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0-6 Yaş Arası Çocukların Algılanan ve Gözlenen Gelişim Düzeylerinin Karşılaştırılması*

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Özet

Bu araştırmada, 0-6 yaş arası çocukların anneleri tarafından algılanan ve çocuk gelişimi uzmanınca gözlenen gelişim düzeylerinin karşılaştırılması amaçlanmıştır. Araştırmanın örneklemi, Bursa ili Nilüfer ilçesindeki iki Aile Sağlığı Merkezine kayıtlı, 102'si kız ve 99'u erkek olmak üzere 0-6 yaş dilimi içerisinde olan toplam 201 çocuk ile annelerinden oluşmaktadır. Çocukların anneleri tarafından algılanan gelişim düzeylerini ortaya koymak için Ankara Gelişim Tarama Envanteri (AGTE), gözleme dayalı gelişim düzeylerini tespit etmek amacıyla Denver II Gelişimsel Tarama Testi'nden yararlanılmıştır. Araştırma bulguları, araştırmaya katılan çocukların gelişimlerinin AGTE sonuçlarına göre %19,4 oranında, Denver II sonuçlarına göre %22,4 oranında normal olmadığını göstermiştir. Her iki gelişim testinin ortak sonuçlarına bakıldığında ise çocukların %8'inin her iki gelişim testine göre normal gelişim göstermediği görülmüştür. Bunun yanında 37-48 ay arası çocukların Denver II gelişim sonucuna göre en yüksek oranda (%33,3), 25-36 ay arası çocukların AGTE gelişim sonucuna göre en yüksek oranda (%32,4) normal olmayan gelişim gösterdikleri görülmüştür. Araştırma ile ilgili alanyazın incelenmiş, araştırma bulguları ile karşılaştırılarak tartışılmış ve ilgili kişi, kurum ve kuruluşlara önerilerde bulunulmuştur.

Anahtar kelimeer: Okul öncesi dönem, algılanan gelişim, gözlenen gelişim.

Geniş Özet

Giriş

Döllenmeden başlayarak (bebek/fetus anne rahmine düştüğünde) fiziksel, dil, zihinsel, sosyal ve duygusal yönden insan yaşamı boyunca düzenli, uyumlu ve sürekli ilerleme kaydeden, büyüme ve olgunlaşmayı da içeren değişme ve hareket örüntüsüne gelişim denilmektedir (Senemoğlu, 2007; Doğan ve Acar-Şengül, 2016; Santrock, 2016; Yavuzer, 2016). İnsanoğlunun en önemli kritik gelişim yaşları erken çocukluk dönemidir. Çocuklar, bazı gelişim aşamalarında ve aylarda/yaşlarda bazı becerileri öğrenmeye karşı daha fazla hassasiyet gösterme eğiliminde olmaktadırlar. Çevrelerinde olan etkinliklere karşı daha duyarlı oldukları için bazı gelişimsel becerileri diğer dönemlerden daha hızlı kazanabilmektedirler. Gelişim özellikleri (olumlu ya da olumsuz) bakımından diğer aşamalardan ayrılan ve genellikle geri dönüşü olmayan veya çok zor olan aşamalara kritik gelişim dönemleri adı verilmektedir. Kritik gelişim dönemlerinde çocukların kazanması gereken fakat çeşitli nedenlerle kazanamayan gelişim özelliklerini ileride kazanması çok güç, hatta imkansız olmaktadır. Çünkü bu gelişim aşamasına dönülmesi, bu aşamanın yeniden yaşanılması söz konusu olmamaktadır. Anne-baba ve öğretmenler, çocukların sağlıklı gelişimlerini desteklemek için bu bahsedilen kritik gelişim aşamalarında, çocukların belli deneyimleri yaşamaları için onlara fırsat vermeleri gerekmektedir (Senemoğlu, 2007; Akman ve diğerleri, 2012). Bu yüzden çocuğun her ay/yaş aşamalarındaki gelişimsel özellikleri, ihtiyaçları, ilgi ve alanlarının iyi bilinip farkında olunması, çocuklara doğru yaklaşımlarda bulunularak ilgi ve ihtiyaçlarının yeterli düzeyde karşılanması, çocuğun sağlıklı gelişimine katkı sağlamakta ve erken müdahalede önem taşımaktadır (Antepli ve Yıldız, 2015). Bu araştırmada annelerin 0-6 yaş arası çocuklarının gelişimlerine ilişkin algıları ile araştırmacıların çocukların gelişimlerine ilişkin sonuçlarının karşılaştırılması ve incelenmesi amaçlanmıştır.

Yöntem

Bu araştırmada, ilişkileri ve bağlantıları inceleyen ilişkisel tarama modeli kullanılmıştır. İki veya daha çok sayıdaki değişken arasındaki birlikte değişim varlığını ve/veya derecesini

belirlemeyi amaçlayan ilişkisel tarama modelinde korelasyon ve nedensel karşılaştırma yöntemleri kullanılmaktadır (Büyüköztürk, Kılıç-Çakmak, Akgün, Karadeniz ve Demirel, 2015). Çalışmanın evrenini belirlemek için araştırmacılar tarafından çocukların gelişimlerini etkileyebilecek faktörlerin yer aldığı bir risk tarama listesi oluşturulmuştur. Risk tarama listesi Bursa Halk Sağlığı Müdürlüğünde uzun yıllar çalışan ebe, hemşire ve doktorlar tarafından kontrol edilerek risk tarama listesi aracılığıyla Bursa'nın Nilüfer Merkez ilçesinde yer alan 29 ASM'nin her biri değerlendirilmiştir. Değerlendirme sonucunda gelişimsel destek gereksinimi bağlamında Akçalar ASM ve Işıktepe ASM'de kayıtlı 0-6 yaş dilimi içerisindeki çocuklar ve anneleri bu çalışmanın evrenini oluşturmuştur. ASM'lerde bulunan 0-6 yaş arası çocukların sayıları Sağlık Bakanlığı Sağlık-Net Karar Destek Sisteminden (KDS) tespit edilmiş ve bu iki ASM'nin 0-6 yaş dilimindeki toplam nüfus 566 olarak bulunmuştur (Erişim Tarihi: 26.01.2016). Bu bağlamda araştırmanın evreni 566 çocuk ve onların anneleri olarak belirlenmiştir.

Araştırma örnekleminde yer alacak anne ve çocuk sayısı % 5 hassasiyet ve % 95 güven aralığına (Israel, 1992) göre hesaplanmış ve minimum örneklem hacmi 0-6 yaş diliminde olan 240 çocuk ve onların anneleri olarak tespit edilmiştir. Örneklem grubunda yer alan çocuklar ve anneleri basit tesadüfi örnekleme yöntemi ile belirlenmiştir. Örnekleme alınan mahallelerdeki ASM'lerde kayıtlı bazı çocukların mahalle veya şehir dışı kayıt olduğu, bazılarının engelli (tanı koyulmuş bir hastalık/sendrom) olduğu, bazılarının yabancı uyruklu olduğu, bazılarının hem ASM'ye gelmediği hem de ev adreslerine/telefon numaralarına ulaşılamadığı, bazı annelerin ise çalışmaya katılmayı kabul etmedikleri görülmüştür. Bu çerçevede erişilen 201 çocuk ve onların anneleri çalışmanın örneklemini oluşturmuştur.

