

PREDICTORS OF EXECUTIVE FUNCTION IN EARLY CHILDHOOD:
URBAN AND RURAL POVERTY

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ABSTRACT

PREDICTORS OF EXECUTIVE FUNCTION IN EARLY CHILDHOOD: URBAN AND RURAL POVERTY

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Executive function (EF) is an umbrella term of cognitive processes (working memory, inhibition, mental set shifting), which are important for achieving goal-directed behaviors. Several contextual and child factors influence EF development. Poverty is a risk factor for EF skills; however, the effects of urban and rural poverty might be different. The current study examined the differences in urban and rural poverty in terms of living conditions and parenting, EF differences in urban and rural poverty, and predictors of EF. The participants were 241 children and their mothers living in poverty. Children's EF was assessed via Corsi block tapping (visuospatial WM), forward and backward digit span (verbal WM), day-and-night (inhibition), and dimensional change card sort (mental set-shifting) tasks. The results indicated that urban and rural poverty differed in terms of the poverty level (i.e., income, education), home stimulation, neighborhood quality, and mothers' expectations about children's educational attainment, whereas they were similar in terms of parenting, conversations with children and mothers' beliefs about child development. The comparison of urban-

rural poverty in terms of EF showed that children living in urban and rural poverty were not significantly different in their EF skills. Moreover, children's age, duration of attending kindergarten, receptive vocabulary, and children's perceptual sensitivity were associated with children's EF; and urban-rural poverty interacted with mothers' positive parenting predicting children's verbal WM and mental set-shifting. The findings of the study are important for describing urban-rural poverty differences in Turkey, and the findings have implications for future studies.

Keywords: Executive Function, Poverty, Urban-Rural, Parenting



ÖZ

ERKEN ÇOCUKLUK DÖNEMİNDE YÖNETİCİ İŞLEV BECERİLERİNİN YORDAYICILARI: KENTSEL VE KIRSAL YOKSULLUK

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Yönetici işlev becerileri, çeşitli bilişsel beceriler (çalışan bellek, ketleyici kontrol ve zihinsel esneklik) için kullanılan genel bir terim olup amaç odaklı davranışlar için oldukça önemlidir. Çevresel veya bireysel faktörler yönetici işlev becerilerinin gelişimini etkilemektedir. Yoksulluk, yönetici işlev becerileri için bir risk faktörüdür; ancak, kentsel ve kırsal yoksulluğun etkileri farklı olabilmektedir. Bu çalışmada, yaşam koşulları ve ebeveynlik açısından kentsel ve kırsal yoksulluk farkları, kentsel ve kırsal yoksullukta yönetici işlev becerilerinin farklı olup olmadığı ve yönetici işlev becerilerinin yordayıcıları incelenmiştir. Katılımcılar, yoksulluk koşullarında yaşayan 241 anne-çocuk çiftidir. Çocukların yönetici işlev becerileri, Corsi iz sürme testi (görsel-uzamsal çalışan bellek), ileri ve geri sayı uzamı görevleri (sözel çalışan bellek), gece-gündüz görevi (ketleyici kontrol) ve boyut değiştirerek eşleme görevi (zihinsel esneklik) ile değerlendirilmiştir. Bulgular, kentsel ve kırsal yoksulluğun, yoksulluk düzeyi, ev ortamındaki uyaranlar, mahalle özellikleri ve annelerin çocuklarının eğitimi ile ilgili beklentileri açısından farklılaşırken; ebeveynlik, annelerin çocuklarıyla

sohbetlerinin içerikleri ve çocuk gelişimine yönelik inançları açısından farklılaşmadığını göstermiştir. Kentsel ve kırsal yoksulluk, yönetici işlev becerileri açısından karşılaştırıldığında, çocukların yönetici işlev becerilerinin anlamlı olarak farklılaşmadığı görülmüştür. Ayrıca, çocukların yaşları, anasınıfına devam etme süreleri, alıcı dil becerileri ve çocukların algısal hassasiyeti yönetici işlev becerileri ile ilişkili bulunurken; kırsal-kentsel yoksulluk, annelerin pozitif ebeveynliği ile etkileşime girerek görsel çalışan bellek ve zihinsel esneklik becerileri ile ilişkilidir. Bulgular, Türkiye’de kırsal ve kentsel yoksulluğun farklılıklarını tanımlaması açısından önemliyken, yönetici işlevlerle ilgili gelecekteki çalışmalara yön vermesi beklenmektedir.

Anahtar Kelimeler: Yönetici İşlevler, Yoksulluk, Kentsel-Kırsal, Ebeveynlik



To my parents

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CHAPTER 1

INTRODUCTION

Executive function (EF) is a concept that has been studied by many researchers from different disciplines. In recent years, there is an increasing interest in the concept of EF in developmental psychology literature. Although there is no published article between the years of 1981 and 1990, 642 articles have been published within the scope of developmental psychology between the years of 2011 and 2014 (Müller & Kerns, 2015). In the year 2019, 412 articles have been published that are associated with EF within the scope of developmental psychology according to the web of science records.

EF development is widely studied since EF skills are important for children's developmental outcomes in several domains. Specifically, children's EF skills positively influence children's school readiness (Blair, 2016; Fitzpatrick, McKinnon, Blair, & Willoughby, 2014), later academic achievement including reading and math skills (Ahmed, Tang, Waters, & Davis-Kean, 2018; Best, Miller, & Naglieri, 2011; Blankenship et al., 2019), and behavioral regulation (Vernon-Feagans et al., 2016). Additionally, EF skills are impaired in several clinical conditions such as attention deficit hyperactivity disorder (Martel, Nikolas, & Nigg, 2007), autism (Demetriou et al., 2018), and obsessive-compulsive disorder (Snyder, Kaiser, Warren, & Heller, 2015). Considering the role of EF in several developmental domains, it is important to understand how EF skills develop and determine the factors leading to variability in EF skills. The current chapter includes the definition of EF, the developmental processes of EF, and the contextual factors affecting EF development.

1.1 Executive Function (EF)

Although EF is a widely studied concept, researchers do not have a consistent or agreed definition of EF (Martin & Failows, 2010). In addition to the EF definition, they also disagree on the EF components, their associations, and the methodology used

to measure executive function. In this part of the chapter, different views on EF definition and EF components are summarized.

1.1.1 Definition of EF

There is not a consensus on the definition of EF, and researchers have used different definitions in EF studies in the literature. The term “central executive” was firstly introduced by Baddeley and Hitch (1974). However, the central executive was defined within the framework of working memory (WM), and it was thought as a “homunculus,” which was responsible for integrating the information coming from the phonological loop and visuospatial sketchpad (Baddeley, 1996). Later on, researchers utilized more comprehensive definitions of EF. For instance, Welsh, Pennington, and Groisser (1991) took a cognitive and neuropsychological view and defined EF as the goal-directed behaviors that included planning, systematic search, and impulse control. Then, Hughes and Graham (2002) reported that EF is an umbrella term involving a number of cognitive processes that are responsible for goal-directed behaviors.

Similarly, Best, Miller, and Jones (2009) also defined EF as the umbrella term of goal-directed cognitive components of the prefrontal cortex. Considering all the definitions, Martin and Failows (2010) concluded that the common thema among different definitions of EF is that it is associated with controlling actions of an individual. Additionally, Jurado and Rosselli (2007) examined various definitions of EF and concluded that EF is a complex and important term. EF is important for achieving goal-directed behaviors via structuring the thoughts, and it involves shifting mindsets in response to changing environmental conditions, inhibiting improper responses, making a plan, and complying with the plan until it is achieved. In a recent study, Blair (2016) defined EF in terms of its components and expressed that EF is the ability to keep information in WM, inhibiting impulsive responses, and flexibly shifting among mental sets, which are implying the conscious control over behaviors.

The development of EF skills has a biological basis. EF is related to the functioning of the prefrontal cortex (PFC; Anderson & Reidy, 2012; Hughes & Graham, 2002; Miller & Cohen, 2001). PFC receives information both from the external environment and internal emotional and autonomic states of the person; then, this information is processed in the PFC (Powell & Voeller, 2004). The coming

information is assessed as short-term and long-term goals based on their importance, and actions are planned accordingly. Different regions of the frontal lobe are important for distinct cognitive processes (Stuss & Alexander, 2000). Specifically, the dorsolateral frontal cortex is mainly associated with EF functioning (Alvarez & Emory, 2006). The dorsolateral prefrontal area has a role in the regulation and control of cognitive activities, attention, flexible cognitive set-shifting, and memory (Powell & Voeller, 2004). Additionally, the frontal cortex has associations with many cortical and subcortical brain regions. Brain imaging studies indicate that various brain areas, in addition to the frontal cortex, are activated, especially in response to complex EF tasks (Alvarez & Emory, 2006; Burgess & Stuss, 2017). The maturation of PFC takes longer since the axonal myelination in this region becomes slower (Fuster, 2002). Children's cognitive development occurs in parallel to the myelination of the cortical regions. Especially the maturation of the lateral regions of the PFC occurs later than the medial and orbital regions, and lateral regions are mainly involved in the EF functions.

1.1.2 Components of EF

In addition to the definition of EF, another uncertainty is related to the components of EF. In their review, Best and Miller (2010) argued that one of the main theoretical challenges regarding EF is whether EF is a unitary construct, or it is composed of several independent components. The first view argues that EF is a unitary construct, including subcomponents. To illustrate, Baddeley (1996; 1998) suggested the central executive as the main mechanism in the WM system, which resembled a little man in the head who was taking all the decisions. Central executive was controlling two slave systems: the phonological loop and the visuospatial sketchpad. Additionally, in his hybrid model of EF, Barkley (1997) considered response inhibition as the main mechanism which is important for other components like WM, affect regulation, internalization of speech, and reconstitution (analysis and synthesis of behavior). Within the scope of the first view, some researchers argued that EF could be reduced to a single construct, and it was not reducible to its components (Martin & Failows, 2010). For instance, Duncan, Emslie, Williams, Johnson, and Freer (1996) considered EF as a higher-order mechanism that is in charge of controlling

actions. Additionally, they argued that EF is associated with Spearman's general intelligence, which is reflecting the controlling functions of the frontal lobe.

Alternatively, other researchers argued that EF includes dissociable components (componential view). However, different researchers included different cognitive processes as EF components based on the factor analyses conducted on different samples. For instance, Mariani & Barkley (1997) included 4-5-year-old ADHD and community children in their study and conducted a factor analysis on several EF tasks. The results revealed a four-factor structure: Motor control, verbal learning-memory, picture recognition-factual knowledge, and working memory-persistence. In a further study, Barkley, Edwards, Laneri, Fletcher, and Metevia (2001) conducted a factor analyses on the data of 12-19-year-olds including an ADHD and community population and concluded that inattention, working memory, and inhibition were the components of EF. Additionally, Hughes (1998) tested the factor structure of EF tasks with preschool children and offered working memory, attentional flexibility, and inhibitory control as EF components. Later on, Brocki and Bohlin (2004) also conducted a factor analysis on the data of 6-13-year-olds who completed various EF tasks, and they concluded that disinhibition, speed/arousal, working memory/fluency were the components of EF.

Consequently, it seems that there is not a consensus on the components of EF, and it is a subjective decision to include which dimensions to include. In addition to the variability in the EF components, the associations between these components is also a controversial issue. For instance, the proponents of the componential view argued that EF included several components; and they might be related or not related to each other (Hughes & Graham, 2002). This approach focused on identifying the components of EF and exploring the associations among EF components. Identifying these components and associations is advantageous for several reasons. For instance, it helps to interpret the performances in different EF tasks and developing age-appropriate versions of tasks to measure a specific component of EF. Additionally, identifying these components is critical for differentiating different disorders that suffer from problems in EF and determining the specific problem areas (Hughes & Graham, 2002).

Another view regarding EF is the distributed view of EF. In their chapter, Martin & Failows (2010) summarized that EF is placed within and around all components, processes, and skill creating it rather than being a construct controlling

several cognitive functions. In this view, EF is argued to be also distributed on the social world; and this is the point in which the distributed view differed from the componential view, which is only emphasizing the cognitive processes. Accordingly, social factors are accepted as affecting EF skills. Similarly, studies are indicating the effects of various social factors that influence the development of EF skills. These studies examining the effects of social factors will be given later in this chapter.

Lastly, an integrative model was suggested by Miyake et al. (2000) as a unity and diversity model. They criticized the previous researchers who conducted factor analyses on the EF tasks to determine the components, and they offered latent variable analysis, which was a method that excluded the commonalities of different tasks and provided purer factors. In their latent variable analyses, which was conducted on the data of undergraduate students, they came up with three components: shifting (mental set shifting), updating (monitoring and updating WM), and inhibition (inhibiting prepotent responses). After determining these components, they examined the associations among them via Confirmatory Factor Analysis. They found that these three components were distinguishable from each other, but they were correlated to each other at a moderate level. Later, Lehto, Juujarvi, Kooistra, and Pulkkinen (2003) conducted the same analyses on data of 8-13-year-old children; and they also found WM, inhibition, and shifting components by supporting the factor structure of unity and diversity model of Miyake et al. (2000).

