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To cite this article: Bulbin Sucuoğlu, Hatice Bakkaloğlu & Seyda Demir (2018): Beneficial effects of inclusive preschools on the home environments of young children with and without disabilities, Early Child Development and Care, DOI: 10.1080/03004430.2018.1539842

To link to this article: https://doi.org/10.1080/03004430.2018.1539842

Published online: 29 Oct 2018.

Article views: 71
Beneficial effects of inclusive preschools on the home environments of young children with and without disabilities*

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ABSTRACT
The purpose of this study is to investigate the home environments of young children with (CWDs) and without disabilities (CWODs) with the aim of identifying the relationships between the development of children and their home environments. The study analyses further, whether inclusive preschools, as an intervention, have an influence on the quality of home environments of both group of children. The study is based on an assessment of the family homes of 61 pairs of CWDs and CWODs, using data gathered through the Home Screening Questionnaire-Turkish (HSQ-T) and the Gazi Early Childhood Assessment Tool (GECAT). The analysis revealed that the quality of the home environments of CWDs and CWODs is significantly different in favour of CWODs and that significant relationships exist between the HSQ-T scores and the language and socio-emotional development scores of the CWDs. A significant relationship was found between only socio-emotional development and home environment of CWODs. In addition, it was found that inclusive preschools influenced the quality of the family homes of not only CWODs but also CWDs.

Young children find many opportunities that aid in their growth and development in the home and the pace and level of their development are influenced by the family environment in which they develop and learn. Children by interacting with both their physical environment and their family members, face different experiences and learn new information before starting school. Since 1960s many studies noted significant contributions of home environment to the cognitive, language, social, and emotional development and behaviours of children and accordingly, the quality of the home environment has been accepted as an important predictor in child development (Anders et al., 2012; Biedinger, 2011; Bradley, 1993; Iltus, 2007; Kleemans, Peeters, Segers, & Verhoeven, 2012; Totsika & Sylva, 2004).

Previous literature has suggested two groups of indicators related to the home environment that may affect the cognitive, social-emotional, and language development of children. The first group contains such indicators as the socio-economic status (SES) of the parents including their levels of education and income (Aikens & Barbarin, 2008; Niklas & Schneider, 2017; Niklas, Cohrssen, & Tayler, 2018); their effects on child development have been summarized in several studies. In their review article Bradley and Corwyn (2002) explained that although there are some conflicting findings, SES, especially the income and education levels of parents can have a significant impact.
on all aspects of a child’s development and wellbeing. In a meta-analytic study (Letourneau, Duffett-Leger, Levac, Watson, & Young-Morris, 2011), it was emphasized that a low SES is likely to have a negative effect on the development of children and adolescents, a smaller but significant effect on literacy and language skills, leading to internalizing behaviours in children. In addition, better educated and high-income parents can provide a more supportive environment for their children and tend to encourage achievement and communicate high expectations (Eccles, Wigfield, & Schiefele, 1998; Hill et al., 2004; Hill, Ramirez, & Dumka, 2003; Meeece et al., 2013).

The second group of indicators for home quality focuses on the parent–child interactions and family context. Rather than focusing on the SES of the family, these indicators include such factors as the level of stimulation provided by the home environment and different types of materials that are available along with the nature of the relationship-between parent and children (Aikens & Barbarin, 2008; Bradley, Caldwell, Rock, Hamrick, & Harris, 1988; Foster, Lambert, Abbott-Shim, McCarty, & Franze, 2005; Melhuish et al., 2008). How parents interact with their child through playing, reading to them and engaging in other activities has been found to be strongly associated with increased social, cognitive, language, and speech development of children. In addition, the availability of children’s reading materials, books, art, drawing supplies, and toys which are accepted as critical physical indicators of the home environments, along with the behaviours of parents, are proximal indicators that have been shown to have a significant effect on the development of children (Iltus, 2007; Totsika & Sylva, 2004). Moreover, a group of research studies revealed that home learning environment has significant contributions to the children’s language and linguistic competencies, early literacy skills (Roberts, Jergens, & Burchinal, 2005), and reading, spelling and mathematic skills (Niklas & Schneider, 2013, 2017; Senegal & Le Fevre, 2002). Furthermore, home learning environment was proved to be a good predictor of intelligence (Molfese, DiLalla, & Bunce, 1997) and later academic skills of typically developing children (Melhuish, 2010).

According to Bradley (1993), none of these factors by itself influence the home environment or the level of development of a child, since a complex and interrelated set of factors are at play, such as the income and characteristics of the parents, but also the characteristics of the child, in terms of, for example, their cognitive development. Although there have been a plethora of international studies documenting the relationship between the quality of the home environment and development of typically children, revealing the variables of the home, such as poverty, parent characteristics and behaviours that influence children (Bradley, 1993; Espy, Molfese, & DiLalla, 2001; Hayes, 1997; Lee, Vernon-Feagans, Vazquez, & Kolak, 2003; Richter & Grieve, 1991), studies focusing on the home environment of children with disabilities (CWD) are still very few in number.