Araştırmada, çocukların demografik özelliklerini belirleyebilmek amacıyla "Aile Bilgi Formu", annelerin çocuklarının gelişim düzeylerine ilişkin algılarını tespit etmek amacıyla "Ankara Gelişim Tarama Envanteri (AGTE)" ve 0-6 yaş arası çocukların gelişim düzeylerini ölçmek amacıyla "Denver II Gelişimsel Tarama Testi" kullanılmıştır. Verileri elde etme aşamasından önce araştırma çalışması ile ilgili "Etik Kurul İzni" alınmıştır. Sonraki aşamada tez çalışmasının Bursa İli Işıktepe ASM ve Akçalar ASM'de yapılabilmesi için Bursa Halk Sağlığı Müdürlüğünden "Anket İzni" ve "Araştırma İzni" alınmıştır. Aile hekiminden alınan iletişim bilgileri sayesinde aileler aranmış ve annelere araştırmanın ayrıntıları anlatılmıştır, uygun olan aileler ziyaret edilerek görüşmeler gerçekleştirilmiştir. Bu görüşmeler sırasında anne ile yalnız görüşülmüş, her bir form, ölçek ve testler bire bir anne ile görüşülerek uygulanmıştır.

Bulgular

- Araştırma bulguları, araştırmaya katılan çocukların gelişimlerinin AGTE sonuçlarına göre %19,4 oranında, Denver II sonuçlarına göre % 22,4 oranında normal olmadığını göstermiştir. Her iki gelişim testinin ortak sonuçlarına bakıldığında ise çocukların %8'inin her iki gelişim testine göre normal gelişim göstermediği görülmüştür. Her iki gelişim testi arasındaki anlamlılığa bakıldığında ise test sonuçları arasında fark olmadığı, gelişim testlerinin tutarlı sonuçlar verdiği görülmüştür ($p>0,05$).
- Araştırma bulguları, her iki gelişim testi sonuçlarının arasındaki anlamlılığın ince motor gelişim alanında tutarlı sonuçlar vermediğini; çocukların Denver II'ye göre %6,5 oranında,

AGTE'ye göre ise %22,4 oranında ince motor gelişim alanında normal gelişme göstermediklerini göstermiştir.

- Araştırma bulguları, her iki gelişim testi sonuçlarının arasındaki anlamlılığın sosyal beceri-öz bakım/kişisel-sosyal gelişim alanında tutarlı sonuçlar vermediğini; çocukların Denver II'ye göre %17,9 oranında, AGTE'ye göre ise %8 oranında sosyal beceri-öz bakım/kişisel-sosyal gelişim alanında normal gelişme göstermediklerini göstermiştir.
- Araştırma bulgularında, 37-48 ay arası çocukların Denver II gelişim sonucuna göre en yüksek oranda (%33,3), AGTE gelişim sonuçlarında ise 25-36 ay arası çocukların en yüksek oranda (%32,4) normal olmayan gelişime sahip oldukları görülmüştür. Yapılan istatistiki testlerde de çocukların yaşları ile Denver II sonuçları ve AGTE dönüştürülmüş T puanları arasında istatistiksel olarak anlamlı bir farklılık olduğu bulunmuştur.

Sonuç ve Tartışma

Araştırma bulguları, araştırmaya katılan çocukların gelişimlerinin AGTE sonuçlarına göre %19,4 oranında, Denver II sonuçlarına göre % 22,4 oranında normal olmadığını göstermiştir. Her iki gelişim testinin ortak sonuçlarına bakıldığında ise çocukların %8'inin her iki gelişim testine göre normal gelişim göstermediği görülmüştür. Konu ile ilgili alanyazın incelendiğinde her iki gelişim testinin kullanıldığı araştırmalara rastlanmamakla birlikte sadece AGTE veya Denver II testi ile yapılan araştırmaların olduğu görülmektedir. Şimşek, Kurçer, Kayahan, Ersin ve Gözükara'nın (2004) beş yaş ve altındaki çocuklarda büyüme ve gelişmeyi etkileyen faktörleri belirlemek amacıyla yaptıkları araştırmada çocukların AGTE genel gelişim sonuçlarının %11,9 oranında normal gelişim göstermediğini bulmuşlardır. Savaşır ve arkadaşları (1998), AGTE'nin psikometrik özelliklerini belirlemek amacıyla yaptıkları çalışmalarında çocukların %9 oranında normal gelişim göstermediğini belirtmişlerdir. Frankenburg, Ker, Engelke, Schaefer ve Thornton (1988) Denver testinin şüpheli sonuçlarının %19 oranında olduğunu, Ural Bayoğlu, Erdoğan Bakar, Kutlu, Karabulut ve Anlar (2007) Denver testi sonucu anormal olan çocukların oranının %12.1 olduğunu ve Bayoğlu (2015) ise farklı çalışma gruplarında yapılacak olan araştırmalarda Denver II testi sonuçlarının %6 ila %25 oranında gelişimsel gecikme tanımlayabileceğini belirtmiştir. Yapılan araştırmalar ile bu araştırma bulguları karşılaştırıldığında bu çalışmanın dezavantajlı bir bölgede yapılmasından kaynaklı olarak gelişimsel olarak normal olmayan çocukların daha yüksek oranda görüldüğü düşünülmektedir.

Araştırma bulguları, her iki gelişim testi sonuçlarının arasındaki anlamlılığın ince motor gelişim alanında tutarlı sonuçlar vermediğini; çocukların Denver II'ye göre %6,5 oranında, AGTE'ye göre ise %22,4 oranında ince motor gelişim alanında normal gelişme göstermediklerini göstermiştir. Bu bulgunun, AGTE'de bulunan ince motor gelişim alanına ait soru sayısının az olmasından ve çocuğun bu maddelerden bir tanesini bile yapamadığında ince motor gelişim alanında geri veya gecikmeli olarak sonuç almasından kaynaklanabileceği düşünülmektedir. Ayrıca annelerin çocuklarının gelişimlerini değerlendirmek için verdikleri cevapların araştırmacı tarafından uygulanan Denver II sonuçlarıyla tutarlı olmadığı da söylenebilir.

Araştırma bulguları, her iki gelişim testi sonuçlarının arasındaki anlamlılığın sosyal beceri-öz bakım/kişisel-sosyal gelişim alanında tutarlı sonuçlar vermediğini; çocukların Denver II'ye göre %17,9 oranında, AGTE'ye göre ise %8 oranında sosyal beceri-öz bakım/kişisel-sosyal

gelişim alanında normal gelişme göstermediklerini göstermiştir. Bu bulgunun, Denver II testinin araştırmacılar tarafından yapılarak maddelerin gözlemlenmesi ve/veya uygulanması şeklinde yapıldığından dolayı ve/veya özellikle Denver II testindeki "ad-soyad" söyleme maddesinin AGTE testinde bulunmaması ve annelerin bu maddeyi çocuklara öğretmede çocukların daha geç yaşlarını beklemelerinden kaynaklı olabileceği düşünülmektedir.