Although different researchers suggested various EF components, recent studies commonly use the components suggested by Miyake et al. (2000) as core EF components (i.e., Diamond, 2013; Garon, Bryson, & Smith, 2008; Kassai, Futo, Demetrovics, & Takacs, 2019; Rosen et al., 2019). Taking these components is favorable since these components can be measured via simple tasks (Miyake et al., 2000). Considering all these studies, WM, inhibition, and cognitive flexibility (mental set-shifting) were included in the current study; and they were defined in detail below.

1.1.2.1 Working Memory

WM is defined as the system, which is important for keeping the information in mind during complex tasks that require reasoning, comprehending, and learning (Baddeley, 2010). The most influential model of WM was suggested by Baddeley and Hitch (1974). In this model, the WM system included a central executive and two

storage systems: phonological loop and visuospatial sketchpad. The phonological loop is important for storing auditory information, whereas the visuospatial sketchpad is important for storing visual and spatial information. The central executive has a supervisory role and coordinates the information coming from these two storages. Then, they added episodic buffer to the model, which was responsible for storing the information as integrated chunks by linking WM components, perception, and long-term memory.

WM is derived from the concept of short-term memory (Baddeley, 2010); however, WM and short-term memory (STM) are different terms (Diamond, 2013). Specifically, STM is related to holding information in mind, whereas WM also requires manipulating that information such as relating that information with previously learned or later will be learned stimuli. Moreover, they load on different factors, and they rely on different parts of the brain; in other words, WM is associated with activation in dorsolateral PFC, whereas STM is not. Additionally, their developmental patterns also show differences; for instance, STM develops earlier.

The first appearance of WM emerges in the first year of infancy. For instance, in the delayed response task, which measures visuospatial short-term memory, infants can find a hidden object as early as six months after a delay, implying the appearance of WM (Reznick, Morrow, Goldman, & Snyder, 2004). When infants reach their first birthday, they can keep the information after long delays in time (Reynolds & Romano, 2016). After the age of two, children's WM is assessed through visual and auditory span tasks which require recalling the presented items (Garon et al., 2008). These tasks indicate that the memory span increases from 2-3 items at the age of 4 to approximately six items at the age of 12 (Gathercole, 1998).

Phonological memory skills develop throughout the early and middle childhood years, and this development occurs in parallel to the development of rehearsing (Gathercole, 1998). On the other hand, there is a substantial increase in children's visuospatial memory development between the ages of 5 and 11, which is closer to the adult level. The development of this skill is in line with the development of short-term memory system, phonological loop, and the central executive system. When the development of these two systems was compared in a sample of 7-15-year-olds (Isaacs & Vargha-Khadem, 1989), performance in visuospatial memory assessed via the Corsi Block Tapping Task, was developing behind the auditory memory assessed via Forward Digit Span task. However, the performance in visuospatial

memory was better than auditory memory when it was assessed via the Backward Digit Span task, which requires recalling the items in the reverse order. Similarly, Pickering, Gathercole, and Peaker (1998) examined verbal and visuospatial span tasks in children, and they found that children's performances in these tasks were not associated; therefore, they concluded that these two systems are separate from each other. Consequently, both visuospatial and verbal spans were included in the current study.

1.1.2.2 Inhibition

Inhibition is an ability to control attention, behaviors, emotions, and thoughts of a person despite the external or internal distractors and showing the appropriate actions (Diamond, 2013). More specifically, Barkley (1997) defined behavioral inhibition as the inhibition of a prepotent response (a response that has been associated with an immediate reinforcement), ceasing a continuing response, and having control over self-directed responses in response to competing events. For instance, controlling attention is important for selectively attending and focusing on a certain stimulus while suppressing other ones (Diamond, 2013). Likewise, cognitive inhibition involves suppressing unwanted mental representations (i.e., memories); and behavioral inhibition involves controlling behaviors against behaving impulsively.

The onset of response inhibition appears in the first year of life (Garon et al., 2008). For instance, children can stop an ongoing gratifying activity when they are told to stop. The most popular measure in preschool children is the delay of gratification paradigm (Mischel, Shoda, & Rodriguez, 1989). In the paradigm, the child is presented with an attractive toy/snack and asked to wait without playing/eating until the experimenter comes back to the room. If they wait, they get more of that desirable thing; if not, they take less of it. As children get older, they can wait for the long-term bigger rewards rather than immediate smaller rewards. For instance, 3-year-olds tend to choose immediate rewards, whereas 4-year-olds prefer to wait for the delayed rewards (Lemmon & Moore, 2007). The complex tasks of inhibition require children to inhibit a dominant response following a certain rule (Garon et al., 2008). For instance, in the Stroop task, children are presented with several words naming colors. Each word is written in ink, which is different than the written word implies. Then, children are asked to name the color of the ink by inhibiting their automatic

response to read it. Preschool versions of the Stroop task have been created by using shapes rather than words (i.e., Kochanska, Murray, & Harlan, 2000). For instance, in a Stroop-like task, the performances of 3-to-12-year-old children were examined, and Ikeda, Okuzumi, & Kokubun (2014) concluded that children performed better as they got older.

The period between the ages of 3 and 5 is important due to rapid development in these skills (Best & Miller, 2010; Garon et al., 2008). At the age of 4, children display successful performance in simple and complex response inhibition tasks. After this rapid improvement, the development becomes slower after age 5. Children's performance improves between the ages of 5 and 8, particularly in the tasks that require WM; after this age, the improvement in the inhibition skills becomes even slower (Best & Miller, 2010). The improvement of inhibition skills continues into adolescence; for instance, in a sample of 6-17-year-olds, their performances improved in the Stroop task in line with the increases in their ages (Leon-Carrion, Garcia-Orza, & Perez-Santamaria, 2004).

Inhibition tasks do not measure inhibition purely; rather, they also require WM (Best & Miller, 2010; Garon et al., 2008). Especially as the task becomes more complex, the requirement of WM increases since the child needs to keep the instructions in mind. Consequently, it was argued that WM and inhibition are highly correlated with each other, so they are not independent (Davidson, Amso, Anderson, & Diamond, 2006). On the other hand, performance in WM tasks also requires inhibition skills because inhibiting distractions is necessary for focusing on the stimuli that the person is working on (Diamond, 2013). However, when WM and inhibition requirements of the tasks were manipulated, variations in WM loads and inhibition did not interact (Beveridge, Jarrold, & Pettit, 2002). Therefore, they concluded that the effects of WM and inhibition are not dependent on each other; and they are not interdependent constructs. Likewise, Aron (2008) argued that these skills are mainly associated with separate but connected brain regions. In addition to these studies, Miller, Giesbrecht, Muller, Mclerney, and Kerns (2012) conducted a confirmatory factor analysis on EF tasks, and they reported that WM and inhibition are separate constructs. Consequently, these skills are not dependent on each other; however, it is difficult to separate working memory and inhibition in the EF tasks due to measurement issues.

1.1.2.3 Mental Set-Shifting

Mental set-shifting requires the ability to switch among the mental states, tasks, or rules in the cases of multiple tasks (Miyake et al., 2000). Set shifting includes both response shifting and attention shifting (Garon et al., 2008). Tasks that require a change in the motor response following a change in the rule are response shifting tasks, whereas tasks that include a change regarding the aspects of the stimuli are attention shifting tasks.

One of the simple tasks that could be considered as a response shifting task in infants is the A-not-B task (Piaget, 1954). In this task, a toy is hidden under the A-box, and the infants are expected to find it. After a few trials, the toy is hidden under the B-box, then children are expected to look for the toy under the B-box rather than the A-box. Clearfield, Diedrich, Smith, & Thelen (2006) indicated that infants could find the object in the B-box by the time they reach 7-8 months of age. As children get older, their performance improves in this task. For instance, Espy, Kaufmann, McDiarmid, & Glisky (1999) indicated that children performed better in this task between the ages of 23 and 66 months.

The most common task used in attention shifting is the Dimensional Change Card Sort task (Zelazo, 2006). In this task, children are asked to sort the given cards according to their colors (color game). After the color game, the rule of the game changes, and children are asked to sort the given cards according to their shapes (shape game; post-switch phase). Most of the 3-year old children correctly sort the cards in the pre-switch trials, and most of the 4-5-year-olds can pass the post-switch phase. In addition to these phases, a border version is also included, which is a mixed-phase integrating the previous two phases. In this version, only half of the 5-year-old children could succeed. Cross-sectional studies indicated that set-shifting skills continue to improve in later years after the preschool period.

WM and inhibition are necessary for mental flexibility because inhibiting the previous mental set and activating the new one (which requires WM) are needed for mental set shifting (Diamond, 2013). Therefore, it develops later than inhibition and WM. As these two components of EF develop, children perform better in more complex set-shifting tasks such as A-not-B task with multiple locations (Garon et al., 2008). Within the scope of set-shifting, attention shifting develops later than the response shifting. Children have difficulty in attention and response shifting tasks until

the end of their preschool years if the first mental set of the task is strong, or there is high conflict among the mental sets (Garon et al., 2008). In a study, Davidson et al. (2006) indicated that the development of cognitive flexibility continues until the adult years, and 13-year-olds' performance is not at the adult levels even when the memory requirements of the tasks are minimized. Similarly, Crone, Somsen, Zanolie, & Van der Molen (2006) compared, 8-10, 12-14, and 16-18-year-olds; and found that 16-18-year-olds performed better than others, whereas 8-10-year-olds performed poorer than the other groups. They also found that performance monitoring was effective for improving performance, and children could monitor their performance as they got older. Therefore, it seems that the set-shifting skills do not reach mature levels until the adult years.

1.1.3 Developmental processes of EF

Despite the rapid development in the early years of childhood, frontal lobes are the brain areas that develop later than other regions of the brain (Anderson & Reidy, 2012). The development of EF skills is parallel to the maturation of PFC, and the maturation of the PFC continues until the adult years (Powell & Voeller, 2004). Specifically, Zelazo and Müller (2002; pp. 445) stated that EF skills appear around the first year, and there are significant improvements in the EF skills between the ages of 2 and 5. Around the age of 12, children succeed in many tasks at the adult level; however, some of the EF skills continue developing until the adult years. For instance, abstract thinking abilities, predicting the results of actions in the long term, and handling the mentally complex information are reflecting the maturation of PFC in the adolescence period (Powell & Voeller, 2004).

The development of the attention system is critical for EF skills since the development of EF components are built upon this system (Garon et al., 2008). Selectively attending to certain stimuli and resisting the distractors are critical for a better EF performance. In parallel to the development of the anterior attention system, children have more control over their attention, and they become able to attend to stimuli for longer periods of time in the preschool years. Similarly, studies have shown that children who have attentional problems also experience problems in their EF skills (Friedman et al., 2007).

Studies on EF development mainly focus on the development in preschool years, and examine the changes in these skills across different ages (Best & Miller, 2010; Best et al., 2009). Firstly, WM emerges in the infancy period; and infants as young as 6-month-olds have WM skills to keep information in their memory, although more complex forms emerge around 15 months (Garon et al., 2008). Secondly, inhibition component of EF emerges around the second half of the first year of life; and around the age of 2, children can succeed in the tasks (i.e., Baby Stroop) that require coordination of the WM and inhibition skills such as keeping a rule in mind to inhibit a prepotent response. Set shifting is a more complex component since performance in set-shifting tasks requires both WM and inhibition skills. Successful performance in response shifting emerges in the first year of life (i.e., in the A-not-B task), whereas attention shifting emerges later around the age of 2-3 (i.e. in the Dimensional Change Card Sort task). Studies indicated that the development of inhibition mainly occurs in the preschool period, and the development becomes slower after that period (Best et al., 2009). On the other hand, WM and shifting show more linear developmental change continuing to adulthood.

Most of the skills that are necessary for the EF performance are appearing before the age of three such as having control over the attention, keeping the information in mind, inhibiting prepotent responses considering the given rules, and directing the attention flexibly and responding accordingly (Garon et al., 2008). The ages between 3 and 5 years are critical for EF development since children can coordinate the basic skills necessary for EF, and they can succeed in more complex tasks in this period (i.e., backward digit span task, day-and-night task, and Dimensional Change Card Sort task). With increasing age, children consider the benefits and costs of certain actions, then become more proficient in their control strategies, and they can adapt more easily to the demands of the changing tasks (Chevalier, 2015).

Consequently, although the growth of EF skills continues into adulthood, the preschool period is important for the development of EF skills since most of the developmental processes occur in this period. Considering that important improvements occur in the early childhood in EF skills, children's age was controlled in the analyses.