An early study that summarized the relationship between home quality and child development suggests that as the caretaking demands of CWDs may be different from those of typically developing children and as parental behaviours change according to the needs of their children, the environment in which a child grows up is influenced by the changes in the parents’ reactions to the children’s needs (Bradley, 1993). Several studies have identified significant links between the adaptive functions of CWDs and several dimensions of the home, such as responsivity, learning materials, and stimulation (Nihira, Mink, & Meyers, 1984), and these dimensions have been found to vary based on the family’s culture (Nihira, Tomiyasu, & Oshio, 1987). In the last three decades, there have been only a few studies examining the family home qualities of CWDs. One such study (Holder-Brown, Bradley, Whiteside, Brisby, & Parette, 1993) investigated the home environment of children with orthopaedic impairments (CWOI) and found that the presence of such children can increase the needs of the family, cause stress among family members and can negatively affect the parent–child relationship. In addition, the home environment has been linked to the adaptive behaviours of preschool age CWOIs and their intellectual development. In another study, the specific aspects of the home environment related to the development of children with visual impairments (CWVIs) were examined (Dote-Kwan & Hughes, 1994), and it was found out that the quality of the home environment had little influence on the development of young CWVIs, except in the area of expressive pragmatic language. In addition, the relationship between the home environment and childhood changed according to
the severity of blindness of the children in question. The relationship between the home environment of young CWVIs and their early experiences, along with the parental behaviours, were analysed in another study (Dote-Kwan, Hughes, & Taylor, 1997). The results pointed to no significant link between home quality and the development level of CWVIs, except their expressive pragmatic language at the 26th month. However, as the child gets older, the provision of play materials by the parents was found to be associated with the children’s level of vocalization. Finally, a study of the home environments of children with disabilities was carried out (Kesiktas et al., 2009) for which data were collected from the parents of children with various disabilities, as well as the parents of typically developing children. This study compared the home environment of young CWDs and CWODs and identified the variables related to the home quality. The findings revealed that the home qualities of the 0–3-year age group of CWDs and CWODs were not significantly different, while for the 3–6-year age group, the home environment of the CWDs tended to be less favourable than that of typically developing children. In addition, education level of the mother, the income of families and the employment status of the mother were found to be related to the home environments of both age groups, and the quality of the home environment of the participant mothers with a higher education level and a higher income were more favourable.

**The effects of intervention programs on the quality of home**

The quality of the family home can be influenced by intervention programs developed either to meet needs of the parents with at-risk children, such as those with low-birth-weight or pre-maturity or to support the development of children with various difficulties. Previous studies have shown how such programs might have a significant effect on the home environment of children regardless the SES of their families (Bradley, 1993; Totsika, & Sylva, 2004). For example, earlier studies indicated that intervention programs included programs for parental skills or child development resulted in significant improvement of the quality of home environment of typically developing children or children at-risk groups (Barrera, Rosenbaum, & Cunningham, 1986; Brooks-Gunn, Klebanov, & Liaw, 1995; Fowler, 1978; Hamilton, 1972; Love et al., 2002; Metzl, 1980). In recent studies those investigated the impact of intervention programs on home environment, found that even the non-intensive but systematic interventions such as a few sessions parent programs was associated with not only the quality of home learning environment but also children’ skills (Niklas, Cohrssen, & Tayler, 2016, p. 2018).

In Turkey, there have been two studies to date examining the effects of the home-based and hospital-based (a program implemented during the routine health care visits) early intervention programs on the home environment of young children from low-and-middle SES backgrounds. The first study showed that the home environments of low-birth weight and premature-birth children improved after the implementation of the home-based program (Karaaslan Baç & Bal, 2002); while the second study, focusing on the home environment of sick children identified no statistically significant difference between the quality of the home environment of the hospital-based intervention group and the comparison groups (Ozturk-Ertem et al., 2006). That said, the positive effects of the program on the home quality of sick children were determined in several dimensions, including providing toys and materials to the child and opportunities for daily stimulation. Recently, Kesiktas et al. (2009) compared the home quality of CWDs and their typically developing peers aged 0–6 years, determining the factors associated with the home environment of the two groups of Turkish children, although the study disregarded the effects of early intervention programs on the family home quality.