Öneriler

Özellikle başta birinci basamak sağlık hizmeti ile ailelere ve gelişimi risk altında bulunan çocuklara yönelik birincil hizmet veren ASM'lerde çalışan sağlık personeli olmak üzere çocukla çalışan her meslek elemanının çocuğu tek başına değil, çevresi ve özellikle bakım veren en yakın kişi olan annesi ile birlikte değerlendirmesinin daha anlamlı ve faydalı olacağı düşünülmektedir. Üstelik sadece annelere yönelik değil, gebelere ve babalara yönelik de müdahaleler geliştirilmesi ve ev ziyaretlerinin yapılmasının çocuğun gelişimi için koruyucu olacağı düşünülmektedir. ASM'lerde çocuk gelişimi uzmanı, sosyal hizmet uzmanı ve psikologlardan oluşan mobil ekiplerin kurulmasının ve bu ekiplerin mahallede bulunan tüm aile ve özellikle çocukların değerlendirilmesi için ev ziyareti yapmasının riskli aile ve çocuklara erken müdahale edilebilmesi adına önemli olacağı düşünülmektedir.

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A Comparison of Perceived and Observed Developmental Stages among Children in the Age Range of 0–6 Years*

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Abstract

This study aims to compare the developmental levels of children in the age range of 0–6 years as perceived by their mothers and observed by a child development specialist. The sample of the study consists of 201 children (102 girls and 99 boys), who were 0–6 years old at the time of the study, and their mothers who were registered in two Family Health Centers in the district of Nilüfer in Bursa, Turkey. The Ankara Developmental Screening Inventory (ADSI) was used to reveal the developmental levels of the children as perceived by their mothers, and the Denver II Developmental Screening Test was used to detect their observation-based developmental levels. Based on the results of the ADSI, the developmental levels were non-normal in 19.4 percent of the children, and based on the results of Denver II, they were non-normal in 22.4 percent of the children. An analysis of the shared results of both developmental tests revealed that 8 percent of the children showed non-normal development and that fine motor development and social skills–self-care/personal–social development were not consistent. Literature in the area is reviewed and discussed in relation to the results of the present study. Recommendations are made for relevant authorities, organizations, and institutions.

Keywords: Pre-school period, perceived development, observed development.

Introduction

Development is defined as the pattern of change and evolvement that is marked by a regular, consistent, continuous progress throughout an individual's life in physical, linguistic, mental, social, and affective terms, as well as growth and maturation, starting with the conception of the embryo (Senemoğlu, 2007; Doğan and Acar-Şengül, 2016; Santrock, 2016; Yavuzer, 2016). It refers to an organism's physical and mental changes and progresses in behaviors and actions that result from environmental and biological factors over time (San-Bayhan and Artan, 2009). Development also refers to the functional changes that individuals go through (Yazgan-İnanç, Bilgin and Kılıç-Atıcı, 2008); it is constant and leads to a state where individuals can fully practice a target role (Haywood, 1993; Bjorklund, 2012; Doğan & Acar-Şengül, 2016). Development manifests in the form of quantitative and qualitative changes. In other words, it is a successive, continuous, age-related process that enables transition across skills. Development is a complex phenomenon that cannot be explained through quantitative measurements; it combines various structures and functions over time and involves changes and relations across these structures and functions (Bjorklund, 2012; Yavuzer, 2016).

Development is a multidimensional, interdisciplinary field. Each dimension of development emphasizes a specific field, but there are mutual relations between its dimensions. Because of these relations, each stage of development directly affects the following stage. Therefore, development does not occur in parts, and it should be viewed as a whole; it consists of changes that occur consecutively in specific stages of life. Thus, it is not possible to break down periods of development along precise boundaries. Development occurs within a process that can be divided into specific stages, each of which is dependent upon the skills acquired in the previous stage. The characteristics of the previous stages continue for a certain period in the following stages (Yazgan-İnanç et al., 2008; San-Bayhan and Artan, 2009; Karabekiroğlu, 2013; Yavuzer, 2016; Yörükoğlu, 2016).

Although children undergo the same developmental processes, the skills acquired vary from one child to another because of individual differences. Each child has a distinctive

development rate; some children might display superior development at a specific month/age compared to other children. Furthermore, the development rate of a child might manifest in different paces for various areas of development. The characteristics of the previous developmental stage can be maintained in subsequent stages for a certain period. In other words, characteristics that appear in one developmental stage are added to the characteristics of the following developmental stage, and newly acquired skills and behaviors are combined with new qualities, thus ensuring that each developmental stage is improved in a holistic manner (San-Bayhan & Artan, 2009; Yavuzer, 2016; Yörükoğlu, 2016; Antepli and Yıldız, 2015).

Development might take place at an extraordinarily high pace, but it might also occur at a slow pace. The timely emergence of developmental characteristics that are unique for each developmental stage shows that development follows an ordinary path, whereas the early emergence of some of the developmental characteristics that belong to subsequent developmental stages indicates more advanced development than expected. If an individual does not display developmental characteristics that are unique for the developmental stage they are in, this shows that their development is behind expectations (Yazgan-İnanç et al., 2008).

Human beings' most critical developmental period is early childhood. Children tend to show more sensitivity to learn specific skills in certain areas of development and in specific months/years of age. Because they are more sensitive to the events around them, they acquire specific developmental skills earlier than they do in other stages. Stages that differentiate from others in terms of developmental characteristics (i.e., positive or negative) and that are usually irremediable or very difficult to remediate are called critical areas of development. It is very difficult or even impossible for children to acquire developmental characteristics that they should have acquired in critical areas of development but were unable to because of various reasons later in life. This is because revisiting this area of development or experiencing this stage again is well out of the question. Parents and teachers should offer opportunities to children for experiences within these critical areas of development to support their healthy development (Senemoğlu, 2007; Akman et al., 2012). Therefore, knowing and being aware of developmental characteristics, needs, and areas of interests of children in each month/year of age and meeting their interests and needs at sufficient levels by approaching them in the right way are essential in contributing to children's healthy development and in early intervention (Antepli and Yıldız, 2015).

It is important for professional groups that examine children's development to objectively evaluate children's development so that they can develop correct intervention plans for children. In this context, it is important to apply the applied developmental tests by spending as much time as possible with the child and being included in the child's games. Because while applying the development tests, some test items due to insufficient time and / or inappropriate environment cannot be applied. In this case, unobservable development information is taken from the parent of the child. However, the developmental advances perceived by the parent about their child may be very different from the observations of the expert applying the developmental test. Therefore, it is thought that it may be more correct to blend the developmental information obtained from the family about the child with the developmental information observed by the expert applying the test and to decide the test result in this way. In

this context, this study aimed to compare the levels of development of children in the age range of 0–6 years as perceived by their mothers and based on the results of evidence-based developmental evaluations.

Method

This study aimed to compare the levels of development of children in the age range of 0–6 years through the Denver II Developmental Screening Test and Ankara Developmental Screening Inventory (ADSI). The study adopted a correlational survey model that investigates relationships and links. The correlational survey model aims to determine the presence of covariance and/or its extent between two or more variables on the basis of the correlational method (Büyüköztürk, Kılıç-Çakmak, Akgün, Karadeniz and Demirel, 2015).