1.1.4 Assessment of EF

There are some problems regarding the measurement of EF skills. First of all, different EF components contribute to the performance in EF tasks at different levels, meaning that their effects are not homogenous (Miyake et al., 2000). For instance, although the backward digit span task mainly measures WM, it also requires inhibition skills. Additionally, task impurity is an important problem in the assessment of EF (Müller & Kerns, 2015). In EF tasks, it is difficult to determine whether the performance of participants is derived from EF skills or non-executive factors. Another limitation of EF tasks is their ecological validity. Since these tasks are novel to participants, it is questionable how the performance in these tasks reflect participants' real-life behaviors (Anderson & Reidy, 2012). As shown by neuroimaging studies, the internal consistency of EF tasks was argued as low since small changes in the administration of tasks were leading to a significant impact on the results (Burgess & Stuss, 2017). Additionally, test-retest reliability of the EF tasks is also problematic since participants get used to the requirements of the tasks; then, it is difficult to infer the performance to the EF skills (Müller & Kerns, 2015).

For children, there are other challenges regarding EF assessment. For instance, adult tasks are adapted to assess children's EF skills. Since adult tasks are complex tasks, it is critical to keep the relevant EF components when simplifying the adult tasks (Garon et al., 2008). Additionally, children might get tired during the assessments more easily as compared to adults; and their language skills might be limited to follow the requirements of the tasks (Anderson & Reidy, 2012). Therefore, it seems critical to use the tasks that are widely used to assess specific components of EF in the literature, and make sure that children are not getting too tired during the assessments, as well as controlling the language skills of children.

1.1.5 Predictors of EF

The mechanisms contributing to the development of EF skills show variability (Best & Miller, 2010). These changes might be either biological or environmental. In a longitudinal study conducted with twins from ages 17 to 23, Friedman et al. (2016) found that EF skills were highly stable, but somewhat change in the common EF (including all factors). Additionally, there was a high level of heritability in EF skills.

Consequently, the results indicated that most of the stability was due to genes, but the change in the EF skills was due to environmental factors, indicating that in addition to genes, environmental factors have a role in the EF development. Therefore, EF development is partly influenced by the environment. As a support of this view, several studies showed that EF skills could be improved through practice or training (Blair, 2016). For instance, in a study (Holmes et al., 2010), a training program was implemented to 8-11-year-old children with ADHD who had deficits in their WM. After the training for approximately 20 days, children's verbal and visuospatial WM skills improved significantly; and these improvements were maintained in the 6-month follow-up. In addition to WM, other dimensions of EF can also be improved. For instance, Dowsett and Livesey (2000) indicated that children's inhibition skills improved after a training program. In their meta-analysis, Kassai et al. (2019) reported that EF skills improved after training; however, training a single component was not transferred to untrained components of EF; then they suggested that training studies should include more than one component of EF. Considering all these studies, it might be argued that EF skills are not only dependent on genetic make-up; in fact, they are open to change through supportive contextual factors. In the literature, there are certain contextual factors that have been reported as contributing to EF development, such as culture, SES level of the family, parenting, and home quality. In this section, studies regarding the factors contributing to the EF development are explained in detail.

1.1.5.1 Child factors

Children's language skills are an important predictor of children's EF skills (Daneri et al., 2019). In a longitudinal study (Gooch, Thompson, Nash, Snowling, & Hulme, 2016), children's language skills (consisting of receptive and expressive vocabulary, sentence structure, and sentence imitation) was strongly associated with children's concurrent EF skills. Additionally, it was suggested that bilingualism provided an advantage to children's EF development; that is, bilingual children performed better in EF tasks, especially in the ones that required solving conflicting situations (Carlson & Meltzoff, 2008). In the current study, children's receptive vocabulary was included as a predictor of children's EF skills.

Children's temperamental characteristics also have a role in the development of EF skills. For instance, the positive emotionality of children was associated with

improved inhibition but poorer attention flexibility skills in highly disadvantaged groups (low-SES and high mental health problems in mothers) (Ku, Feng, Hooper, Wu, & Gerhardt, 2019). Additionally, children's inhibitory control temperament was positively associated with their inhibition EF skills (Morasch & Bell, 2011). Moreover, Raver et al. (2013) revealed that high reactivity was a risk factor for children living in high economic hardship conditions. In the current study, frustration -a type of difficult temperament- was included as a temperamental characteristic. In addition to frustration, we also wanted to test the role of perceptual sensitivity (Boyce & Ellis, 2005) since people with high perceptual sensitivity are more sensitive to environmental cues (Rothbart, Ahadi, Hershey, & Fisher, 2001), and they might be influenced differently from the urban versus rural poverty conditions. Recently, sensitivity to the environmental stimuli is studied within the scope of sensory processing sensitivity (SPS). SPS is a genetically-based trait that is associated with a sensitive nervous system; that is, these people have more awareness of the environmental stimulations (Aron, Aron, & Jagiellowicz, 2012). In the literature, studies reported that SPS was associated with greater internalizing problems (Botenberg & Warreyn, 2016), more symptoms of obsessive-compulsive disorder (Dar, Kahn, & Carmeli, 2012), and more selective eating in children (Farrow & Coulthard, 2012). In a study with preterm children (Adams, Feldman, Huffman, & Loe, 2015), high sensory processing was negatively associated with WM and inhibition. Consequently, high sensitivity to environmental cues has been found as a risk factor. On the other hand, there are studies reporting that perceptually sensitive children show better developmental outcomes in non-optimal environments such as self-concept (Ertekin & Berument, 2019), cognitive-language development (Okur, Güneş, & Berument, 2017), and attachment (Okur, Berument, & Bahtiyar Saygan, 2016). Therefore, considering these inconsistent findings, the role of perceptual sensitivity might be examined for children's EF skills. Consequently, anger/frustration and perceptual sensitivity were included in the current study to test their associations with children's EF skills.

Another characteristic of children leading to variability in EF performance is child gender. There are studies in the literature examining gender differences in EF. For instance, Klenberg, Korkman, & Lahti-Nuutila (2001) reported that girls performed better than boys in inhibition and selective attention than boys. In another study (Mileva-Seitz, 2015), it was reported that boys performed poorer than girls in

inhibition, whereas they did not differ in attention and WM. On the other hand, there are other studies reporting that there is not a difference among boys and girls in their EF skills (i.e., Ardila, Rosselli, Matute, & Guajardo, 2005; Hughes & Devine, 2019). In sum, studies testing the effect of gender on EF skills provide controversial findings.

1.1.5.2 Parenting

In addition to transmitting their genes, parents also contribute to their children's EF skills through non-genetic factors such as parenting quality (Deater-Deckard, 2014). In the early years of child's life, parents have an essential role to provide opportunities for social interaction to promote children's EF skills (Moriguchi, 2014). In this respect, parenting behaviors are important for children's EF development. There are various types of parenting behaviors that have been studied in the literature in relation to children's EF skills. In their review, Fay-Stammach, Hawes, and Meredith (2014) revealed that parental behaviors regarding scaffolding, stimulation, sensitivity, hostility, and behavioral control are associated with the development of EF skills in children. In a study, parenting behaviors consisting of maternal sensitivity, mothers' mind-mindedness, and autonomy support, and quality of father-child interactions were positively related to children's EF skills, including WM, inhibition, and set-shifting (Bernier, Carlson, Deschenes, & Matte-Gagne, 2012). Among these dimensions, especially autonomy support, was found as a stronger predictor of children's EF (Bernier, Carlson, & Whipple, 2010). In another study, Camerota and Willoughby (2019) reported that maternal sensitivity was positively, but maternal intrusiveness was negatively associated with children's EF development at the age of three. There are some other studies focusing on the effects of negative parenting dimensions on the EF development of children. For instance, parents' negative affect, their use of negative control, and conflict with children were reported as risk factors for children's EF skills (Hughes & Devine, 2019). In another study (Cuevas et al., 2014), mothers' failure to facilitate attention, physical stimulation, and displaying negative affect, and intrusiveness were associated with poor performance in preschool children. It was also argued that the effect of parenting might be different for children coming from different SES backgrounds. For instance, in a study (Rochette & Bernier, 2014), the effect of the positive parenting behaviors of mothers, such as response to the distress, response to positive signals, and physical proximity

on EF development, was more evident in the low-SES group rather than the high-SES group.

In addition to parenting quality, mothers' language capacity was also reported as an important factor for children's EF development (Daneri et al., 2019; Hughes & Devine, 2019). More specifically, the variety of mothers' words in their utterances and mean length of utterance were associated with better EF performances in their children. Moreover, mothers' depression levels had negative effects on children's EF skills (Hughes, Roman, Hart, & Ensor, 2013).

Therefore, in the present study maternal sensitivity and autonomy supporting behaviors as well as mothers' inductive reasoning were included as parenting dimensions to examine their effects on children's EF development

1.1.5.3 Home Environment

Quality of the home environment, including the availability of toys/books/puzzles, parents' book reading, teaching numbers and counting is positively associated with children's EF development including WM, inhibition, and cognitive flexibility (Hughes & Devine, 2019; Rosen et al., 2019). In a longitudinal study (Rosen et al., 2019), cognitive stimulation predicted children's growth in their inhibition and cognitive flexibility in the 18-month follow up; then, authors suggested that intervention studies should target cognitive stimulation to improve children's EF skills. On the other hand, in a study (Nathanson, Alade, Sharp, Rasmussen, & Christy, 2014), the effects of TV watching on preschool children's EF skills were examined. The researchers found that long hours of TV watching and starting to watch TV at earlier ages were associated with poorer EF skills. Since children have difficulty in extracting meaning from the TV content at an early age, it might be harmful to children's EF development. Therefore, activities in the home environment that provide cognitive stimulation are important for children's EF skills.

In addition to the positive effects of stimulation, disorganized and unpredictable conditions in the house have negative influences on children's EF skills (Hughes & Ensor, 2009). In an experimental condition, the effects of low and high levels of exposure to environmental stimuli were examined. Rodrigues and Pandeirada (2018) tested 8-12-year-old children's EF under the low and high-load visual environments, and they found that high-load environment (several visual stimuli in the

testing environment) negatively affected children's attention/inhibition and WM. Moreover, household chaos was reported as a mechanism that was responsible for the intergenerational transmission of EF skills of parents to their adolescent children (Brieant, Holmes, Deater-Deckard, King-Casas, & Kim-Spoon, 2017). Specifically, parent's low EF skills were associated with their children's low EF skills longitudinally in households, including higher chaos levels. Thus, household chaos might be a risk factor for children in terms of the transmission of poor EF skills from parents. Therefore, the current study examined the roles of stimulation and chaos in the home environment in the development of EF.

1.1.5.4 Neighborhood

In addition to household chaos, neighborhood chaos also has an influence on the EF development of children. For instance, St. John and Tarullo (2019) found that neighborhood chaos (i.e., unsafe, high levels of drug activity) mediated the association between SES and children's WM and inhibition skills. More specifically, when there were higher levels of neighborhood chaos, children from higher SES families performed better than children from lower SES families. Therefore, it seems that children from low-SES families have problems in dealing with the stresses of high neighborhood chaos; and low neighborhood quality might be a risk factor for their EF development. Considering these studies, in the present study the role of neighborhood quality in the EF development of children was also tested.

1.1.5.5 Schooling

In the literature, the positive effects of schooling on EF development have been reported in a number of studies (i.e., Ponitz, Rimm-Kaufman, Grimm, & Curby, 2009). Specifically, Burrage et al. (2008) reported that children who were attending kindergarten performed better in the WM task compared to the same age children who were not attending kindergarten. Kindertartens provide certain advantages for children, such as stimulating materials and activities (La Paro et al., 2009), and these activities lead to an improvement in children's development (i.e., language, social skills) (Burchinal et al., 2008; Burchinal, 2018). There is also evidence that schooling leads to improvements in the neurocognitive development of children and fosters

children's cognitive development, including EF (Baker, Salinas, & Eslinger, 2012). Considering the positive effects of schooling, the duration of attending kindergarten was controlled in the analyses of EF.

1.1.5.6 Culture

The culture in which children have raised influences children's EF skills due to the differences in the socialization processes (Jaramillo et al., 2017). For instance, parents from individualist cultures use more authoritative parenting and value child autonomy, whereas parents from more collectivist cultures use more authoritarian parenting and value child obedience, cooperation, and inhibition of personal needs (Rudy, Grusec, & Wolfe, 1999). In line with these parental expectations, children from Asian cultures have better EF skills compared to children in Western cultures due to differences in the child-rearing styles. For instance, when Chinese and US children were compared, Chinese children performed better in the EF tasks (Sabbagh, Xu, Carlson, Moses, & Lee, 2006; Schmitt et al., 2019). In another study comparing the EF skills of Chinese and American preschoolers (Lan, Legare, Ponitz, Li, & Morrison, 2011), Chinese children performed better than American children in inhibition and attention tasks, whereas they did not differ in WM tasks. Moreover, children from Korea (Oh & Lewis, 2008) and Hong Kong (Wang, Devine, Wong, & Hughes, 2016) performed better than English children in their EF skills. There are also studies reporting non-significant differences across countries. To illustrate, Moriguchi, Evans, Hiraki, Itakura, and Lee (2012) found that Japanese and Canadian children were not different in their mental set-shifting skills. Considering these studies, it seems that culture in which children are raised is likely to have an impact on their EF development.