To conclude, all studies focusing on the home environment, and those examining the effects of intervention programs on home quality, strongly emphasize the relationship between the home environment and the development of CWDs and CWODs. Considering the fact that in Turkey, the number of young CWDs aged between 3 and 6 years old are educated in preschools alongside their typically developing peers is quite small, as most either attend special education centres or
stay at home until they reach school age, the home environment becomes more important for these children so as to develop and function as much as expected. It is apparent that further studies are needed to reveal the critical importance of the home environment for the CWDs and the effectiveness of inclusive preschools on their home quality. Therefore, the findings of this research may guide professionals working in the developing parent training programs and in the teaching of parents with the necessary skills to meet their children’s needs. Further research may also draw the attention of researchers to the importance of improving the competence of teachers and other professionals in educating parents to make significant changes in indicators of the home environment, and especially those related to parent behaviours. Accordingly, the purpose of the present study is to investigate the home environments of the CWDs and CWODs and to understand whether inclusive preschools affect the quality of the home environment of both groups of children. To this end, we asked following questions:

(1) Is there a significant difference between the home environment of CWDs and CWODs?
(2) Is there a relationship between development of CWDs and CWODs, and their home environments?
(3) Is there a relationship between the education level, income, and employment of the mothers of CWDs and CWODs, and the Home Screening Questionnaire (HSQ) scores?
(4) Do attending inclusive preschools have an effect on the quality of home environment of CWDs and CWODs?

Method

Study group

This study was a part of a comprehensive Preschool Inclusion Project that investigated the factors affecting the development of the preschoolers with and without disabilities, and data on the homes and children collected during this project were included in the present study. The study group consisted of 61 pairs of preschool CWDs and CWODs and their mothers (See Table 1). All children were attending inclusive public preschools in middle-class neighbourhoods in Ankara, Turkey. The CWDs were diagnosed as having developmental disabilities in terms of intellectual disability, hearing impairment, speech and language disorders, autism spectrum disorders, and physical and health problems. In Turkey, since only children with mild disabilities are accepted to inclusive preschools, all CWDs were considered to be having mild disabilities. There was no significant difference ($t = .272, p = .786$) between the mean age of the CWD ($x = 52.11$ months, $SD = 6.10$) and CWOD ($X = 51.64$ months, $SD = 6.22$). Most of the CWDs received two or more hours of special education services in a week in private special education and rehabilitation centres, in line with the special education regulations of the Ministry of Education. Each CWD was matched with a CWOD peer in the same class of the same age and gender. None of the CWODs had been referred to the hospital with developmental problems, aside from health issues, based on information provided by their parents and teachers.

The mean age of the mothers of CWDs and CWODs was 32.23 ($SD = 6.34$, range = 21–54 years) and 32.03 ($SD = 5.26$, range = 23–48 years), respectively. A significant difference noted between the numbers of years of education of the mothers with CWDs, and those of CWODs ($U = 1340.50$, $p < .05$) and the level of education of the mothers of CWDs was lower than mothers of CWODs. In terms of income; the monthly income of the families of the CWDs was significantly less ($U = 1424.00$, $p < .05$) than the mothers of the other group (See Table 1).

In Turkey, since preschool inclusion is mandated by law, each class in public preschools has at least one CWD, with the size of classes being in the 15–25 range, with a mean of 19 children in total. On the other hand, all preschool teachers in the study were females and had graduated from four-year university programs.
Instruments

The Home Screening Questionnaire (HSQ)

This self-report questionnaire was developed for the assessment of the quality and quantity of the stimuli and support offered to children at home (Frankenburg & Coons, 1986), and has been used in the development of intervention programs for the home environment of young children. It is a screening version of the Home Measurement of the Environment (HOME, Caldwell & Bradley, 1984) that has been commonly used in previous research studies investigating the relationship between the family environment and child development. The HOME is based on observations at home and interviews with parents and evaluations can take a considerable amount of time, making the collection of data from large groups difficult when economic resources are limited. In contrast, the HSQ is an easy, economical tool that can be implemented in 15 minutes and does not require home visits.

The HSQ was designed to identify– as early as possible–children who are at-risk for developmental delays due to negative environmental influences (Coons, Gay, Fandal, Ker, & Frankenburg, 1981). This instrument covers almost all aspects of home environment such as parents reading behaviours (Item1. Do you get any magazine? Item4. How many books do you have besides children’s book?), parent–child interaction through play, reading, teaching and singing (Item8. How often does someone get a chance to read stories to your child?), parent behaviours related child raising (Item12. What do you do with your child’s art work? Item22. What would you do if your child got angry and hit you?), father–child-interaction (Item16. How often does your child spend time playing or working with his/her father?), and location and size of house (Item25. Which of the following best describes your neighborhood? Item26. How many bedrooms does your house have?).