Population and Sample

The researchers developed a risk screening list including the factors that could influence the development of children to identify the population of the study. The risk screening list was reviewed by midwives, nurses, and physicians working in the Directorate of Public Healthcare in Bursa, Turkey, and each of the 29 Family Healthcare Centers (FHC) located in the Nilüfer district of Bursa was evaluated using the risk screening list. Based on the results of the evaluation, children in the age range of 0–6 years and their mothers, who were registered at Akçalar FHC and Işıktepe FHC, constituted the population of the study, considering their need for developmental support. The number of children between 0–6 years of age who were registered at the FHCs was retrieved from a facility of the Ministry of Health in Turkey named Sağlık-Net Karar Destek Sistemi (Health-Net Decision Support System; DSS), and the total population of children in the age range of 0–6 years at these two FHCs was 566 (Retrieved on Jan 26, 2016). Thus, the population of the study consisted of 566 children and their mothers.

The number of children and mothers to be included in the sample group was calculated based on 5 percent sensitivity and 95 percent confidence interval rates (Israel, 1992), and the minimum sample volume was determined as 240 children in the age range of 0–6 years and their mothers. The children in the sample group and their mothers were identified through the simple random sampling method. Some of the children who were registered at the FHCs in the districts where sampling was done were registered as guests from other districts or cities, some were disabled (with a diagnosed disease/syndrome), some were foreign nationals, some neither came to the FHC nor could be accessed in their homes or via telephone, and some mothers did not agree to participate in the study. 201 children and their mothers who were accessed within this framework constituted the sample group of the study.

Table 1. *Demographic information on the children in the study*

Tables	Groups	n	%
Gender	Girl	102	50.7
	Boy	99	49.3
Age	0–12 months	38	18.9
	13–24 months	39	19.4
	25–36 months	37	18.4
	37–48 months	33	16.4
	49–60 months	32	15.9
	61–72 months	22	10.9
Receiving pre-school education	Receiving	31	15.4
	Not receiving	170	84.6
Birth order	1	72	35.8
	2	82	40.8
	3	43	21.4
	4	4	2.0

As shown in Table 1, 50.7 percent of the children in the sample group were girls, and 49.3 percent were boys. 19.4 percent of the children were 13–24 months of age, and 10.9 percent were 61–72 months of age. The majority of children (84.6%) were not receiving pre-school education. 40.8 percent of the children were the second child in the family, and 2 percent of them were the fourth child.

Data Collection Tools

The tools that were used for the study are a family information form, which aimed to identify the demographic characteristics of the children;the ADSI, which aimed to identify the perceptions of mothers regarding their child's developmental level; and Denver II Developmental Screening Test (Denver II), which aimed to measure the developmental levels of children aged 0–6 years. Both developmental tests were utilized to reach more objective results and to compare the perceptions of mothers regarding their children's development with that of the researchers' findings.

Family Information Form

The family information form was developed by the researchers to obtain demographic information about the children in the study. It included items that sought to reveal information on the birth order of the child and whether they received pre-school education.

Ankara Developmental Screening Inventory (ADSI)

The ADSI was developed by Işık Savaşır, Nilhan Sezgin, and Neşe Erol in 1998 to evaluate the development of children aged 0–6 years. ADSI provides an opportunity to determine developmental delays or deficiencies,to recognize babies and children who are thought to be under risk in developmental terms in early stages, and to take early measures accordingly. The inventory consists of 154 questions that are directed to mothers regarding the development of their child. There are separate questions for each age group. Mothers receive questions based on the age and month of their child;they are expected to respond to the questions with one of the following responses: "Yes,""No,"or "I do not know." The validity scores of the inventory were 0.99 for 0–12 months, 0.98 for 13–44 months, and 0.88 for 45–72 months. The scores in the language–cognitive dimension were 0.93 for 0–12 months, 0.99 for 13–44 months, and 0.84 for

45–72 months. The scores in the fine motor development dimension were 0.92 for 0–12 months, 0.80 for 13–44 months, and 0.64 for 45–72 months. The scores in the gross motor development dimension were 0.91 for 0–12 months, 0.80 for 13–44 months, and 0.16 for 45–72 months. The scores in the social skills–self-care development dimension were 0.92 for 0–12 months, 0.85 for 13–44 months, and 0.37 for 45–72 months. In the first stage, foreign developmental scales were used for the preparation of the inventory. These developmental scales were translated into Turkish, and the repeating items were removed. In the second stage, specific developmental items were evaluated on the basis of their consistency with culture and style of expression. For this purpose, semi-structured interviews were conducted with mothers belonging to lower-class backgrounds in terms of socioeconomic development. In the third stage, developmental items from the first two stages were reviewed, and a form consisting of 218 items was prepared with the following dimensions: language and cognitive development, fine motor skills, gross motor skills, and social development. This form was created separately for both children and mothers. In the fourth stage, both forms were administered to 66 children aged 5 years and their mothers to investigate the difference between the forms. In both forms, items that exceeded 20 percent were removed from the scale. A normative study was conducted in the last stage. The inventory with 168 items was administered to 860 mothers (of 420 boys and 440 girls). Items that did not indicate an increase in developmental growth with age were removed, and the scale reached its final form with 154 items. Although each area of development in the inventory is evaluated separately, it is possible to make an evaluation based on the overall development score. The total score is calculated by adding all responses of "yes" in the inventory and the items that belonged to previous developmental stages assuming that the child achieved them all. The score on other areas of development is calculated by adding all responses of "yes" for each developmental item and the relevant developmental items that belonged to stages before the starting point. There is a T-table to calculate the mean of the total development scores for each age group. A child with normal development got a score in the 40–60 range. In other words, a score between 40 and 60, according to the mean T-table of children's overall development scores, means that the child is in a developmental stage consistent with his/her age. There is no general T-score table for each overall development score; instead, there is a table that separately shows whether areas of development are consistent with the children's age. In this table, the line that indicates the years and months of the child is drawn first, and then, other lines showing 20and 30 percent below his/her years and months are drawn. The child's scores are expected to be between his/her age line and the 20-percent line. However, if two or more development scores are between the 20- and 30-percent age lines or if each development score is below the 30-percent age line, it is concluded that the child has a developmental deficiency (Savaşır, Sezgin and Erol, 1998).

Denver II Developmental Screening Test

The Denver Developmental Screening Test (DDST) was published first by Frankenburg and Dodds in 1967 to capture developmental problems and make early interventions by following the development of children. The test was utilized in various countries, and under the light of new information, Frankenburg and Dodds revised the test and developed Denver II in 1990. Denver II was developed to be administered to children aged 0–6 years who looked healthy. Assessing whether children's developmental skills are consistent with their age, this test has a prominent role in screening latent developmental problems, verifying suspicious

situations through an objective tool, and identifying childrenatrisk in terms of development. The first standardization of DDST in Turkey was conducted by two professors at Hacettepe University, Kalbiye Yalaz and Shirley Epir, in 1982. It was revised and standardized by Kalbiye Yalaz and Banu Anlar in 1996 and by Kalbiye Yalaz, Banu Anlar, and Birgül Bayoğlu in 2009. It was submitted for use globally under the name Denver II, provided that those who would like to use it receive training in Turkey.

