, we believe that if the issues related to teachers are addressed by the school principals and even by the MoNE, and if the schools are properly prepared and if the teachers are supported in working with children with a broad range of skill levels, the results will be reflected not only for the quality of the classrooms but also in the benefits enjoyed by all children.

The last finding of the study to be discussed is related to the variables predicting the development of children at the three data points of the study. A canonical correlation analysis revealed a significant
shared relationship between the developmental scores in the cognitive, language, socio-emotional and psychomotor domains and all predictor variables related to CWDs for the three measurement points. These findings support the theoretically expected relationships between the four developmental scores of the CWDs and their other skills along with their developmental functions. The most important finding is that social skills were found to have the strongest relationship with the development of CWDs in inclusive environments at the first and second measurement points and to be the second highest contributor at the third data point. It can thus be concluded that social skills are the important factors in predicting the developmental progress of CWDs in inclusive environments. Previous literature has emphasized that students with various disabilities have difficulties acquiring adequate social skills (Aykır & Çifçi Tekinarslan, 2012; Bakkaloglu et al., 2019; Dawson, Toth, Abbott, Osterling, Munson, Estes, et al., 2004; Gresham, Sugai, & Horner, 2001; Matson, Matson, & Rivet, 2007) and that the social skills interventions employed with preschoolers with disabilities focus mostly on play skills and those related to peer interaction (Vaughn, Kim, Morris-Sloan, Tejero Hughes, Elbaum, & Sridhar, 2003). Accordingly, our finding emphasizing the importance of social skills in inclusive environments leads us to consider developing teacher training programs that focus on the teaching of social skills to CWDs so as to increase the benefits to be had from among their peers with different ability levels. In this way, the social skills of CWDs can be improved, and consequently, their social interactions with their peers and their engagements in all activities, along with the other benefits of inclusive preschools, may increase.

Limitations of the study

Although this project yielded promising results regarding the significance of inclusive preschool classrooms, there are a number of limitations to the findings. First, the canonical analysis did not clarify the relationships between the development of CWODs and predictor variables. In addition, the developmental skills and the other scores related to the predictor variables of CWODs changed less than that of the CWDs over the two years. These findings led us to conclude that the characteristics of CWODs may be more homogeneous than that of the CWD, as so additional studies involving greater among of data from the preschoolers with different ability levels may add a different perspective of the predictor variables in the development of CWODs. Second, the data in the current study was collected using self-reporting instruments and the assessment of the development of both groups of children through interviews with the mothers and observing the children outside the classroom context. As the instructional methods used by the teachers, the classrooms environment and the interactions between CWDs and CWODs have a greater impact on children's outcomes, a future research based on data garnered through classroom observations may paint a different picture of the benefits of the inclusive preschools attended by CWDs. Third, this project emphasizes the importance of the inclusive environment for the young children with disabilities. We believe that studies comparing the advantages and disadvantages of special education preschools and inclusive preschools may lead us to consider the benefits of inclusive environments for CWDs, in terms of their developmental skills. Finally, in the present study, the predictor variables explained approximately 50% of the characteristics of the children, which may be attributable to the high levels of variance. In future studies, other variables, such as the parental involvement, the engagement of CWDs in academic and nonacademic activities, and their social acceptance may be added into the analysis, through which other predictors explaining the developmental gains of CWDs may be revealed.

To conclude, the results of our project have highlighted the importance of inclusive environment for the development of CWDs. Viewing our findings from sociocultural (Vygotsky) and social learning (Bandura) theories perspectives, it can be accepted that CWDs seemed to learn many skills in the four developmental domains, both with and alongside their peers, through observation and modeling. It is believed, however, that in an inclusionary system that is not well established in terms of teacher preparation, parental involvement and access to the support systems.
defined within the regulations, CWDs may not be able to take advantage from the opportunity to learn alongside their peers without disabilities, to the expected extent. In addition, there is the possibility that they may be rejected both by their peers (Bakkaloglu et al., 2019; Ferreira, Aguiar, Correia, Fialho, & Pimentel, 2017; Odom et al., 2006) and teachers in inclusive classrooms (Demirkaya & Bakkaloglu, 2015; Guralnick, Gottman, Connor, & Hammond, 1996; Odom & Diamond, 1998). That said, inclusive environments would appear to support the main developmental skills of CWDs. Replication studies are generally considered valid and scientific, and so the results of similar studies may provide a more comprehensive understanding of the research findings (Cook, Collins, Cook, & Cook, 2016; Banerjee, Movahedazarhouligh, Millen, & Luckner, 2018). As such, in order not lead to teachers, principals, parents and policy makers into believing that CWDs show significant development in inclusive preschools regardless of whether or not the stage has been set, further studies should be conducted involving similar populations that replicate this study so as to investigate whether similar results are reached.

References


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