It is a parent answered questionnaire which is written at a third or fourth grade reading level, and the parents are required to complete multiple-choice, fill-in-the-blank and yes-no questions related to the availability of toys and books, parental involvement and organizations in the environment (Coons

| Table 1. Demographical characteristics of children with disabilities and their mothers. |
|-----------------|-----------------|---|---|
| Variables       |     N     |       |       |
| Children with disabilities (CWDs) | | | |
| Age             | $\bar{x} = 52.11$ | (SD = 6.10) | |
| Gender          |           |       |       |
| Girls           | 21        | 34.4 | |
| Boys            | 40        | 65.6 | |
| Total           | 61        | 100  | |
| Diagnosis       |           |       |       |
| Speech and language impairment | 15 | 24.6 | |
| Physical-health problems | 12 | 21.1 | |
| Hearing impairment | 5 | 19.7 | |
| Autism spectrum disorders | 13 | 21.3 | |
| Intellectual disabilities | 16 | 26.2 | |
| Mothers         |           |       |       |
| Age             | $\bar{x} = 32.23$ (SD = 6.34) | $\bar{x} = 32.03$ | (SD = 5.26) |
|                 | Range = 21–54 | Range = 23–48 | |
| Education       | $\bar{x} = 9.82$ (SD = 3.53) | $\bar{x} = 11.48$ | (SD = 3.14) |
|                 | Range = 5–17 | Range = 0–15 | |
| Working status  | Working |       | Working |
|                 | N = 9 (14.75%) | N = 17 (27.86%) | |
|                 | Not working | Not working | |
|                 | N = 52 (85.24%) | N = 44 (72.13%) | |
| Income          | Less than 1500 Turkish Liras | Less than 1500 Turkish Liras | |
|                 | N = 30 (49.18%) | N = 21 (34.42%) | |
|                 | Range = 600–6000TL | Range = 900–9000TL | |

Note: CWDs: children with disabilities; CWODs: children without disabilities. CWODs were matched with CWDs in terms of age and gender; and so their characteristics were not presented in the table.

**Instruments**

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It is a parent answered questionnaire which is written at a third or fourth grade reading level, and the parents are required to complete multiple-choice, fill-in-the-blank and yes-no questions related to the availability of toys and books, parental involvement and organizations in the environment (Coons

Note: CWDs: children with disabilities; CWODs: children without disabilities. CWODs were matched with CWDs in terms of age and gender; and so their characteristics were not presented in the table.
et al., 1981). Although HSQ comprises two questionnaires one for the 0–3-year age group and one for the 3–6-year age group, as well as a toy list; in the present study, the 3–6 year form was used for the collection of data related to the home environment of preschoolers with and without disabilities. The 3–6 age form is used from the child’s third birthday until the day before the child’s six birthday. Since the toys such as a playpen, Tinker Toys and door swings on the toy list are not ordinary toys and are rarely found in middle-class Turkish homes, we disregarded the toy list for the present study. The total score is calculated by adding up the scores of all items based on the 3–6 scale score sheet and evaluations are made by considering the total score, which is in the 0–56 range for the 3–6 years old children (Coons et al., 1981).

The reliability coefficients (Kuder-Richardson) of the original 3–6 scale is .80 and the test re-test reliability was recorded as .86. (Frankenburg & Coons, 1986). The Turkish version of the instrument (HSQ-T) was studied by a group of researchers (Kesiktas et al., 2009), and the Alpha reliability coefficient was found to be .78 for the 3–6 scales, respectively. In the current study, Cronbach alpha coefficients were calculated for the data collected from the mothers of CWDs and CWODs separately and also for all study group, and all the reliability values are presented in Table 2.

In the present study, the HSQ-T was applied by trained interviewers, and so the interrater reliability between three interviewers was examined by using four videos that showed four different interviews with parents of children with and without disabilities and the mean of the correlations (r) values between the evaluators was found over .90 (range= .84 - .93). Studies conducted in Japan (Ueda & Ozawa, 1985) and Norway (Andersson, Sonnander, & Sommerfelt, 1998) among others, excluded several items from the instrument due to the child-rearing practices in their countries, although in this study, no items were excluded from the analysis.

**Gazi Early Childhood Assessment Tool (GECAT)**

This instrument was developed to evaluate the development of young children providing valuable information about the developmental level of children aged 0–72 months (Temel, Ersoy, Avci, & Turla, 2005). The GECAT includes 249 items spread across four developmental domains, namely psychomotor (73 items), cognitive (60 items), language (60 items) and socio-emotional (56 items) development. The scoring of the items in the instrument is based on the observations of the children while playing with toys, and also by interviews with the parents or primary caregivers. According to previous study investigated the psychometric characteristics of the instrument, the GECAT have high correlations with the Denver test scores and Spearman-Brown r values calculated for each age group separately, varied .82 and .94 for the total score, .57 and .88 for the psychomotor, .47 and .84 for cognitive, .47 and .84 for language subtest and finally .47 and .81 for socio-emotional test (Temel et al., 2005). In addition, according to item analysis, the score of each item significantly discriminated against the 27% of the participants who had maximum and minimum scores from the GECAT at $p = .000$ level. In the current study, the interrater reliability values between three evaluators were calculated based on ‘agreements on items by using agreements / agreements + disagreements X 100’ formula (Alberto & Troutman, 2013) and the percentage of agreement was found to be over .90 ($X = 97.04$).