Data obtained to determine psychometric characteristics were analyzed through logistic regression analysis to identify the months/ages at which children go through each item. The analyses helped identify the months/ages at which 25, 50, 75, and 90 percent of children go through an item. Children from various age groups and multiple examiners were included to ensure the reliability of the test. When the results of the tests were compared in terms of reliability, the consistency between the examiners was 90 percent and the test–test consistency did not fall below 86 percent.Denver II consists of 134 items that evaluate four areas of development: personal–social, fine motor–adaptive, language, and gross motor. After calculating the age of the child and drawing the age line, the skills to be performed by the child are identified, so the examiners assess the consistency between the child's development and his/her age. Apart from the developmental items, five "test behavior" items are observed at the end of the test. The examiner observes how the child behaves with regardto these items during the time he/she spends assessing a child, which allows the examiner to make interpretative evaluations efficiently. In the interpretation of the test, there are three assessments: normal, abnormal, and suspect. For their development to be interpreted as "normal," children should pass all items listed under their month/age or should get only one caution; to be interpreted as "suspect," there should be only one delay, two or more delays, or one delay+one caution or more; and to be interpreted as "abnormal," there should be two or more delays in all items in the entire test. Referral to a center for diagnostic assessment is recommended in the case of abnormal development (Yalaz, Anlar and Bayoğlu, 2016).

Procedure

The ethical committee's approval was received for the present study before the data collection started. Afterward, approval for conducting surveys and research was received from the Directorate of Public Healthcare in Bursa, Turkey, to conduct this thesis study in Işıktepe FHC and Akçalar FHC. The data were collected by visiting homes in cooperation with the FHCs and reaching the families and their children aged 0–6 years who were registered to the FHCs.

Fifty mothers were interviewed in the FHCs during the data collection process. Family physicians and family healthcare staff were informed about the study and were presented the approval documents granted by the Directorate of Public Healthcare in Bursa. The information (name-surname, phone number, and address) of children aged 0–6 years who were registered to the family physicians' system was retrieved. A room was allocated in the FHCs for interviews, and family physicians were requested to refer mothers with children aged 0–6 years along with their children to the room. The mothers coming to the interview were informed about the study and were asked to fill out forms and tests, after having stated their agreement to participate in the study. After administering ADSI to the mothers, their children were contacted, and Denver II was administered to them to assess their development.

Interviews were conducted with 151 families during home visits in the data collection process. Using the information retrieved from the family physicians, we reached out to the families, and the mothers were provided the details of the study. Additionally, family physicians and family healthcare staff contacted mothers. After they were informed about the study, appointments were made with mothers who agreed to participate. They were asked about the day on which they were available for a home visit, and a plan was made to visit them in their homes when they were available. On the appointment day, the mothers were called 30 minutes before the home visit to enquire if they were available for a home visit, and interviews were conducted with those who were available. Interviews were conducted with the mothers alone, and each form, scale, and test was administered to the mothers during one-on-one interviews.

The interviews lasted for 30–60 minutes. After the interviews, recommendations were made to mothers regarding what they can do about the developmental levels of their children and to support their development. They were also given a phone number through which they could contact the researchers; they were informed that they could have access to the results of the study if they wished.

There were specific problems during home visits. Some parents rejected the healthcare staff who wanted to visit their homes because of the information they came across on the internet, and some families refused to take part in the study when they were reached out for home visits because they thought the visitors could be burglars or that they may administer harmful vaccination to their children.

The data collected through the family information form, ADSD, and Denver II were analyzed on SPSS 20 Statistics software package. Whether the data met the criteria for the normal distribution of data was also tested. The distribution of the data was analyzed through the Shapiro–Wilk and Kolmogorov–Smirnov tests. Because the data were not normally distributed, nonparametric hypothesis tests were used. The significance level was set as p=0.05, both in evaluating normal distribution and the results of the hypothesis tests. The McNemar and Friedman tests were used to compare the results of the ADSI and Denver II.

Ethical Approval of Research

All rules stated to be complied with within the scope of “Higher Education Institutions Scientific Research and Publication Ethics Directive” were followed in this study. None of the actions mentioned under the heading of “Actions Against Scientific Research and Publication Ethics”, which is the second part of the directive, have been carried out.

Results

This section of the present study, which was conducted to compare the development of children aged 0–6 years as perceived by their mothers and based on the findings of the researchers, presents the descriptive and prevalence statistics that were collected from mothers and children using measuring tools and relational analyses conducted in accordance with the purpose of the study.

Table 2. *Descriptive statistics of children's T-scores by gender converted to ADSI*

Gender	Age	n	Mean	Min	Max	S
Girls	0–12 months	20	45.40	30	55	5.46
	13–24 months	25	42.88	27	56	6.84
	25–36 months	17	43.94	35	62	4.73
	37–48 months	16	51.06	39	62	7.26
	49–60 months	16	50.12	40	60	6.21
	61–72 months	8	48.50	43	57	4.89
	Total	102	46.41	27	62	6.76
Boys	0–12 months	18	48.77	35	61	7.02
	13–24 months	14	48.50	27	57	5.14
	25–36 months	20	42.30	29	56	6.24
	37–48 months	17	44.11	23	56	8.65
	49–60 months	16	49.37	40	73	8.88
	61–72 months	14	52.07	36	65	8.33
	Total	99	47.19	23	73	8.03
Total	0–12 months	38	47.00	30	61	6.39
	13–24 months	39	44.89	27	57	6.78
	25–36 months	37	43.05	29	54	5.58
	37–48 months	33	4748	23	62	8.63
	49–60 months	32	49.75	40	73	7.55
	61–72 months	22	50.77	36	65	7.35
	Total	201	46.79	23	73	7.41

Table 2 shows that the ADSI converted T-scores of girls aged 37–48 months were the highest (Mean=51.06) and those of girls aged 13–24 months were the lowest (Mean=42.88); the ADSI converted T-scores of boys aged 61–72 months were the highest (Mean=52.07) and those of boys aged 25–36 months were the lowest (Mean=42.30). Considering the ADSI converted T-scores of all children, those aged 61–72 months had the highest mean value (Mean=20.77), while those aged 25–36 months had the lowest mean value (Mean=43.05).

Table 3. *Prevalence of the results of ADSI development areas*

Area of Development	Normal		Abnormal	
	f	%	f	%
Language–Cognitive Development	178	88.6	23	11.4
Fine Motor Development	146	72.6	55	27.4
Gross Motor Development	187	93	14	7
Social Skills–Self-Care Development	185	92	16	8
Overall Development	181	90	20	10
Total	162	80.6	39	19.4

Table 3 shows that the rate of children in the study who as per ADSI had abnormal fine motor development was 27.4 percent, abnormal gross motor development was 7 percent, and abnormal overall development was 10 percent. ADSI overall development results indicated that 19.4 percent of children did not have normal development.