1.1.5.7 Socioeconomic Status (SES)

Socioeconomic status (SES) of the family has also found to be related to the EF development of children (Aran-Filippetti & Richaud de Minzi, 2012; Dilworth-Bart, 2012). In a meta-analysis (Lawson, Hook, & Farah, 2014), the association between SES and EF was found as small-to-medium in the effect size. More specifically, as parents' education and income levels increased, children performed

better in EF tasks (Ardila et al., 2005; Hackman, Gallop, Evans, & Farah, 2015). Additionally, there are studies comparing the EF skills of children from different SES levels. In a study, when the performance of low and middle SES children (Farah et al., 2006) were compared, children from low-SES families displayed worse performance in WM and inhibition tests than middle-SES children. Similarly, children from middle and high-SES families performed better in EF tasks compared to children from low-SES backgrounds (Aran-Filippetti & Richaud de Minzi, 2012; Rochette & Bernier, 2014). Therefore, children living in low-SES families are at risk for the development of EF skills.

Ursache and Noble (2016) explained the role of SES on EF development through white matter structure in the brain; and they reported that SES level of the family was associated with integrity and volume in the white matter in specific brain regions (i.e., right parahippocampal cingulum, left superior corticostriatal tract in frontal cortex) which are involved in EF functioning. They also reported that low levels of white matter volume were related to poor performance in cognitive flexibility, especially in low-SES children. Thus, it seems that the SES level of the family might modify the cognitive functioning of children and living in a low-SES family might be a risk factor for EF development.

In sum, adverse life conditions such as living in low-SES families, poor parenting and low home environment quality are associated with low level EF skills in children. One adverse condition incorporating all these negative life events is poverty. There are several studies indicating that poverty is associated with low EF skills in children (Raver et al., 2013). In the following section, the definition of poverty, the differences between urban and rural poverty, risk factors associated with poverty, and the relation of poverty with EF development are provided in detail. Moreover, both poverty and low-SES studies are given in the following sections. Since SES is described in terms of income, education, and occupational status (Bradley & Corwyn, 2002), low income, education, and occupational status are considered as low-SES. Therefore, people living in poverty can be considered as being low-SES; so, these terms are used interchangeably hereinafter.

1.2 Poverty

Poverty has been considered as economic deprivation, indicating the insufficiency of the purchasing power of people (Akindola, 2009). Although determining the poverty level is important, it is difficult to determine the criteria to consider the people living in poverty. Previous studies used unidimensional methods (based on a single measure) in order to determine the poverty level, and they mainly utilized income in this assessment (Alkire & Foster, 2011). Therefore, income level is considered as the official poverty threshold (Cook & Frank, 2008), and it has been widely used to determine the poverty level in research (i.e., Evans & Schamberg, 2009). However, income-poverty has been criticized due to its overlooking to the nature of poverty and misleading the identification of poor people (Saith, 2005; Wagle, 2002).

Recently, many researchers utilized the multidimensional view of poverty (Bourguignon & Chakravarty, 2019). In this view, poverty is associated with capabilities and functioning in multiple domains, and the well-being of people living in poverty exceeds the effects of the income level (Duclos, Sahn, & Younger, 2006). Therefore, people living in poverty experience multiple deprivations, and it is suggested to measure multiple indicators assessing different dimensions of poverty (Alkire & Foster, 2011; Ravallion, 2011). For instance, in their Multidimensional Poverty Index (MPI), Alkire and Santos (2014) included three dimensions and ten indicators of poverty: health (nutrition, child mortality), education (years of schooling, and school attendance), and living standards (cooking fuel, sanitation, water, electricity, assets). In the literature, there are studies examining the determinants of poverty by interviewing people, and the results are supporting the multidimensionality of poverty. In a study conducted in Nigeria, Akindola (2009) reported that in addition to income, people experience various kinds of deprivation regarding meeting the basic needs (i.e., having safe drinking water) and participation in social and economic activities in the society such as education and health care.

In the multidimensional view, many researchers aggregate scores of multiple indicators and use a single score. However, this method has problems since a deprivation in one area (i.e., education) may not compensate a deprivation in another area (i.e., unemployment); therefore, each deprivation has a distinct feature (Alkire & Foster, 2011). Considering the studies reported above, it can be suggested that

assessing only one indicator of poverty seems insufficient to capture the whole picture of the living conditions of poverty. For instance, Duclos et al. (2006) reported that the correlations of income and other welfare variables (i.e., nutrition, household assets) are weak.

Moreover, the rates and the stability of different poverty indicators might be different across countries. For instance, material hardship has been reported as more stable than income poverty in European countries (Bossert, Chakravarty, & D'Ambrosio, 2013). Additionally, differences existed among European countries in their reliance on different indicators of poverty. Specifically, European countries differ in terms of the rates of income poverty and material hardship levels. In the United States, a statistical report of food insecurity revealed that not all the households below the official poverty line (based on income) were suffering from food insecurity; on the other hand, there were households suffering from food insecurity although they were above the poverty line (Coleman-Jensen, Rabbitt, Gregory, & Singh, 2019). One of the sectors leading to differences in poverty is agriculture. Although the contribution of agricultural activities to the income level of the families is limited (Zezza & Tasciotti, 2010), these activities are effective in reducing poverty levels of the poorest people, especially in poor countries (Christiaensen, Demery, & Kuhl, 2011). Specifically, agricultural activities improve the food insecurity of the households and health conditions through providing access to cheaper and nutritious food (Alexandratos, 2005; Aliber & Hart, 2009; Zezza & Tasciotti, 2010). Therefore, these differences across and within countries indicate that poverty needs to be measured through multiple indicators.

Children are the most vulnerable group to be affected by poverty; therefore, determining the poverty conditions that influence children is necessary (Lipina, Simonds, & Segretin, 2011). Although income has been used as the main criterion of poverty in various studies, the income level is not enough to capture the conditions that might affect the developmental needs of children living in poverty. For instance, a study conducted on 15 countries from Africa showed that children from poor families had higher levels of malnutrition compared to children from wealthier families (Fotso, 2006). Especially in child poverty research, a multidimensional approach has been suggested (Minujin, Delamonica, Davidziuk, & Gonzalez, 2006). Lipina et al. (2011) proposed various child poverty indicators such as exposure to toxic agents, nutrition,

having access to safe drinking water and medical care to use in poverty research to examine their effects from a developmental viewpoint.

1.2.1 Urban and Rural Poverty

Urban and rural regions differ in terms of the opportunities and living conditions. First, the definition of rural is necessary. The differentiation of urban and rural depends on the nature of economic life and the concentration of the population (Alemdar, Demirdöğen, & Ören, 2012). For instance, agriculture is the main source of economy in rural regions. Additionally, the settlement of the population is more dispersed and far from urban life. People living in poverty are more concentrated in rural regions. Therefore, people living in rural regions are more likely to be poor compared to people living in urban regions (Weber, Jensen, Miller, Mosley, & Fisher, 2005). This situation also applies to the conditions in Turkey, meaning that poverty is more prevalent in rural regions (Alemdar et al., 2012). Although most of the poor people are still living in rural regions, poverty is also becoming a problem of urban regions (Ravallion, Chen, & Sangraula, 2007). However, there are regional differences in the rates of urban and rural poverty across populations; that is, most poor people are living in urban regions in Latin America, whereas, in East Asia (i.e., China), the majority of poor are living in rural regions.

Although poverty is associated with many risk factors for children's development, experiencing urban and rural poverty creates differences in child outcomes due to differences in living conditions. In general, people living in urban regions engage in manufacturing, administration, and service activities, they have higher education levels than the average, they have easier access to services and information, they have low fertility and mortality rates, they are more liberal or radical in their political views, and their ethnicities are more variable (Champion & Hugo, 2017). On the other hand, people living in rural regions have occupations related to agriculture and primary industry, they have lower education levels than the average of the nation, they have low levels of access to services and information, they have high rates of fertility and mortality, they are more conservative and not open to changes, and the ethnicity of the people is more homogenous. On the other hand, in rural regions, people have more food security (Garasky, Morton, & Greder, 2004), and there are stronger relationships (Pinderhughes et al., 2001). Additionally, urban and rural

poverty differ in terms of socioeconomic inequality; that is, there is more inequality in urban regions in terms of reaching sufficient nutrition for children compared to rural regions (Fotso, 2006). Additionally, poor people living in urban regions perceive themselves as healthier than poor people living in rural regions, although they are not different in terms of their reports of depression and happiness (Amato & Zuo, 1992). In a study (Matthews, Taylor, Sherwood, Tucker, & Limb, 2000), interviews were conducted with teenagers living in rural regions, and they reported feeling isolated from the village life, powerless, and bored. They were having difficulty meeting their needs in the village, reaching services and public transportation. Similarly, in Turkey, the problems of urban and rural regions differ. In urban regions, the physical and social welfare needs cost more, that is, the transportation, health services, and the rents for the houses are more expensive as compared to rural regions (Alemdar et al., 2012). Moreover, crime rates, inequality, and unfavorable environmental conditions lead to more stress in urban regions. On the other hand, in rural regions of Turkey, people deal with the problems regarding inadequacy in infrastructure and services and being unable to reach the resources.

Parents living in urban and rural regions have differences in their demographics. For instance, mothers living in rural regions have low-income levels (Roscigno, Tomaskovic-Devey, & Crowley, 2006), less education (Lampard et al., 2000, pp. 443), and they work longer hours despite limited gains of money (Vernon-Feagans, Gallagher, & Kainz, 2010, pp.166). Parenting behaviors also differ in urban and rural regions. Rural parents are more intrusive (Bornstein et al., 2008) and punitive, restrictive and authoritarian (Lampard et al., 2000, pp. 443) than urban mothers, and they are more likely to have harsh interactions with their children (Pinderhughes et al., 2001). Additionally, rural parents believe in gender stereotypes, underestimate their role in children's development, and predict the developmental milestones of children later than the actual developments compared to urban parents (Lampard et al., 2000). Moreover, rural parents make fewer investments in the education of their children than urban parents (Roscigno et al., 2006).

In terms of neighborhood characteristics, rural regions have higher residential stability, and more social networks, whereas urban regions are more dangerous (Pinderhughes et al., 2001). In addition, compared to urban regions, opportunities for education are also limited in rural regions. In rural regions, access to resources is limited due to the distance from the urban areas, they are not attractive for high-

qualified teachers, and educational buildings have a low quality (Vernon-Feagans et al., 2010, pp.163).

Furthermore, despite some advantages of the urban regions, there are also disadvantages of urban poverty life, such as poor environmental conditions, high crime incidences, and inequality. Considering all these findings, it seems that people experiencing poverty are faced with different kinds of problems in urban and rural regions. Therefore, assessing poverty in terms of income only leaves out important contextual factors (Alemdar et al., 2012). Thus, in order to understand the living conditions of urban and rural poverty, a multidimensional assessment of poverty is necessary.

1.2.2 Poverty and Risk Factors

Poverty conditions bring various risk factors that negatively affect children's development. Children living in poverty experience various familial problems such as violence, unstable and chaotic conditions, poor parenting quality; they have less opportunity for access to cognitively stimulating materials and activities such as having access to books; they are more likely to experience exposure to polluted water and air, and they live in more dangerous and unhealthy neighborhoods; and they are more likely to attend to poor quality schools (Evans, 2004). Therefore, children who are living in poverty experience poorer developmental outcomes. For instance, children whose families live below the poverty line based on their income levels show lower school achievement; and the risk is bigger if they were exposed to poverty in their preschool or early school years (Brooks-Gunn & Duncan, 1997).

First of all, poverty is a risk factor for the quality of the home environment. Since families in poverty have low income, the low-income level of the family reduces the quality of home learning environments of children through fewer opportunities for stimulating toys and materials (Votruba-Drzal, 2003). In addition to income levels, parents' education levels are positively associated with their provision of providing a home literacy environment (i.e., playing games related to math concepts, teaching literacy skills, reading books) to their children (Foster, Froyen, Skibbe, Bowles, & Decker, 2016). Although fathers also engage in stimulating activities with their children, mothers engage in these activities more frequently than the fathers do. Therefore, low education levels of mothers might be a risk factor for providing a

stimulating home environment. In addition to the risk of a stimulating home environment, households in poverty suffer from chaotic home conditions. Chaotic households lack routine and predictability, and they are less structured, crowded, and noisier (Evans, Gonnella, Marcynyszyn, Gentile, & Salpekar, 2005). Chaotic conditions are stressful for parents, and it decreases their parenting quality. On the other hand, chaotic environments lead to overstimulation for children, and strategies to this overstimulation might lead to difficulties for picking the beneficial stimuli in the environment (Matheny, Wachs, Ludwig, & Phillips, 1995). Therefore, household conditions of poverty might be disadvantageous for children's development due to low levels of stimulation and higher levels of chaos.