**Table 2.** Reliability values of HSQ 3–6 scale.

<table>
<thead>
<tr>
<th>Coefficient reliabilities</th>
<th>Frankenburg and Coons (1986) Cronbach $\alpha$ (English)</th>
<th>Pessanha and Bairrao (2003) Cronbach $\alpha$ (Portuguese)</th>
<th>Kesiktas et al. (2009) Cronbach $\alpha$ (Turkish)</th>
<th>Current study Cronbach $\alpha$ (Turkish)</th>
</tr>
</thead>
<tbody>
<tr>
<td>HSQ of CWDs</td>
<td>.74 for 0–3 scale</td>
<td>.82 for 0–3 scale</td>
<td>.70 for 0–3 scale</td>
<td>.73 for 3–6 scale</td>
</tr>
<tr>
<td>HSQ of CWODs</td>
<td>.80 for 3–6 scale</td>
<td>.78 for 3–6 scale</td>
<td>.59 for 3–6 scale</td>
<td></td>
</tr>
<tr>
<td>HSQ of CWDs + CWODs</td>
<td></td>
<td></td>
<td></td>
<td>.74 for 3–6 scale</td>
</tr>
</tbody>
</table>

Note: CWDs: children with disabilities; CWODs: children without disabilities.
Procedure

For the Preschool Inclusion Project, the data for the present study were collected on two occasions, six months apart, in the fall and spring semesters of a single academic year. This allowed any increases in HSQ-T scores in a school year, as well as the relationship between the development of children and the quality of the family environment, to be determined. Project evaluators trained in the GECAT assessed the level of child development by observing them while playing in an appropriate setting and interviewed the mothers for the items that could not be observed in the preschool environment. Although the HSQ-T is a self-report instrument, the researchers chose to use it as the basis for the interviews with the mothers about their home environment due to the fact that the items for recipients at third and sixth grade levels (Frankenburg & Coons, 1986), and some of the participant mothers had difficulties in reading or understanding the questions.

Data analysis

To analyse the HSQ-T and GECAT data, firstly, the means, standard deviations, and ranges for all variables related to the development of children and their homes were calculated separately for the CWDs and CWODs. Then, to compare the quality of the home environment of the CWDs and CWODs for the first and second measures, independent t-test were used and the effect size for the two tests was calculated using Cohen d value, thus determining the level of influence of the disability of children on the home environment (Field, 2009). In addition, to determine the preschool children whose home environment put them in at-risk in terms of development, the means and standard deviations for the HSQ-T total scores were calculated for both CWDs and CWODs and the children whose scores were more than 2 standard deviations below the mean scores (Pallant, 2010) were considered to reside in a high-risk and less favourable family environment. Secondly, to understand whether a significant relationship existed between the home environment and the development of both groups of children, the Pearson Correlation values were calculated for the HSQ-T and GECAT scores. Thirdly, the same correlation analysis was repeated to examine the relationship between the education and income level of mother and the HSQ-T scores of the CWDs and CWODs. To find out whether or not HSQ-T scores were influenced by the mother’s working status, t-test was then used. Finally, a paired sample t-test was used to examine separately the increase in gains in the HSQ-T scores of the CWDs and CWODs, while the effect size of inclusive preschools on the home environments of the participant children was calculated using Cohen d values.

Results

The mean scores, standard deviations and ranges of the HSQ-T scores and GECAT scores of the CWDs and CWODs collected in fall and spring semester are presented in Table 3. It can be seen that, for the first measure, the range of the mean scores of the entire group varied between 5–33, and the mean HSQ-T scores of the CWDs was 24.25 while the HSQ-T scores of the CWODs were 28.65. In addition, Table 3. Descriptive analysis of HSQ scores and independent and paired t-tests results for the HSQ1 and HSQ2 of the CWD and CWODs.

<table>
<thead>
<tr>
<th>Measures</th>
<th>CWD</th>
<th>CWOD</th>
<th>Independent t-tests</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>X</td>
<td>SD</td>
<td>Range</td>
</tr>
<tr>
<td>HSQ-T1 (first measure)</td>
<td>24.25</td>
<td>5.48</td>
<td>5–33</td>
</tr>
<tr>
<td>HSQ-T2 (second measure)</td>
<td>26.10</td>
<td>5.10</td>
<td>6–35</td>
</tr>
<tr>
<td>Paired samples t-tests</td>
<td>t = 2.97, p = .004</td>
<td>d = .38</td>
<td></td>
</tr>
</tbody>
</table>

*Cohen d values (effect size).
13.1% (16 children) of the entire sample were identified as living in a high-risk home environment, in that their mean HSQ-T scores were two standard deviations below the mean of the total scores of the study group. Among the 16 children whose home environment was deemed at-risk, 15 were found to be CWDs (24.6% of all CWD) and only one a CWOD.