Table 4. *Prevalence of the "normal" and "abnormal" results of ADSI development result by children's age*

Age	Normal		Abnormal	
	f	%	f	%
0–12 months	34	89.5	4	10.5
13–24 months	34	87.2	5	12.8
25–36 months	25	67.6	12	32.4
37–48 months	25	75.8	8	24.2
49–60 months	29	90.6	3	9.4
61–72 months	15	68.2	7	31.8
Total	162	80.6	39	19.4

As seen in Table 4, the group of children aged 25–36 months had the highest rate of abnormal development (32.4%), as revealed by ADSI development results. The group of children aged 49–60 months had the lowest rate of abnormal development (9.4%).

Table 5. *Prevalence of the "normal" and "abnormal" results of ADSI development result by children's gender*

Gender	Normal		Abnormal	
	f	%	f	%
Girl	86	84.3	16	15.7
Boy	76	76.8	23	23.2

As seen in Table 5, 15.7 percent of girls and 23.2 percent of boys did not have normal development according to ADSI development results.

Table 6. *Prevalence of children's results of "normal," "caution," and "delay" according to Denver II*

Area of Development	Normal		Caution		Delay	
	f	%	f	%	f	%
Personal–Social Development	165	82.1	21	10.4	15	7.5
Fine Motor Development	188	93.5	5	2.5	8	4.0
Language Development	175	87.1	16	8.0	10	5.0
Gross Motor Development	185	92.0	8	4.0	8	4.0

Table 6 shows that the Denver II area that had the highest rate of "normal" development (93.5%) was fine motor development; the area that had the highest rate of "caution" (10.4%) was personal–social development; and the area that had the highest rate of "delay" (7.5%) was also personal–social development.

Table 7. *Prevalence of the "normal" and "abnormal" results of Denver II result by children's age*

Age	Normal		Abnormal*	
	f	%	f	%
0–12 months	35	92.1	3	7.9
13–24 months	27	69.2	12	30.8
25–36 months	30	81.1	7	18.9
37–48 months	22	66.7	11	33.3
49–60 months	22	68.8	10	31.3
61–72 months	20	90.9	2	9.1
Total	156	77.6	45	22.4

*Children with a Denver II result of "suspect" and "abnormal" were compiled under this heading.

As seen in Table 7, the group of children aged 37–48 months had the highest rate of abnormal development (33.3%), as revealed by Denver II development results. The group of children aged 0–12 months had the lowest rate of abnormal development (7.9%). Total Denver II results indicate that 22.4 percent of the children did not have normal development.

Table 8. *Prevalence of children's results of "normal," "abnormal," and "suspect" according to Denver II*

Age	Normal		Abnormal		Suspect	
	F	%	f	%	f	%
0–12 months	35	92.1	1	2.6	2	5.3
13–24 months	27	69.2	2	5.1	10	25.6
25–36 months	30	81.1	2	5.4	5	13.5
37–48 months	22	66.7	2	6.1	9	27.3
49–60 months	22	68.8	0	0	10	3.3
61–72 months	20	90.9	2	9.1	0	0
Total	156	77.6	9	4.5	36	17.9

Table 8 shows that children aged 0–12 months had the highest level of "normal" development (92.1%); none of the children aged 49–60 months had "abnormal" development; children aged 61–72 months had the highest rate of "abnormal" development (9.1%); and children aged 37–48 months had the highest rate of "suspect" results (27.3%). Total Denver II results indicated that 4.5 percent of all children had "abnormal" results and that 17.9 percent had "suspect" results.

Table 9. *Prevalence of the "normal" and "abnormal" results of the Denver II test by children's gender*

Gender	Normal		Abnormal*	
	f	%	f	%
Girl	83	81.4	19	18.6
Boy	73	73.7	26	26.3

*Children with a Denver II result of "suspect" and "abnormal" were compiled under this heading.

As seen in Table 9, 18.6 percent of girls and 26.3 percent of boys did not have normal development, according to Denver II results.

Table 10. *McNemar test results between developmental stages, as indicated by ADSI and Denver II*

ADSI Development Result	Denver II Development Result*						p
	Normal		Abnormal		Total		
	f	%	f	%	f	%	
Normal	133	66.2	29	14.4	162	80.6	0.488
Abnormal	23	11.4	16	8	39	19.4	
Total	156	77.6	45	22.4	201	100	

*Children with a Denver II result of "suspect" and "abnormal" were compiled under this heading.

As Table 10 shows, 8 percent of all children did not have normal development, as revealed by both ADSI and Denver II results, and 66.2 percent showed normal development according to the results of both tests. The analysis of significance between both developmental tests showed no difference between their results and that the results of both developmental tests were consistent ($p>0.05$).

Table 11. *Friedman test results between developmental stages as indicated by ADSI language–cognitive development and Denver II language development*

ADSI Language–Cognitive	Denver II Language Development Result*								p
	Normal		Caution		Delay		Total		
	f	%	f	%	f	%	f	%	
Normal	160	79.6	13	6.5	5	2.5	178	88.6	0.194
Abnormal	15	7.5	3	1.5	5	2.5	23	11.4	
Total	175	87.1	16	8	10	5	201	100	

*Children with a Denver II result of "suspect" and "abnormal" were compiled under this heading.

Table 11 shows that language development was normal in 79.6 percent of the children as indicated by both ADSI and Denver II results; 9 percent showed normal development according to ADSI but did not according to Denver II (6.5% "caution" and 2.5% "delay"); and 7.5 percent showed normal development according to Denver II but did not according to ADSI. The analysis of significance between the developmental tests showed no difference between the results and that the results of both developmental tests were consistent (p>0.05).

Table 12. *Friedman test results between developmental stages as indicated by ADSI fine motor development and Denver II fine motor development*

ADSI Fine Motor Development Result	Denver II Fine Motor Development Result*								p
	Normal		Caution		Delay		Total		
	f	%	f	%	f	%	F	%	
Normal	139	69.2	2	1	5	2.5	146	72.6	0.000**
Abnormal	49	24.4	3	1.5	3	1.5	55	22.4	
Total	188	93.5	5	2.5	8	4	201	100	

*Children with a Denver II result of "suspect" and "abnormal" were compiled under this heading.

**p<0.05

Table 12 shows that fine motor development was normal in 69.2 percent of the children, as indicated by both ADSI and Denver II results; 3.5 percent showed normal development according to ADSI but did not according to Denver II (1% "caution" and 2.5% "delay"); and 24.4 percent showed normal development according to Denver II but did not according to ADSI. The analysis of significance between the developmental tests showed a difference between their results and that the results of the developmental tests were not consistent (p<0.05).

Table 13. *Friedman test results between developmental stages as indicated by ADSI gross motor development and Denver II gross motor development*

ADSI Gross Motor Development Result	Denver II Gross Motor Development Result*								p
	Normal		Caution		Delay		Total		
	f	%	f	%	f	%	F	%	
Normal	174	86.6	6	3	7	3.5	187	93	0.549
Abnormal	11	5.5	2	1	1	0.5	14	7	
Total	185	92	8	4	8	4	201	100	

*Children with a Denver II result of "suspect" and "abnormal" were compiled under this heading.