Another area that poverty has a negative impact is the parenting quality. Living in poverty is a risk factor for parenting quality (i.e., responsiveness) (Evans, Boxchill, & Pinkava, 2008). Specifically, poor parents use physical punishment more frequently, they are less responsive to the needs of children and less likely to provide a high-quality learning environment, and they are more protective against the risks (i.e., drugs) (Magnuson & Duncan, 2002, pp.115). Although poverty is a risk factor for parenting, there are poor parents who are warm, responsive, and capable of providing a learning environment for their children (Magnuson & Duncan, 2002, pp.116). Therefore, some parents might be resilient to poverty conditions. Stresses deriving from the poverty conditions and inadequate social network might explain the mechanisms leading to poor parenting quality (Evans et al., 2008). In a qualitative study (Russell, Harris, & Gockel, 2008), mothers experiencing poverty reported the poverty conditions as hindering their parenting quality since it required a struggle to deal with the stresses of poverty; their depression due to these stresses were damaging their parenting quality and leading to self-doubts regarding their capacity of parenting. In addition to these mechanisms, it was reported that parents from low-SES backgrounds were more likely to report adverse childhood experiences, and these experiences were leading to parenting distress. Rather than the direct effect of poverty, impaired parenting quality due to stressful poverty conditions affects children's development (La Placa & Corlyon, 2016). On the other hand, parents who are warm, who have high expectations and provide children clear rules and routines, might protect their children against the negative influences of poverty (Perkins, Finegood, & Swain, 2013). A study conducted in Turkey compared the parenting of both low educated (at most secondary school education) and high educated (at least high school

education) mothers living in urban/metropolitan and low-to-middle educated mothers living in rural/Anatolian cities (Nacak, Yağmurlu, Durgel, & van de Vijver, 2011). Highly educated mothers living in urban regions were displaying obedience demanding and punitive behaviors towards their children less frequently, expecting their children to attain self-regulation, social, cognitive, and physical developmental skills at earlier ages, and they had houses with more learning materials for children compared low-educated rural mothers. On the other hand, low-educated urban and rural mothers were similar in their parenting behaviors (obedience-demanding, punitive, warmth, inductive reasoning, permissive, and cognitive stimulation), and most of the developmental expectations (self-regulation, obedience, autonomy, self-sufficiency, social, cognitive, and physical development), in addition to learning materials in the home environment. However, rural mothers were expecting their children to attain family-oriented behaviors (i.e., visiting grandparents) and traditional/moral values at earlier ages, and having a healthier physical environment compared to low-educated urban mothers. All mothers were similar in their parenting behaviors related to warmth, inductive reasoning, and cognitive stimulation. Considering this study, it might be suggested that low-educated urban and rural mothers in Turkey share many ideas and behaviors regarding children's development.

Moreover, in a broader context, poverty is associated with living in low-quality neighborhoods. Living in a disadvantaged neighborhood involves certain risks that affect children. For instance, neighborhood disadvantage and violence were associated with more physical aggression of parents towards their children (Molnar, Buka, Brennan, Holton, & Earls, 2003). In a comprehensive model, Kohen, Leventhal, Dahinten, and McIntosh (2008) examined the pathways that the neighborhood affects children's development. Disadvantaged neighborhoods were associated with less cohesion in the neighborhood (less social support from the neighbors), and it was leading to maternal depression and family functioning (conflict among the family members). Mothers' depression and poor family functioning were associated with negative parenting (less consistent and more punitive) and poor stimulation in the home environment, which were also negatively affecting children's language and behavioral development.

In sum, poverty is associated with various risks regarding home and neighborhood quality, and parental expectations and behaviors, and these risks vary in accordance with whether families are living in urban and rural regions. It seems

important to identify which specific factors are associated with children's EF development in urban and rural regions.

1.2.3 Poverty and Executive Function

There are several studies indicating the negative effects of poverty on children's EF skills. In a review of 31 studies, poverty (i.e., education, income, occupation) has been reported as being associated with problems in executive function and attention skills (Fry, Langley, & Shelton, 2017). Moreover, it is shown that longer durations of experiencing poverty is associated with poorer EF skills in preschool children (Raver et al., 2013). The effect of living in low-SES has been supported by electrophysiological recording. For instance, Kishiyama, Boyce, Jimenez, Perry, and Knight (2008) reported that the prefrontal function of low-SES children was altered compared to high-SES children; in other words, attention-related activity was reduced in low-SES children. Additionally, Merz, Wiltshire, and Noble (2018) reported that disadvantaged families have to deal with various stressors (i.e., financial hardships, chaotic and noisy houses); and these stressors result in the disruptions of the functioning of PFC.

1.2.3.1 Theoretical Model for the Role of Poverty on EF

The theoretical basis of the role of poverty on EF development has been explained through experiential canalization (Gottlieb, 1997). According to experiential canalization, development is determined by the interactions of biology and experience. Poverty is a context whose effects on development could be explained via experiential canalization. In poverty, children are thought to have limited access to resources; however, experiential canalization argues that there are alternative sources of stimulation in these contexts that shape children's development (Blair & Raver, 2012a). Adverse conditions such as poverty lead to changes in neural and genetic processes resulting in changes in behaviors and cognitions (Blair & Raver, 2012a). These changes might not be desirable; rather, they are adaptive in those contexts. For instance, in disadvantaged environments with limited resources, highly reactive responses are adaptive to obtain those limited and currently available resources to ensure the survival of the person before they disappear (Blair, Raver, & Finegood,

2016; Miller & Chen, 2013). It is achieved through changing the physiology of the person, that is, stress physiology of the person is calibrated to fit the behaviors to the context (Blair, Raver, & Finegood, 2016). These reactive behaviors are associated with the benefits in the short-term, although they bring long-term costs. Smoking and obesity have been reported as consequences of this kind of strategy (Miller & Chen, 2013). There are several studies indicating these calibrations to environmental conditions. To illustrate, Blair and Raver (2012a) reported that poverty conditions lead to changes in the HPA-axis functioning, which is then associated with more reactive responses to threats; and these rapid reactions are adaptive, especially in unsafe environments. Within the scope of EF development, Blair et al. (2011) reported that poverty was associated with low positive parenting, which then led to changes in the cortisol levels; and finally leading to poor EF skills of children. On the other hand, in positive environments, changes in the stress physiology make individuals more reflective of the possible responses leading to more planned behaviors; and these behaviors bring benefits in the long-term (Blair, Raver, & Finegood, 2016). Therefore, adverse environments can lead to long-term problems in executive function. However, in these environments, positive experiences such as parenting and home environment quality might buffer the negative influences of these contexts on children (Blair & Raver, 2012b).

There are also studies indicating that some negative experiences might be advantageous for certain developmental domains. For instance, people who are coming from a stressful background (i.e., violence) might perform better in the detection, learning, and memory-related skills when the conditions show similarity to their background lives (Frankenhuis & de Weerth, 2013). Similarly, studies indicating that maltreated children have changes in the neural systems (i.e., HPA functioning), and they are more sensitive to the detection of angry faces (i.e., Pollak, 2008). In a study examining the effect of childhood adversity on EF skills, Mittal, Griskevicius, Simpson, Sung, and Young (2015) reported that childhood adversity (unpredictable, harsh environment) negatively affected inhibition; however, it positively affected shifting skills under the condition of uncertainty. Therefore, adverse life experiences may not impair the overall cognitive abilities, yet, it might improve certain skills for a better adaptation. Thus, investigating the development of EF in varied risk contexts would contribute to our understanding of which specific contextual factors contribute to the development of EF skills. In the following section, studies on the association

between poverty-related factors (i.e., parenting, home environment, and neighborhood) and children's EF are reported.

1.2.3.2 Poverty Related Risk Factors Affecting EF

In this section, we will specifically focus on the associations between poverty and EF. In their review, Hackman, Farah, and Meaney (2011) reported that prenatal factors (i.e., maternal stress), parent-child interactions, and cognitive stimulation are the SES related factors that constitute risks for the development of cognitive skills such as EF. In a longitudinal study, Blair et al. (2011) indicated that ethnicity, income-to-needs ratio affected children's EF through negative parenting; maternal education and ethnicity affected children's EF skills through positive and negative parenting. In addition to parenting dimensions, living in adverse households (based on the number of people in the house, safety, and noise level) was negatively associated with children's EF. Similarly, Sarsour et al. (2011) showed that the SES level of the family affected children's inhibition and WM skills through parents' responsivity, enrichment activities in the home, and parental involvement. In a low-SES and non-urban sample, Rhoades, Greenberg, Lanza, and Blair (2011) indicated that maternal stress/depression was negatively, and income level and children's vocabulary was positively related to children's EF skills. In sum, especially parenting behaviors and the quality of the home environment seem critical for the development of EF skills of children living in poverty.

Due to the differences in living conditions, children living in urban and rural poverty show differences in their development. There are studies comparing cognitive functioning in urban and rural regions. In a study examining the cognitive impairment (dementia) of 55-to-79-year-old adults living in urban and rural regions, Nunes et al. (2010) reported that cognitive impairment was higher in rural regions. Studies are limited in terms of the comparison of executive function skills in urban and rural regions. To illustrate, Tine (2014) compared the working memory skills of 10-to-12-year-old children living in urban and rural regions. WM difference in urban and rural children was not present for high-income families. However, in the low-income condition, rural children performed better in verbal WM and performed poorer in visuospatial WM compared to urban children. The author argued that children from rural poverty have asymmetrical weaknesses in WM, whereas children from urban

poverty showed a symmetrical weakness in WM. On the other hand, another study conducted with preschool children did not find a significant difference in WM performance among urban and rural children (Rojas-Barahona, Förster, Moreno-Rios, & McClelland, 2015). Moreover, in a study conducted with adult participants, Gupta et al. (2011) compared adults' EF skills living in urban and rural regions and found that people living in urban regions performed better in their EF skills. Therefore, the findings in the literature are contradictory in terms of the effects of urban and rural poverty, and further studies are needed to clarify their effects on EF development. Therefore, the current study compared urban and rural poverty in terms of children's EF skills.

1.3 The Current Study

As mentioned before, poverty is associated with various risks in terms of the quality of the home environment, parenting, and neighborhood quality (Evans, 2004), and previous studies indicated that they are important for children's EF development (Fay-Stammbach et al., 2014; John & Tarullo, 2019; Rosen et al., 2019). Although children's EF skills appear in their first year, certain skills mature in adulthood; however, there is rapid development in EF skills, especially between the ages of 2 and 5 (Powell & Voeller, 2004; Zelazo & Müller, 2002). Accordingly, experiencing poverty in this period might be disadvantageous for children's EF skills. Although poverty is a risk factor for children's EF, urban and rural poverty differ in terms of various aspects. Previous studies indicated that, in rural regions, poverty is more prevalent (Weber et al., 2005), people have lower education levels (Champion & Hugo, 2017), and parents make less investment in their children's education (Roscigno et al., 2006), but relationships are stronger (Pinderhughes et al., 2001) compared to rural regions. On the other hand, in urban regions there are more resources in the home environment (Nacak et al., 2011) and neighborhood (Champion & Hugo, 2017) despite higher crime rates (Alemdar et al., 2012). Moreover, it is reported that parents show poor parenting quality toward their children in rural regions (Bornstein et al., 2008). However, a study conducted in Turkey indicated that low-educated urban and rural mothers were highly similar in their parenting behaviors and their expectations for children's development, such as reaching developmental milestones despite few differences (Nacak et al., 2011). It is obvious that living conditions are different in

urban and rural poverty, including the factors that contribute to the development of children's EF. Therefore, their roles in the development of children's EF skills might be different. Consequently, the current study included the poverty level of the family, home and neighborhood quality, and parenting to examine their associations with children's EF. Moreover, considering the previous studies, children's language skills (i.e., Daneri et al., 2018) and temperamental characteristics (Raver et al., 2013) were also included as child-related factors affecting children's EF. Considering the positive effects of schooling on children's EF (Ponitz et al., 2009), and the rapid development of EF skills in early childhood (Garon et al., 2008), the duration of attending kindergarten and children's age were included as control variables in the current study,

The first aim of the study was to compare the living conditions in urban and rural poverty in terms of poverty indicators (income level, food insecurity, material hardship, and parents' education level), home environment quality (stimulation and chaos), neighborhood characteristics (the social and physical structure of the neighborhood, support from neighbors, physical resources, and neighborhood stress), and mothers' parenting quality (i.e., sensitivity, inductive reasoning, and autonomy support). Moreover, in addition to the mothers' expectations for their children's educational attainment, two open-ended questions were included to examine mothers' beliefs on child development and their conversations with their children. Since studies are limited in terms of defining the differences in urban and rural poverty in Turkey (i.e., Alemdar et al., 2012; Nacak et al., 2011), it is necessary to clarify these differences. Identifying these differences are quite important in the current study to interpret the roles of urban and rural poverty in children's EF.