To answer the first question in the study, a t-test aimed at understanding whether a difference existed between the home environment of CWDs and CWODs pointed to the significant differences between the HSQ-T scores of the two groups of children not only on the first measure but also on the second measure as well. As can be seen in Table 3, the quality of the environment of the CWODs was more favourable than that of CWDs. Effect sizes (Cohen d) indicated that having a CWD has a significant effect (.90) on the quality of the family home for the first measure and a medium effect for the second measures (.60), with both findings indicating that presence of a CWD influenced the home environments of the preschoolers.

As for the second question of the study, when the relationship between the home environment (HSQ-T1) and children’s development (the GECAT scores) for the first data point was examined by calculating the Pearson Correlation Coefficients, and all r values were presented Table 4. This table shows that small but significant correlations existed between home environment (HSQ-T1) of CWDs and the GECAT, language \( r = .32, p < .05 \) and social-emotional \( r = .35, p < .01 \) subscale scores. For CWODs, a significant relationship was found only between the socio-emotional development and the HSQ-T scores \( r = .33, p < .01 \). However, when the Pearson Correlation Coefficients between HSQ-T scores and the GECAT scores were calculated for 122 children, finding showed that the HSQ-T scores were associated with all subscale scores of GECAT (see Table 4).

In reply to the third question, the relationships between the characteristics of mothers and the home environment were examined. The Pearson correlation coefficients calculated separately for the two groups of children indicated that the mother’s education level was significantly correlated with the HSQ-T scores for both CWDs \( r = .45, p = .000 \) and CWODs \( r = .44, p = .000 \), while the mother’s income was only correlated with the HSQ-T scores for the CWDs \( r = .48, p = .000 \). When the HSQ-T scores of the working mothers and housewives were compared with a t-test, it was found that there were no significant differences between the home environment of working mothers and those were not working of both CWDs and CWODs.

Finally, considering preschool education as an early intervention, whether the home quality of the two groups of children was affected by early interventions in preschools was examined. In paired sample t-test (See Table 3), the mean scores of the second measurement of home environment of CWDs and CWODs were found to be significantly higher than the mean scores of that of the first measurements. It would seem that attending inclusive preschools have small but positive effects on the quality of the home environment of both groups of children; however, the effect of preschools on the home environments of CWDs was found to be larger \( (d = .34) \) than that of CWODs \( (d = .14) \).

Discussion

The results of the present study revealed that: (a) a significant difference exists between the home qualities of CWDs and CWODs, with the home quality of CWDs being less favourable than that of the CWODs, (b) strong relationships exist between the characteristics of the parents and home environment in both groups of the children, (c) significant relationships exist between the development of the study group and their home environment; and finally (d) inclusive preschools have a significant effect on home environments of the CWDs and CWOD. All findings were discussed based on the characteristics of the mothers and child variables alongside the results of the existent research studies.

Early articles explaining the results of studies comparing the family home qualities of CWDs and CWODs emphasized the effects of the child on the home environment and parental behaviour, and also the reciprocal influence of the children and environment (Bradley, 1993; Bradley, Caldwell, & Elardo, 1979). Accordingly, both the child and the environment (parenting and other characteristics
Table 4. The relationships between HSQ-T scores and the GECAT subscale scores for the CWD, CWOD and for all children.

| Variables                  | CWD  
|                           |      |
|                           | N = 61|      |
|                           | 1    | 2    |
|                           | 3    | 4    |
|                           | 5    |      |
| 1. HSQ-T score (1st measure) | .17  | .20  |
| 2. Pmd                    | .21  | .06  | .31**|
| 3. Cd                     | .32* | .06  | .44**|
| 4. Ld                     | .35**| .06  | .47**|
| 5. Sed                    | .74**| .32**| .77**|

| Study group  
|                           |
|                           | N = 61|      |
|                           | 1    | 2    |
|                           | 3    | 4    |
|                           | 5    |      |
| 1. HSQ-T score (1st measure) | -    | .80**|
| 2. Pmd                    | -    | .76**|
| 3. Cd                     | .36**| .55**|
| 4. Ld                     | .55**| .46**|
| 5. Sed                    | .74**| .47**|

Note: Pmd: Psychomotor; Cd: Cognitive; Ld: language; Sed: Socio-emotional developments of the GECAT.

*p < .05.