Table 13 demonstrates that gross motor development was normal in 86.6 percent of the children as indicated by both ADSI and Denver II results; 6.5 percent showed normal development according to ADSI but did not according to Denver II (3% "caution" and 3.5% "delay"); and 5.5 percent showed normal development according to Denver II but did not according to ADSI. The analysis of significance between the developmental tests showed no difference between their results and that the results of both developmental tests were consistent (p>0.05).

Table 14. *Friedman test results between developmental stages as indicated by ADSI social skills–self-care development and Denver II personal–social development*

ADSI Social Skills–Self-Care Development	Denver II Personal–Social Development Results								p
	Normal		Caution		Delay		Total		
	f	%	f	%	f	%	F	%	
Normal	153	76.1	18	9	14	7	185	92	0.002*
Abnormal	12	6	3	1.5	1	0.5	16	8	
Total	165	82.1	21	10.4	15	7.5	201	100	

*Children with a Denver II result of "suspect" and "abnormal" were compiled under this heading.

Table 14 shows that 76.1 percent of the children displayed normal development in the personal–social–self-care development area, as revealed by both ADSI and Denver II results; 16 percent showed normal development according to ADSI but did not according to Denver II (9% "caution" and 7% "delay"); and 6 percent showed normal development according to Denver II but did not according to ADSI. The analysis of significance between the developmental tests showed a difference between their results and that the results of the developmental tests were not consistent ($p<0.05$).

Table 15. *Mann–Whitney U test results between ADSI converted T-score means by children's demographic information*

Tables	Groups	n	Mean	Median	Min	Max	S	Mean rank	z	p
Receiving pre-school education	Receiving	31	50.32	50	30	73	8.98	124.74	-2.475	0.013*
	Not receiving	170	46.15	45	23	62	6.92	96.67		
Gender	Girl	102	46.41	46	27	62	6.76	98.70	-0.571	0.568
	Boy	99	47.19	46	23	73	8.03	103.37		

*p<0.05

As seen in Table 15, there was a statistically significant relation between pre-school education being received by children and their ADSI converted T-score means ($p<0.05$), and there was no statistically significant relationship between the children's gender and their ADSI converted T-score means ($p>0.05$). The children who received pre-school education had a higher ADSI converted T-score mean (Mean=50.32), and boys had a higher ADSI converted T-score mean (Mean=47.19).

Table 16. *Kruskal–Wallis H test results between ADSI converted T-score means by children's demographic information*

Tables	Groups	n	Mean	Median	Min	Max	S	Mean rank	H	p	Pairwise comparison
Age	0–12 months (1)	38	47.00	46	30	61	6.39	103.12	23.220	0.000*	1–3 1-6 2-5 2-6 3-4 3-5 3-6
	13–24 months (2)	39	44.89	45	27	57	6.78	87.50			
	25–36 months (3)	37	43.05	43	29	54	5.58	69.92			
	37–48 months (4)	33	47.48	49	23	62	8.63	110.23			
	49–60 months (5)	32	49.75	50	40	73	7.55	120.44			
	61–72 months (6)	22	50.77	51	36	65	7.35	131.43			
Birth order	1	72	47.69	46	29	66	7.77	107.56	3.461	0.326	
	2	82	46.65	47	23	73	7.93	101.80			
	3	43	45.88	45	35	61	5.79	91.70			
	4	4	43.25	43.5	40	46	2.75	66.38			

*p<0.05

As seen in Table 16, there was a statistically significant relation between the children's ages and their ADSI converted T-score means ($p<0.05$), and there was no statistically significant relation between the children's birth order and their ADSI converted T-score means ($p>0.05$). The ADSI converted T-scores were statistically significantly higher among children aged 0–12 months compared with those aged 25–36 months, among children aged 61–72 months compared with those aged 0–12 months, among children aged 49–60 months compared with those aged 13–24 months, among children aged 61–72 months compared with those aged 13–24 months, among children aged 37–48 months compared with those aged 25–36 months, among children aged 49–60 months compared with those aged 25–36 months, and among children aged 61–72 months compared with those aged 25–36 months. The children aged 61–72 months had a higher ADSI converted T-score mean (Mean=50.77), and those who were the first child in the family had a higher ADSI converted T-score mean (Mean=47.69).

Table 17. *Chi-square test results between Denver II results by children's demographic information*

Tables	Groups	Normal		Abnormal		p
		f	%	f	%	
Receiving pre-school education	Receiving	28	90.3	3	9.7	0.065
	Not receiving	128	75.3	42	24.7	
Gender	Girl	83	81.4	19	18.6	0.194
	Boy	73	18.6	26	26.3	

Table 17 shows no significant difference between pre-school education being received by children and their genders and the Denver II results ($p>0.05$). 90.3 percent of the children receiving pre-school education showed normal development, and 18.6 percent of the boys did not show normal development.

Table 18. *Chi-square (larger than 2×2) test results between Denver II results by children's demographic information*

Tables	Groups	Normal		Abnormal*		p
		f	%	f	%	
Age	0–12 months	35	92.1	3	7.9	0.030**
	13–24 months	27	69.2	12	30.8	
	25–36 months	30	81.1	7	18.9	
	37–48 months	22	66.7	11	33.3	
	49–60 months	22	68.8	10	31.3	
	61–72 months	20	90.9	2	9.1	
Birth order	1	54	75	18	25	0.511
	2	67	81.7	15	18.3	
	3 and above	35	74.5	12	25.5	

*Children with a Denver II result of "suspect" and "abnormal" were compiled under this heading.

**$p<0.05$

As seen in Table 18, there was a statistically significant difference between the children's ages and Denver II results ($p<0.05$). 92.1 percent of the children aged 0–12 months showed normal development, and 33.3 percent of the children aged 37–48 months did not show normal development. There was no statistically significant difference between the children's order of birth and Denver II results ($p>0.05$). 81.7 percent of the children who were the second child in the family showed normal development, and 18.3 percent of them did not show normal development.

Discussion and Conclusion

The results showed that based on ADSI results, the developmental levels were non-normal in 19.4 percent of the children, and based on Denver II results, they were non-normal in 22.4 percent of the children. When the shared results of both developmental tests were analyzed, it was found that 8 percent of children showed non-normal development, as revealed by both developmental tests. A review of relevant literature showed no study that utilized both developmental tests, but some studies utilized only ADSI or Denver II. In a study conducted by Şimşek, Kurçer, Kayahan, Ersin, and Gözükara (2004) to identify the factors that affected growth and development in children aged five and below, it was found that 11.9 percent of children did not show normal development based on ADSI overall development results. In their study conducted to identify the psychometric characteristics of ADSI, Savaşır et al. (1998) determined that 9 percent of children did not show normal development. Frankenburg, Ker, Engelke, Schaefer and Thornton (1988) found that the rate of "suspect" results in the Denver test was 19 percent, while Ural Bayoğlu, Erdoğan Bakar, Kutlu, Karabulut, and Anlar (2007) found that the rate of children who had abnormal development according to the Denver test was 12.1 percent; Bayoğlu (2015) found that the results of the Denver II test in studies with different study groups might define developmental delays in rates varying between 6 and 25 percent. On comparing the results of earlier studies with the present study, it was thought that because this study was conducted in a disadvantaged region, the rate of children who did not have normal development was relatively higher.