The second aim of the study was to compare children's EF skills who were living in urban and rural regions, after controlling for their ages, and the duration of kindergarten attendance.

The third aim of the study was to examine the interaction of urban and rural poverty with the poverty level of the family, parenting quality, home environment, neighborhood quality, and children's temperament on children's EF development. Hereby, it was aimed to identify whether the roles of these factors differ in urban and rural contexts to affect children's EF.

It was hypothesized that:

1. Urban and rural regions would differ in their living conditions in terms of poverty level, home and neighborhood quality, parenting behaviors, and beliefs. Specifically:

1.a. The poverty level would be different in urban and rural regions. More specifically, the income-to-needs ratio, education levels of parents, and food insecurity would be higher in urban regions. However, the difference in material hardship would be exploratory since previous studies did not test this comparison.

1.b. Home stimulation would be higher in urban poverty compared to rural poverty. Since there was no previous study, the difference in household chaos would be exploratory.

1.c. The parenting quality in terms of inductive reasoning, autonomy support, and sensitivity would be exploratory due to contradictory findings of the previous studies. Moreover, the comparison of mothers' expectations about children's educational attainment, and answers to open-ended questions regarding beliefs on child development and conversations with children would also be exploratory.

1.d. The social and physical structure of the neighborhood and support from neighbors would be higher in rural regions, whereas, availability of physical resources neighborhood stress would be higher in urban regions.

2. Children living in rural regions would show poorer performance in EF skills compared to children living in urban regions due to poorer life quality in rural regions.

3. The interactions of urban and rural poverty with the parenting dimensions, home, and neighborhood quality would be exploratory since these interactions were not tested in the previous studies.

CHAPTER 2

PILOT STUDY

The aim of the pilot study was to examine the daily activities of children in rural regions and determining what should be measured additionally regarding the rural life in the main study. Therefore, mothers were interviewed regarding children's daily activities, what they play with, and their conversations with their children.

2.1 Participants

Participants of the study were 12 mothers who had children between the ages of three and six. Mothers were living in rural regions of Mersin. The mean age of children was 4.96 ($SD = 1.08$), the mean age of mothers was 32.45 ($SD = 6.74$), and fathers' mean age was 38.20 ($SD = 7.32$). Of the 12 children, four of them were girls, and eight of them were boys.

Four of the mothers had primary school education, four had a secondary school education, three had a high school education, and one had an associate degree. Two of the mothers were farmers, and others were homemakers. In addition, three of the fathers had primary school education, three had a secondary school education, four had a high school education, and two had a university degree. Nine of fathers were farmers (including agriculture and stock raising), one was butcher, and one was a military specialist. On average, families had 2.25 children ($SD = .87$).

2.2 Measures

2.2.1 Demographic Information Form. The form included the ages of family members and the education and occupation of parents (see Appendix C).

2.2.2 Home Environment Interview. The interview was designed to find out the daily activities of children living in rural regions. It was a semi-structured interview which was composed of five open-ended questions (see Appendix D). It was completed with the mothers of preschool children. The items are related to the activities of children in a day, the things/people that children play with, the content of their conversations with mothers, change in children's activities during week days-weekends and summer-winter.

2.3 Procedure

Participants were reached from a village in Mersin through snowball sampling. The interviews were completed with mothers. Only one of the children was living with grandparents, so it was completed with the grandmother. The interviews lasted approximately 15 minutes.

2.4 Results

The main themes in each question were summarized below.

Q1. How does your child spend time in a day?

- Plays outside with children
- Rides bicycle, plays with soil, water, balls, toy guns, and toy cars
- Watches TV (cartoons), plays tablet and smartphones, listens to music, dances
- Plays with his/her sister/brother
- Helps me set the table, wash the dishes, and sweep the house.
- Goes to the plantation with us, helps us pick vegetables, waters the flowers, dibbles
- Helps us herd animals, plays with animals
- Makes house using chests, builds the chicken house, builds a road
- Listens to the stories of an old neighbor
- Fights with us, misbehaves

Q2. What/Who does your child play with?

- TV, tablet, bicycle, toys, ball, mud, water, lighter, knife, pickaxe, adz, animals, repairing tools
- With siblings, cousins, friends, parents
- Plays hide-and-seek, likes painting, goes to the park and swimming

Q3. What do you talk about with your child? What kind of questions does your child ask?

- Asks everything that takes his/her interest
- Asks “what/how” questions
- Asks about our sheep, the places that we will go, or we had gone
- Asks about the surprise gifts that we will buy (Do you have any surprise for me?)
- Asks about death (Why do we die?), asks about agricultural workers (Who is coming today for working?)
- Tells about their talking with friends, things that he has seen, father, siblings, animals, vegetables
- Talk about current issues (i.e., July 15).
- Asks for food, tells about his hunger, tells that s/he needs to pee.
- Asks questions all the time. “I am tired of his/her questions. I say “shut up” since I feel tired. I cannot find time to answer the questions. I cannot cope with the questions.”

Q4. Do your child’s activities change on weekdays and weekends?

- Goes to school on weekdays
- Plays with friends at school
- Does homework at weekends

Q5. Do your child’s activities change in winter and summer?

- In winter, plays at home, watches TV/cartoons, plays with tablet and puzzle, does painting, and helps to light the stove.
- In summer, plays outside, plays with water and mud, rides a bicycle

2.5 Conclusion

Considering the findings of the pilot study, additional items such as the duration of playing with tablets and smartphones, playing with bicycles, ball, animals, vegetables, repairing tools, friends outside were added to the measures of the main study.

CHAPTER 3

METHOD

3.1 Participants

The participants of the study were 276 children and their mothers. The data were collected from low-SES urban and rural regions of Ankara and Mersin. These two cities were chosen since they were convenient samples to the researcher. Additionally, both cities were metropolitan cities, and the people in rural regions were engaging in agriculture in both cities. Considering these similarities, the participants were recruited from these two cities. 54.3% of the participants ($N = 150$) were living in urban regions (71 participants from Ankara, and 79 participants from Mersin); whereas 45.7% of the participants ($N = 126$) were living in rural regions (62 participants from Ankara, and 64 participants from Mersin). The age range of children was between 49 months and 82 months ($M = 66.16$, $SD = 5.75$). 51.8% of the children were girls ($N = 143$), and 48.2% of the children were boys ($N = 133$). The duration of attending kindergarten ranged between 0 and 22 months ($M = 4.56$, $SD = 3.38$).

The age range of mothers were between 23 years and 48 years ($M = 32.40$, $SD = 5.84$). 95.3% of the mothers were homemakers ($N = 263$). 94.6% of the mothers were married ($N = 261$), .4% was married but living separate ($N = 1$), 4.7% were divorced ($N = 13$), and .4% had lost their husbands ($N = 1$). Fathers' ages ranged between 25 and 54 years ($M = 37.11$, $SD = 5.96$). The families had 1 to 7 children ($M = 2.63$, $SD = .94$). The details of demographics for both parents are given in Table 3.1.

Table 3.1

The detailed demographics of mothers and fathers

	Mothers		Fathers	
	<i>N</i>	Percentage	<i>N</i>	Percentage
Education				
Illiterate	10	3.6	4	1.4
Literate without education	6	2.2	4	1.4
Primary school	106	38.4	103	37.3
Secondary school	98	35.6	76	27.5
High school	53	19.2	74	26.8
Associate degree	3	1.1	10	3.6
University	0	0	5	1.8
Longest time period resided in				
Abroad	0	0	2	.7
Big city	23	8.3	29	10.5
City	86	31.2	81	29.3
Town	25	9.1	25	9.1
Village	138	50	131	47.5

Of the 276 children, 31 of them attended kindergarten for more than 6 months, 3 of them were older than 78 months, and 1 of them was living in a village although he was tested in a kindergarten in an urban neighborhood. Therefore, these 35 children were excluded from the analyses since they might be confounding factors that influence children's executive function skills. Consequently, hypotheses about executive functions were tested by using data from 241 participants. In this data set, children's ages ranged between 49 and 78.5 months ($M = 65.82$, $SD = 5.45$). 51.9% of the children were girls ($N = 125$), and 48.1% of the children were boys ($N = 116$). Furthermore, 51.5% of the participants ($N = 124$) were from urban regions (63 from Ankara, and 61 from Mersin), whereas 48.5% of them ($N = 117$) were from rural regions (57 from Ankara, and 60 from Mersin). The duration of attending kindergarten was 3.65 months on average ($SD = 1.94$).

In Turkey, rural regions are determined based on two criteria (Ministry of Agriculture and Forestry, 2015). Firstly, places staying outside the city and county centers are considered as rural. This criterion is used in the statistics for village and city differences. Secondly, places lower than 20000 inhabitants are considered as rural (including city and county centers with inhabitants lower than 20000, towns, and

villages), which is used for the statistics for urban and rural. Therefore, in the current study, participants from urban regions were reached from low-SES neighborhoods in the city or county centers, whereas participants from rural regions were reached from villages.

3.2 Measures

3.2.1 Demographic information. A detailed form was prepared to obtain knowledge about the education, occupation, and income level of parents, and the number of children and people living in the household (see Appendix E).

3.2.2 Poverty. Families' poverty level was assessed through four different indicators: Income-to-needs ratio, education level of parents, food insecurity, and material hardship. These four variables were translated into z-scores, and they were averaged to create a poverty score. Parents' education level was reverse-scored to create the poverty variable.

3.2.2.1 Income-to-needs ratio. The income-to-needs ratio was calculated by dividing the official poverty line of the country by the income of the family. The ratio was adjusted according to family size. All families had income-to-needs ratios, which were higher than 1. Higher scores indicated lower levels of income and higher levels of poverty. For the comparison of urban and rural poverty, the reverse scores were used; that is, higher levels indicated higher levels of income.

3.2.2.2 Education level of parents. Parents' education levels were coded in rank order (0- illiterate, 1- literate without formal education, 2- primary school education, 3- secondary school education, 4- high school education, 5- associate degree, 6- university degree). The education levels of both parents were averaged.

3.2.2.3 Food insecurity. Community Childhood Hunger Identification Project (CCHIP) Hunger Index (Wehler, Scott, & Anderson, 1992) was used to assess the food insecurity of the families. The measure evaluates food insufficiency due to lack of resources in a household, availability, and sufficiency of resources for making meals, experiences of food shortage, and changes in the eating routines due to food shortages

(see Appendix F). There are 8 questions with a “Yes/No” format. The items are scored as “0” for each “No” answer, and “1” for each “Yes” answer and the sum of 8 items is calculated. Higher scores indicated higher levels of food insecurity, and the scores ranged between 0 and 8. In the original version, Cronbach’s alpha values were found to be ranging between .80 and .89 (Wehler, 1994). The Cronbach’s alpha value was found as .78 for the Turkish version in a recent study (Okur, 2015). In the current study, Cronbach’s alpha of the scale was .81.

3.2.2.4 Material hardship. Families’ material hardship was measured through Household Income- Expense Questionnaire (TEÇGE; Baydar, Kuntay, Goksen, Yagmurlu, & Cemalcilar, 2008; Appendix E). The measure evaluates the availability of certain materials (i.e., plasma TV, internet connection, and car) in the household. In addition to this measure, owning a house, having aid from relatives, or from an institution were also included in this measure. Unavailability of these materials was scored as “1”, and they were summed to create a material hardship score. Since almost all families had a refrigerator and washing machine, they were excluded from the scale. Additionally, credit card debt was excluded due to the low item-total correlation value. Higher scores indicated higher levels of material hardship. The scores ranged between 0 and 11. The Cronbach’s alpha of the scale was found as .64.

3.2.3 Stimulation in the home environment. The stimulating materials and activities in the home environment were assessed through 17- item Home Environment Questionnaire (HEQ; Miser & Hupp, 2012). In order to extend the content of the scale, 14 items were added from HOME (Bradley & Caldwell, 1984; Baydar & Bekar, 2007). The measure evaluates the quantity and frequency of different sources of stimulation for children, such as the presence of children’s books, toys, CDs, as well as reading books, teaching colors and numbers (see Appendix G). Some items of the scale were revised since they were not used anymore (i.e., VCD player, having CDs/tapes/records). Finally, the scale included 30 items. The scale was completed through the reports of the mothers. Since the ranges of the item scores were different, each item was translated into a z-score. Then, the total score based on 30 items was used as a measure of home stimulation.

Additionally, based on the interviews in the pilot study, items regarding what children play within their daily life were added to the Home Environment

Questionnaire. These items included playing with tablets, smartphones, bicycles, balls, mud/soil, animals, farm/vegetables, repairing/agricultural tools, and friends outside. These items were examined separately from the Home Environment Questionnaire. The frequencies for the urban and rural regions were determined and compared.