**p < .01.
of the environment) play an important role in the course of child development and parental behaviours both affect and get affected by child behaviours. Although effects of children's characteristics such as their disabilities on home environment quality should not be generalized (Bradley, 1993); our findings indicated that the quality of home environment of CWDs is less favourable than that of CWODs, a finding that concurs with earlier studies (Bradley et al., 1979; Kesiktas et al., 2009). The significance of the difference between the qualities of the home environment of the two groups of children indicates that a child's disability may have a negative impact on the home environment, including parental behaviours.

These finding should be interpreted carefully, however, as a great deal of research mentioned in the introduction of this study emphasized that the level of education of the parents (especially the mother's) and family income are related to the quality of the home environment and these variables are accepted as predictors of the development of children in later years. In addition, mothers with a higher education level and those with a higher SES are more likely to provide a higher quality home environment for their children and are also able to stimulate their children better (Aikens & Barbarin, 2008; Biedinger, 2011; Melhuish et al., 2008; Niklas & Schneider, 2017; Richter & Grieve, 1991; Sontag-Padilla et al., 2015). On the other hand, the research studies focusing on the home environment of CWDs (Dote-Kwan & Hughes, 1994; Holder-Brown et al., 1993; Kesiktas et al., 2009) have shown that the level of education and income are important variables, being correlated with the quality of the family home environment of CWDs as well. In the present study, since the level of education and income of the mothers of CWDs are lower than those of CWODs, indicating that the significant difference between the HSQ-T scores of CWDs and CWODs may not all be attributed to the child in question. It would seem that investigating the complex relationships that exist between parent characteristics, child's disabilities and home quality should be prioritized when aiming to understand which variables influence on which aspects of home environment, whether directly or indirectly, and what type of causal relationships exists between all those variables.

The home environment and the development in childhood are related variables in young children. Many studies have identified strong relationships between quality of home and children's development (Bradley, 1993; Iltus, 2007; Niklas et al., 2018), with the higher quality of home the greater the cognitive, social and language outputs for the benefit of the child. In addition, home quality influences the overall development of children, affecting cognitive and language performances, and even school success in later life (Bradley, 1993; Camp & Headley, 1994; Espy et al., 2001; Iltus, 2007; Lee et al., 2003; Marturano, de Cassia Trivellato, & D'Avila Bacarji, 2005; Masud, Luster, & Youatt, 1994). Bradley (1993) identified correlations between the home environment and competencies of CWDs; although there are insufficient studies explaining the relationships between the development of the CWDs and the various aspects of their home environments. A literature review revealed two studies evaluating the home environment of CWDs (Dote-Kwan & Hughes, 1994; Holder-Brown et al., 1993) through the use of an extended form of the HOME instrument developed for children with severe disabilities. These studies suggested that no a significant correlation exists between the development of CWDs and their home environments, aside from a relationship between some scales of the HOME instrument and the use of expressive language among children. The present study supports these findings, but only in part, indicating that moderate correlations between the development of CWDs and their home quality. That is, social and language development of CWDs are associated with the HSQ-T scores, while only the social-emotional developmental scores were found to be related to the HSQ-T scores of the CWODs. These findings appear to be in conflict with the findings of previous literature emphasizing the strong effects of home environment on cognitive development and intelligence of typically developing children; Edwards, 1992; Masud et al., 1994; Niklas et al., 2018; Richter & Grieve, 1991). To this end, it seemed that the home environment is important in the development of all children, especially for their language and social development, and it is particularly crucial for CWDs. Taking this into account, researchers who develop training programs targeting parents of young CWDs should consider providing support to parents not only in how to teach certain skills to their children or how to deal with certain behavioural
problems, but also how to create an effective home environment that give their children opportunities to develop.

Programs focused on cognitive development in children (Martin, Ramey, & Ramey, 1990; Metzl, 1980), parent–child relationships (Roman et al., 1995), the developmental level of infants (Barrera et al., 1986), and child-rearing practices among teenage mothers (Field, Widmayer, Stringer, & Ignatoff, 1980) have served to highlight the significant changes that occur in the quality of the home environment of young children after interventions (as cited by Totsika & Sylva, 2004). In the present study, we compared the quality of the home environment of CWDs and CWODs by using HSQ-T, found out that the home environments of all children improved in six months; however, the effect size for CWDs were larger than for CWODs. These indicated that the family home quality of CWDs was much more influenced by attending in inclusive preschools than that of the CWODs. Our finding related to effect of inclusive preschools would appear to be parallel to the findings of studies that found that intervention programs involving parents and children usually result in changes in some aspects of the home environment of young children (Karaaslan Baç & Bal, 2002; Niklas et al., 2018; Ozturk-Ertem et al., 2006; Totsika & Sylva, 2004). In addition, considering the fact that the mothers of CWDs usually experience difficulties in creating a supportive and stimulating environment to sustain the development of their children (Bayrakli, 2016; Sucuoglu, 2001), their interactions with teachers and other mothers of typically developing children alongside observing teachers while they interact with all children, may result in changes in their parental behaviours. Moreover, although the teachers experience significant difficulties when attempting to meet the needs of CWDs as has been found in Turkey (Akalin, Demir, Sucuoglu, Bakkaloglu, & Iscen-Karasu, 2014; Batu, 2010; Gok & Erbas, 2011), they may guide the parents of CWDs on how to support the development of their children at home. On the other hand, preliminary findings of our project suggested that the social, cognitive, language and socio-emotional development of the CWDs improved in inclusive preschools (Sucuoglu et al., 2016). Therefore, that children' skills increase in preschools might resulted in the changes of the activities employed by the parents at home in such activities as playing with the child, reading to the child, and telling them stories, which are accepted as the important proxy indicators of the quality in a family environment (Biedinger, 2011; Iltus, 2007).