The results indicate that the significant correlation between the results of both developmental tests was not consistent in the area of fine motor development, and 6.5 percent of children according to Denver II and 22.4 percent according to ADSI did not show normal development in the area of fine motor development. This result may have stemmed from the fact that the number of items in the area of fine motor development in ADSI was low, and when children were not able to pass even one of these items, their result would be considered deficient or delayed. Furthermore, it can be argued that the mothers' responses to evaluate their children's development were not consistent with the results of Denver II, which was administered by the researcher.

The results indicate that the significant correlation between the results of both developmental tests was not consistent in the areas of social skill–self-care and personal–social development and that 17.9 percent of the children according to Denver II and 8 percent of the children according to ADSI did not show normal development in the areas of social skill–self-care and personal–social development. This result may have stemmed from the fact that the researchers administrated the Denver II test by observing and/or applying the items, and/or the item of saying "his/her name and surname" in the Denver II test was not included in the ADSI test, and mothers waited until later ages before teaching this to their children.

The study found a statistically significant correlation between pre-school education being received by children and ADSI converted T-score means and that those receiving pre-school education had higher ADSI converted T-core means. There are other studies that support this result. In a study where Campbell, Ramey, Pungello, Sparling, and Miller-Johnson (2002) emphasized the importance of pre-school education in early childhood within the scope of a

project, they argued that attending pre-school had a critical impact on children who received pre-school education in both linguistic and cognitive terms and that pre-school education had more significant effects on children in families with low socioeconomic development. Similarly, in a study investigating the effects of daycare centers and kindergartens on cognitive development among disadvantaged children, Burchinal, Lee and Ramey (1989) found that receiving positive support and favorable environmental conditions affect children's cognitive development. In their study investigating the effects of pre-school education on creative thinking skills, Can Yaşar and Aral (2010) found that creative thinking skills were significantly more improved in children receiving pre-school education in comparison to children who did not. Similarly, studies investigating the linguistic development of children who did and did not attend a pre-school educational institution determined that linguistic development skills were significantly more improved in children receiving pre-school education compared to those who did not (Öztürk, 1995; Temiz, 2002; Taner & Asude-Başal, 2005). Considering that pre-school education is critical in the construction of personality characteristics and in ensuring children's transition to being healthy individuals by supporting all areas of development in children from early childhood to adulthood, this result was expected.

The results revealed that according to Denver II development results, children aged 37–48 months had the highest rate of abnormal development (33.3%), whereas according to ADSI development results, children aged 25–36 months old had the highest rate of abnormal development (32.4%). The tests did not yield a statistically significant relation between the children's ages and their Denver II results and ADSI converted T-scores. Table 16 demonstrates that the ADSI converted T-scores were statistically significantly higher among children aged 16 months compared with those aged 0–12 months, among children aged 25–36 months compared with those aged 61–72 months, among children aged 0–12 months compared with those aged 49–60 months, among children aged 13–24 months compared with those aged 61–72 months, among children aged 13–24 months compared with those aged 37–48 months, among children aged 25–36 months compared with those aged 49–60 months, and among children aged 25–36 months compared with those aged 61–72 months. When the relevant literature was reviewed, it was found that studies that presented developmental test results based on the distribution of children's ages were low in number. In a study that Şimşek et al. (2004) conducted with children aged 5 and below, they demonstrated that children aged 24 months and above got significantly higher scores in all areas except the area of gross motor development. Factors including increased interaction between children and those around them as they grow up, the gradual rise in their autonomy and desire to discover, and the growth of their developmental skills may be the reason for variations in development results and scores with age.

Conclusion and Recommedations

The results found in this study were as follows:

- The rate of children who did not show normal development was 19.4 percent based on ADSI results and 22.4 percent based on Denver II results. The mutual results of both developmental tests showed that 8 percent of the children did not have normal development.

- The results indicate that the significance between the results of both developmental tests was not consistent in the areas of fine motor development and social skill–self-care and personal–social development.
- There was no statistically significant relation between pre-school education being received by children and their ADSI converted T-score means. It was found that children with pre-school education had higher development scores.
- There was no statistically significant relation between children's ages and their Denver II results and ADSI converted T-scores. It was found that as children's age rose, their development scores increased as well.

The results revealed that children had abnormal development in every area of development in varying rates. Therefore, relevant institutions, organizations, non-governmental organizations, and members of professions need to work toward spreading awareness on this issue, and the development of children should be assessed and supported by developing early intervention plans.

It is believed that when all professionals who work with children, especially the healthcare staff at FHCs who offer primary healthcare services to families and children whose development is at risk, evaluate children together with those around them, specifically, their mothers—who take care of them in particular—instead of evaluating them alone, the evaluation will become more meaningful. Moreover, developing interventions not only for mothers but also for pregnant women and fathers and making home visits are thought to be pertinent for the development of children.

It is believed that when family physicians and the healthcare staff at FHCs consider health holistically and follow up with them in terms of psychosocial aspects while physically examining families and children, it will aid in supporting families and children. Establishing mobile teams at FHCs composed of child development experts, social service experts, and psychologists and sending these teams to make home visits to examine all family members, especially children, in the neighborhood are thought to be critical in making early interventions for families and childrenatrisk.

Increasing the number of Healthy Living Centers within the Directorate of Public Healthcare in cities working under the Public Healthcare Agency of Turkey and allowing child development experts, social service experts, and psychologists to work at these centers are thought to be essential in the holistic evaluation of families in a healthy way. Making parent schools more prevalent in neighborhoods; offering holistic training sessions to families in cooperation with institutions, organizations, and non-governmental organizations; and providing all families with these sessions as much as possible are thought to be useful measures. In addition to mothers, the attendance of fathers in schools that train parents on the development of their children is critical; therefore, fathers should be encouraged to take part in training sessions.

It is believed that informing parents about technological tools such as televisions, tablets, the internet, and personal computers and making them more aware of how these technologies might affect the development of their children are essential in the development of children as

well as in increasing intrafamily interaction. As television is a commonlyused communication technology, creating programs that support the development and education of children, providing informational content to families through television about the development of their child, and raising their awareness on activities that can support the development of their child are thought to be useful. Giving families the information that they should be a guide for their children and that they should not hinder their healthy social–affective development by fulfilling all their responsibilities are thought to be useful.

Increasing families' awareness of what they can do at home to support children's level of readiness to school is thought to be necessary. For this purpose, getting both children and families to adopt the habit of reading books at home, doing paintings, writing, and drawing activities and supporting children to communicate with those with whom they can form friendships are thought to be essential in supporting children's readiness to school. Staff and teachers working in pre-school education offering training sessions aimed at supporting the development of children and presenting these sessions regularly are thought to be useful in the development of children as well as for the healthy functioning of the family.

The results of the study revealed that children receiving pre-school education had higher developmental scores compared with students who did not. In this case, making pre-school education obligatory, supporting children through high-quality training programs, and thus, equipping children with a solid basis before they start school are thought to be more useful. It is of vital importance that the Ministry of National Education and municipalities establish more daycare centers and kindergartens in regions at risk and support the development of children through parent schools and high-quality training programs.

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