3.2.4 Chaos in the household. Confusion, Hubbub, and Order Scale (CHAOS; Matheny et al., 1995) was used to assess the chaotic conditions in the households (see Appendix H). The scale was translated into Turkish by Sümer, Harma, and Solak (2013). It is a 15 item self-report measured with a 6-point Likert type response format (e.g., “We almost always seem to be rushed”). However, in the current study, 4-point Likert type was used since it would be easier for mothers to complete the scale; since mothers had difficulty completing the scale in a previous study (a tendency to choose the same option or choosing the most extreme options consistently) (Okur, 2015). The scores of each item are summed and divided by the number of items to calculate a score for each household; scores ranged between 1 and 4. In the Turkish adaptation (Sümer et al., 2013), Cronbach’s alpha was reported as .82. It was .79 in the current study.

3.2.5 Neighborhood quality. The quality of the neighborhood was assessed via the Neighborhood Ecologies Survey (Baydar et al., 2007). The measure evaluates the social and physical structure of the neighborhood, support received from neighbors, and physical resources in the neighborhood (see Appendix I). There were 12 items in the *social and physical structure of the neighborhood subscale* (sample item = There are persons who live in our neighborhood who can set a positive role model), and it was evaluated on a 4-point Likert type scale. The scores of each item were summed and divided by the number of items ($min = 1$, $max = 4$). The Cronbach’s alpha was found as .85. *Support from neighbors subscale* consisted of 7 items, and it was evaluated on a 4-point Likert type scale (sample item = If I am sick, someone from the neighborhood would help me) ($min = 1$, $max = 4$). The Cronbach’s alpha of the subscale was .92. There were 10 items in the *physical resources subscale*, which was evaluated on a 3-point Likert type scale (sample item = playgrounds, shopping centers) ($min = 1$, $max = 4$). The Cronbach’s alpha of the subscale was found as .83. In addition to these subscales, *a neighborhood stress scale* was added (Kotchick, Dorsey, & Heller, 2005; Appendix I). The subscale included 5 items that might be stressful for

the families, such as fighting and noise in the neighborhood. An open-ended part was added for other risks that parents considered as stressful in their neighborhoods, and additional stress factors were added to the subscale based on mothers' reports. The Cronbach's alpha of the subscale was .70. The scale was evaluated as "existing" or "not existing." However, the neighborhood stress subscale was reverse coded to produce a neighborhood quality score, including the other three subscales. The scores of these 4 subscales were translated into z-scores and summed to create a neighborhood quality composite score.

3.2.6 Living conditions in rural regions. The living conditions in the urban regions were assessed through a scale developed for the current study (see Appendix J). On the scale, mothers reported the closest place to their village (i.e., village, town), the frequency of public transportation, the frequency of going to the city center (for themselves and for their children), and the number of markets in the village. These items were examined as descriptive information for the rural regions.

3.2.7 Parenting quality. Mothers' positive parenting was assessed based on two dimensions of parental behaviors: autonomy support and inductive reasoning (see Appendix K). Firstly, the autonomy support dimension was assessed through the Parent Attitude Scale (PAS; Demir & Şendil, 2008). The scale originally consisted of 4 dimensions: authoritative, authoritarian, overprotective, and permissive. Among the authoritative dimension of the scale, 12 items that were associated with autonomy supporting behaviors were chosen. The items were related to accepting the child as an autonomous person and supporting the child to express his/her ideas. It was a mother-report measure, and it was assessed through a 5-point Likert type response format. Total scores of items were summed and divided by the number of items; items ranged between 1 and 5. The Cronbach's alpha of the measure was found as .86.

Secondly, the inductive reasoning dimension was assessed through the Child Rearing Questionnaire (Paterson & Sanson, 1999; Yagmurlu & Sanson, 2009). The scale included 4 subscales: inductive reasoning, punishment, obedience-demanding, and warmth dimensions. Only the inductive reasoning subscale was included in the current study (e.g., "I try to explain to my child why certain things are necessary"). There were six items in the subscale, and it had a 5-point Likert type response format.

The Cronbach's alpha was found as .84. Based on these two subscales, a composite score of positive parenting was created.

Perceived maternal sensitivity was evaluated through a scale that was developed for the current study considering the previous measures that are based on observational methods (Berument et al., 2018). The scale included 16 items related to children's perceptions of mothers' understanding of cues related to children's needs, the way of responding to their needs, and adjusting their behaviors according to these needs (i.e., being non-intrusive) (see Appendix L). The scale was administered in an interview format. The scale had a 3-point Likert type response format. In the reliability analyses, five items were excluded due to low contributions in the item-total statistics. Total scores ranged between 0 and 2. The Cronbach's alpha of the 11 items was .79.

3.2.8 Mothers' expectations for their children's educational attainment. A single item question was asked to mothers regarding their expectations related to their children's educational attainment level (i.e., high school, university) (see Appendix M). Their answers were coded as a rank order, with higher scores indicating higher expectations for children's educational attainment. The scores ranged between 1 and 6 (1 being primary school and 6 being university degree).

3.2.9 Mothers' beliefs about child development. Two open-ended questions were asked to mothers to assess their beliefs about child development and their quality of conversations in their interactions (see Appendix M). The first one was, "What is necessary for a child to develop and grow up?". The second one was, "What do you talk about with your child? What kind of questions does your child ask to you?". Mothers' answers were coded according to their themes.

3.2.10 Children's temperamental characteristics. Children's temperamental characteristics were measured through the Children's Behavior Questionnaire (Rothbart et al., 2001; Appendix N). The scale aims to assess the temperamental characteristics of 3-to-7-year-old children. The original version of the scale consists of 15 subscales and 195 items. In the current study, only anger/frustration (13 items) and perceptual sensitivity (12 items) subscales were used. The items of anger/frustration were related to the negative affect of children when they show in response to interruptions of their tasks. The perceptual sensitivity subscale was measuring

children's sensitivity to the environmental stimuli, which are low in their intensity. In a recent study, Cronbach's alpha was .79 for anger/frustration and .81 for perceptual sensitivity (Berument & Sümer, 2013-2017). In the current study, one item from each subscale was excluded from the scale due to negative item-total statistics. The total scores ranged between 1 and 5. Cronbach's alpha was .88 for anger/frustration and .66 for perceptual sensitivity.

3.2.11 Receptive vocabulary. Children's receptive vocabulary was evaluated through the receptive language subtest of the Turkish Expressive and Receptive Language Test (TIFALDI; Berument & Güven, 2013). TIFALDI is a standard measure to assess the language skills of 2-to-12-year-old children. In the receptive vocabulary subtest, children are asked to choose the picture of a target word among four pictures that were displayed on a white page. The starting point of the test is determined according to the biological ages of children. The point in which children correctly answer 8 words successively is accepted as the basal level. Additionally, the point at which 8 wrong answers within 10 successive items is accepted as the ceiling level. Then, based on children's correct answers, a standard score is calculated by adjusting to children's ages.

3.2.12 Mother-reported executive function problems. Children's executive function skills in daily life were assessed via Childhood Executive Functioning Inventory (CHEXI; Thorell & Nyberg, 2008; Kayhan, 2010; Appendix O). The scale consists of 26 items with 4 factors: working memory, planning, inhibition, and regulation. In the current study, working memory (11 items; e.g., "When asked to do several things, he/she only remembers the first or last"), regulation (5 items; e.g., "Has clear difficulties doing things he/she finds boring"), and inhibition (6 items; e.g., "Has difficulty holding back his/her activity despite being told to do so") subscales were included. It is a 5-point Likert type scale based on the reports of mothers. Higher scores indicate higher levels of problems in these skills. The scores ranged between 1 and 5. In the reliability analyses, one item was excluded from the regulation subscale due to the low item-total correlation. Cronbach's alpha values were .83 for working memory, .70 for regulation, and .67 for inhibition.

3.2.13 Executive Function Tasks

3.2.13.1 Working memory. Children's phonological working memory was measured through Backward (BDS) Digit Span Task (Davis & Pratt, 1996; Gathercole & Pickering, 2000). Additionally, Forward Digit Span Task (Gathercole & Pickering, 2000) which has been considered as a measure of short-term memory was also included since children were from a poverty sample. In the forward digit span task, children were told some numbers and asked to repeat the numbers in the same order as the experimenter said. In the backward task, the children were asked to repeat the numbers in the reverse order. Both tasks started with two practice trials. If children failed in these trials, the experimenter reminded the rule and told the correct answer. Then, the test trials began with a two-digit set. In each digit set, there were 4 trials. If children correctly answered the first three trials, the experimenter accepted the fourth one as correct. If children succeeded in at least 2 of the trials, children proceeded to the next digit set. Each correct answer was scored as "1", and the total scores of correct items were calculated. The scores ranged between 0 and 20.

Children's visual working memory was assessed through the Corsi Block Tapping Task (Corsi, 1972). In this task, there were nine wooden cube blocks attached to a whiteboard (Figure 3.1). The procedure of the task was taken from *The Study of Early Childhood Developmental Ecologies in Turkey* (Baydar et al., 2008). The experimenter tapped a miniature monkey toy on the wooden blocks in a sequence, and children were asked to reproduce the same sequence. The length of each sequence was repeated three times. The task started with two practice trials: The first one was one-step, the second one was a two-step sequence. If children failed in the practice trials, the experimenter showed the correct sequence and helped the child produce the correct sequence. Then, the test trials began with a two-step sequence. If children could repeat one of the three sequences correctly, the length of the sequence was increased by one. Children got "2" points if they correctly completed the sequence; they got a "1" point if they could repeat the blocks correctly, but the order of the sequence was wrong, and they got "0" if they failed to produce the sequence. The total score based on each trial was calculated. Children's scores were between 0 and 24.

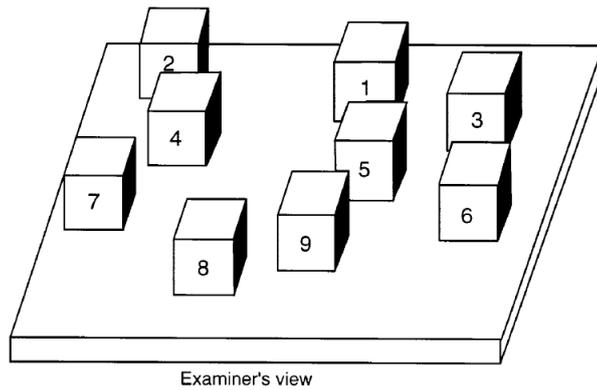


Figure 3.1. The placement of the cubes in the Corsi Block Tapping task (taken from Berch, Krikorian, and Huha, 1998)

3.2.13.2 Response inhibition. Children’s response inhibition was measured via the Day and Night Task (Carlson & Moses, 2001; Gerstadt, Hong, & Diamond, 1994). There were two cards in the task: day card (sun on a white background) and night card (moon and stars on a black background) (Figure 3.2). The child was asked to tell “day” when the experimenter showed the night card and tell “night” when the experimenter showed the day card. There were two practice trials: one for day card, and one for night card. If children failed in the practice trials, the experimenter reminded the rule of the task and told the correct answer. Then, there were 16 test trials in which the experimenter gave no feedback. Children’s performance in each trial was scored as “2” if they correctly answered, scored as “1” if they made self-correction after a wrong answer, and scored as “0” if they answered wrong. The total scores of 16 trials were calculated, ranging between 0 and 32.

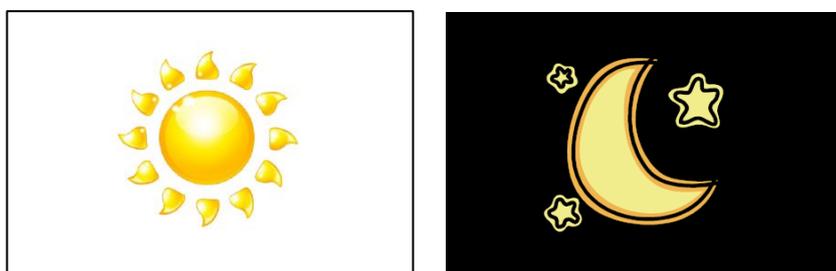


Figure 3.2. Cards used in the Day and Night task

3.2.13.3 Mental set-shifting. Children’s cognitive flexibility was assessed by the Dimensional Change Card Sort task (DCCS; Zelazo, 2006) that is used for 3-to-7-year-old children. In this task, children are asked to sort the given cards based on either their

shape or color. There are two main cards: a blue rabbit and a red boat (Figure 3.3). In addition, there are 14 test cards: 7 red rabbits and 7 blue boats. In the first phase (pre-switch phase), the child starts with the “color game.” The main cards are attached to a box, and the experimenter introduces the main cards to the child. Then, the child is asked to sort the test cards based on their color by putting them into the boxes indicated by the main cards. In the post-switch phase, the experimenter introduces the “shape game,” and the child is asked to sort the given cards based on their shapes. There are 6 trials in each task. The five correct answers out of 6 are considered as “pass.” If children pass the shape game, they continue to the last phase. The last phase is composed of the combination of the first two phases (border version). In this phase, there is a border around some of the cards. If there is a border, the child is asked to play the “color game”; if there is no border, the child is asked to play the “shape game.” There are 12 trials in the last phase. Each correct answer is coded as “1”, and the number of correct answers is summed to get cognitive flexibility score. Children’s scores ranged between 0 and 24.