**Limitations**

This study has several limitations. Firstly, although, parental behaviours, size and location of home, toys and other stimuli available at home and interactions between children and parents have been considered as effective variables in the development of not only typically developing children but also for the CWDs (Biedinger, 2011; Dote-Kwan et al., 1997; Iltus, 2007); the present study used only the HSQ-T total scores to answer the research questions, and did not thoroughly investigate all aspects of home environment of the CWDs, with an item–by–item analysis. Secondly, several studies such as one conducted in Norway (Andersson et al., 1998) and another in Japan (Ueda & Ozawa, 1985) found that some items of the HOME and HSQ were related to the culture in that of the family, and so some of the items were changed according to their culture, and some of them were excluded altogether. However, in the current study, the Turkish version of the HSQ translated by Kesiktas and her colleagues (2009) was used for the research, and none of the items was changed or excluded from the analysis. Therefore, in future studies, if the items of the HSQ-T are modified to suit to the specific characteristics of the CWDs and our culture, the researchers may obtain more information about the quality and various aspects of the home environment of the respondent CWDs, with data collected from a large sample. Thirdly, type of disability considered as one of the important indicators of the quality of home may have an impact on parental behaviours; and when a child has a severe disability, the parents more likely to provide less of a learning experience and fewer opportunities for learning (Bradley, 1993; Holder-Brown et al., 1993). However, although the present study included 61 CWDs, as presented in Table 1, the numbers of children
with different types of disabilities were not equal. For example, there were only five children with hearing impairments, compared to 16 with intellectual disabilities in the study group. In addition, since only children with mild disabilities are accepted in preschools in line with the current legislation in Turkey, all CWD group were classified as having mild disabilities. In this regard, no determination was made of the impact of different types and severities of disabilities in the present study. Analyzing data from a sample includes groups of children with a variety of disabilities will provide a better understanding of what types of disabilities impact most on the home environment, and which aspects of the home environment can be associated with the severity of the disability or the individual characteristics of the child. Finally, although similar to the HOME instrument (Bradley, 1993; Totsika & Sylva, 2004), the HSQ-T is a tool that is sensitive to the changes resulting from intervention programs on the quality of home environment of children and can be used at determining the effects of a variety of intervention programs on the family environment; the readers should keep in mind that it is a self-report instrument. Accordingly, some of the limitations of using self-report questionnaires should be considered such as social desirability bias of the mothers. However, the facts that the HSQ-T has an acceptable level of reliability and it distinguished between the quality of home of CWD and CWOD can be accepted as the data collected from our study group are reliable and valid.

**Conclusion**

Despite our limitations listed above, two of the findings of the present study support previous studies analysing the home quality with parental education, income, working status and development of CWDs and CWODs. In addition, although many challenges have been faced in the implementation of inclusive practices at preschool level in Turkey, not only for parents, but also for teachers and the CWDs in our country, the last findings relating to the gains in the HSQ-T scores highlight the importance of the relationship between inclusive preschools and the home quality of CWDs. Moreover, since this research has for the first time documented the influence of preschools on the home quality of CWDs in Turkey, its findings can be said to contribute to both the national and international bodies of literature. It is well known that not only parental education and income of the parents but also the parents’ knowledge of child development, the attitudes of the parents toward child-rearing, family support systems and also parent–child interactions are influential on home environment (Burchinal, Peisner-Feinberg, Pianta, & Howes, 2002; Dote-Kwan & Hughes, 1994). Therefore, investigating all factors together with the data collected from the families of CWDS may provide a clearer understanding of which specific variables affect which dimensions of home quality. Finally, our findings may guide practitioners in developing and implementing effective interventions in support of the efforts of parents to create a learning environment in the home by encouraging them to provide appropriate toys and playthings for their CWDS, and to take an active role in learning through reading, playing, singing, counting, and drawing with their children.

**Disclosure statement**

No potential conflict of interest was reported by the authors.

**Funding**

This study was a part of a larger project that was supported by the Scientific and Technological Research Council of Turkey 1001 Projects [Project no. 114K649].

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