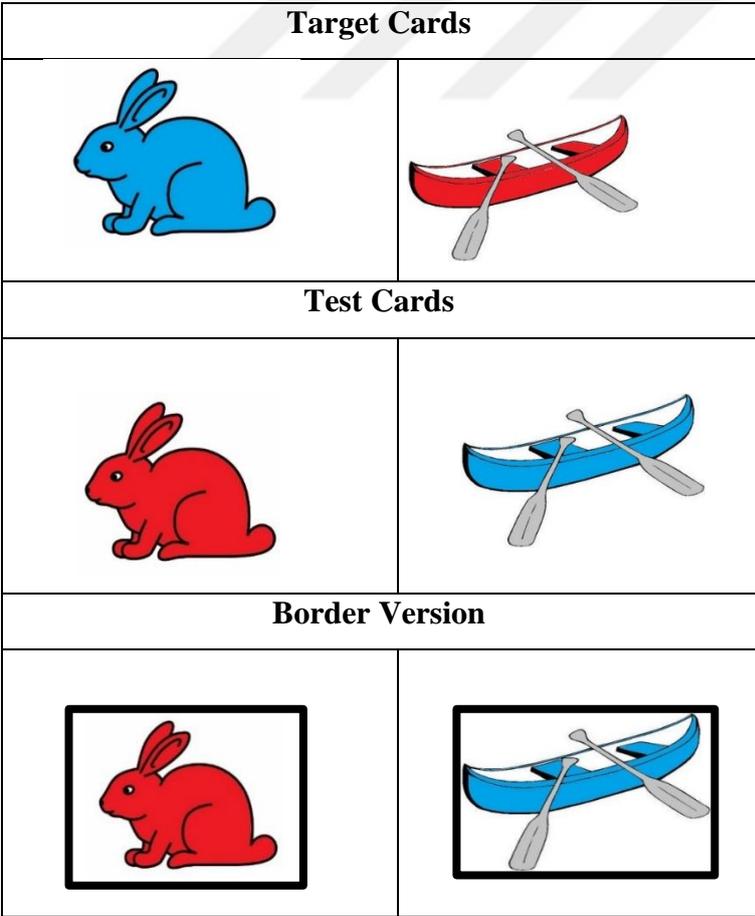


Figure 3.3. Cards used in the Dimensional Change Card Sort Task

3.3 Procedure

Ethical approval was taken from the Human Subjects Ethical Committee at Middle East Technical University (see Appendix A). Then, permission for data collection was taken from the Ministry of Education (see Appendix B). Children were recruited through kindergartens in low-SES urban and rural regions of Ankara and Mersin. Consent forms and mothers' scales were sent to mothers via school teachers. Children were included in the study if their parents provided written consent (see Appendix P). Children also provided verbal consent to participate in the study. Mothers completed the demographic information form, food insecurity index, home environment, neighborhood, parenting, and child temperament scales. Children were tested in school settings. Children completed firstly executive function tasks and then receptive vocabulary test. Finally, they were interviewed about their mothers' sensitivity. Children's tests lasted approximately 45 minutes. Children were given stickers after the executive function tasks; then, they were given toy pens at the end of the study.

CHAPTER 4

RESULTS

4.1 Overview

The statistical software package of SPSS version 25.0 was used to handle missing data and for the descriptive statistics, correlations, ANOVAs, and regressions. Firstly, the missing data were handled. Then, descriptive statistics and correlations were examined. Finally, the main analyses to test the hypotheses of the study were conducted. The first hypothesis was associated with examining the differences in urban and rural poverty in terms of living conditions, parenting quality, home, and neighborhood characteristics, which were measured via the scales. Additionally, mothers' answers to open-ended questions regarding their beliefs on child development and their conversations with their children were compared for urban and rural regions. The second hypothesis examined the urban and rural poverty difference in terms of children's EF skills, which were assessed via EF tasks. Within the scope of the third hypothesis, the interactions of urban-rural poverty with poverty level, home and neighborhood quality, parenting, and children's temperament on children's EF skills.

4.2 Data Cleaning

First, data were examined for missing values, and multiple imputation technique was used to complete the missing data. In these analyses, variables that are likely to be associated with the variable to be completed were entered as predictors. For instance, living in urban and rural regions, education level of parents, family size, having aid from relatives and institutions, food insecurity, material hardship, home stimulation, and chaos were entered as predictors to complete the missing values of family income. If a scale of a participant had more than 5% missing items, then that scale was not completed. For instance, the chaos scale of 4 cases, neighborhood scale

of 1 case, temperament scale of 2 cases, and 1 case of executive function scale were not completed due to high rates of missing values. In total, 69.57% ($N = 192$) of the cases had missing values. Specifically, family income (11% missing in the whole data set), mothers' education level (0.4% missing), fathers' education level (3% missing), material hardship (1% missing), food insecurity (0.4% missing), home stimulation (1% missing), chaos in the household (2% missing), mothers' expectations for children's educational attainment (6% missing), neighborhood quality (0.5% missing), parenting (1% missing), temperament (2% missing), maternal sensitivity (0.2% missing), and living conditions in rural regions (0.2% missing) variables included missing values. For each scale, missing analyses were conducted separately. In each analysis, 5 imputations were created, and their means were taken as the imputed score. Only for the Childhood Executive Functioning Inventory (3% missing), the expectation-maximization technique was used since multiple imputation did not work for this scale.

The data were controlled for univariate outliers by translating the scores of variables into z-scores. Then, multivariate outliers were checked via Mahalanobis distance. There were no univariate or multivariate outliers in the data set. The correlations among study variables were tested to check for multicollinearity, and the correlations were acceptable.

4.3 Descriptive Statistics

Descriptive statistics (mean, standard deviation, minimum, and maximum values) are given in Table 4.1.

Table 4.1

Means, standard deviations, minimum, and maximum values of study variables

	<i>M</i>	<i>SD</i>	<i>Min</i>	<i>Max</i>
Poverty	.00	.65	-1.40	1.86
Parent education	2.82	.84	0	5
Income-to-needs ratio	.26	.13	.03	.72
Material hardship	5.03	2.17	0	11
Food insecurity	1.37	1.75	0	8
Home stimulation	.00	.39	-1.25	1.13
Chaos in the household	1.89	.44	1	3.27
Neighborhood quality	.00	.63	-2.01	1.51
Social and physical structure of the neighborhood	2.83	.56	1.33	4
Support from the neighbors	2.58	.84	1	4
Physical resources in the neighborhood	1.62	.47	1	3
Neighborhood stress	1.24	1.58	0	7
Positive parenting	4.31	.50	2.63	5
Maternal autonomy support	4.29	.52	2.17	5
Maternal inductive reasoning	4.33	.60	2.33	5
Maternal sensitivity	1.05	.41	0	2
Mothers' expectations for children's education attainment	5.02	.78	2	6
Child anger/frustration	2.82	.87	1	5
Child perceptual sensitivity	4.00	.60	1.89	5
Receptive vocabulary (TIFALDI)	112.21	13.95	73	140
Corsi Block Tapping task	9.57	3.83	0	18
Forward Digit Span task	8.27	2.55	2	15
Backward Digit Span task	1.05	1.77	0	7
Day and Night task	19.70	10.65	0	32
Dimensional Change Card Sort task	12.10	6.02	5	24

4.4 Preliminary Analyses

Firstly, the differences in Ankara and Mersin were examined for the study variables. Independent samples t-test was conducted to test for the differences in living conditions, parenting, and children's EF. In urban regions, poverty ($t = -3.80$, $SE = .11$, $p < .001$) was higher in Mersin, whereas, home stimulation ($t = 2.23$, $SE = .06$, $p = .028$) and maternal sensitivity ($t = 1.89$, $SE = .07$, $p = .062$) were higher in Ankara.

However, children's EF skills were not different in the two cities. In rural regions, poverty ($t = -3.49$, $SE = .12$, $p = .001$) and neighborhood quality ($t = -2.61$, $SE = .10$, $p = .010$) were higher in Mersin as compared to Ankara. In terms of children's tasks, forward digit span task ($t = -3.43$, $SE = .42$, $p = .001$) and DCCS scores ($t = -1.97$, $SE = 1.13$, $p = .051$) were higher in Mersin.

Secondly, the association between gender and EF tasks was examined. Independent samples t-test was conducted to compare the EF scores of boys and girls. The results indicated that boys and girls only differed in terms of forward digit span scores. Namely, girls performed better in the forward digit span task as compared to boys ($t = 2.91$, $SE = .32$, $p = .004$).

4.5 Correlations

Correlations were examined for variables that constituted composite scores. The results for poverty indicators showed that income-to-needs ratio was positively associated with parent education ($r = .41$, $p < .001$), but negatively associated with food insecurity ($r = -.24$, $p < .001$) and material hardship ($r = -.41$, $p < .001$). Additionally, material hardship was negatively associated with parents' education level ($r = -.16$, $p = .01$), but positively associated with food insecurity ($r = .38$, $p < .001$). The correlations were in the expected directions.

The correlations among neighborhood quality variables were examined. Expectedly, the social and physical structure of the neighborhood was positively related to support from the neighbors ($r = .61$, $p < .001$), but negatively related to neighborhood stress ($r = -.48$, $p < .001$). Moreover, support from the neighbors was negatively related to neighborhood stress ($r = -.23$, $p < .001$).

The correlations among positive parenting dimensions indicated that maternal autonomy support was positively associated with maternal inductive reasoning, as expected ($r = .65$, $p < .001$).

Additionally, the correlations among mother reported executive function scale and executive function tasks were examined. The results indicated that as expected mother-reported working memory problems were negatively associated with children's performance in Corsi Block Tapping task ($r = -.23$, $p < .001$), Forward ($r = -.15$, $p = .01$) and Backward ($r = -.19$, $p = .002$) Digit Span tasks, and Dimensional Change Card Sort task ($r = -.16$, $p < .01$). Moreover, the mother reported regulation

problems were negatively related to children's scores in the Backward Digit Span task ($r = -.12, p = .04$). However, mother reported inhibition problems were not associated with children's performance in the executive function tasks.

Correlations among the variables that were used in the main analyses are presented in Table 4.2.



Table 4.2
Correlations among variables which were used in the analyses

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
1-Urban-rural	1	.06	-.24 ^a	.02	.32 ^a	-.11	-.01	-.14 ^b	-.01	-.05	-.03	-.13 ^b	-.12	-.11	-.12 ^b	-.01
2-Poverty		1	-.49 ^a	.26 ^a	-.12	-.15 ^b	.03	-.05	.06	-.20 ^a	-.13 ^b	-.08	.06	-.09	-.06	-.06
3-Home stimulation			1	-.30 ^a	.08	.38 ^a	.05	.20 ^a	-.06	.20 ^a	.06	.09	.08	.11	.07	.15 ^b
4-Chaos in the house				1	-.25 ^a	-.29 ^a	-.03	-.07	.18 ^a	-.10	.06	-.09	.01	-.04	.02	-.05
5-Neighborhood quality					1	.16 ^a	.11	.04	-.01	.15 ^b	-.12	-.01	-.01	.03	-.07	.02
6-Positive parenting						1	-.06	.16 ^a	-.08	.17 ^a	-.01	.07	.06	.15 ^b	.02	.13 ^b
7-Maternal sensitivity							1	.02	-.04	.001	-.05	.04	.08	.05	-.07	-.04
8-Mothers' education expectations								1	-.02	-.05	.08	.10	.11	.03	.05	.08
9-Anger/frustration									1	.06	-.11	-.04	-.03	-.05	.06	-.06
10-Perceptual sensitivity										1	.08	.14 ^a	.19 ^b	.11	-.05	.09
11-Receptive vocab.											1	.21 ^b	.22 ^a	.26 ^a	.26 ^a	.22 ^a
12-Corsi Block Tapping												1	.38 ^a	.39 ^a	.16 ^a	.26 ^a
13-Forward Digit Span													1	.39 ^a	.22 ^a	.21 ^a
14-Backward Digit Span														1	.26 ^a	.32 ^a
15-Day and Night															1	.06
16-DCCS																1

Note: ^a $p < .01$, ^b $p < .05$

4.6 Testing Hypothesis 1: Comparison of urban and rural poverty in terms of living standards, parenting, mothers' beliefs about child development, and conversations with children

4.6.1 Comparison of living standards and parenting in urban and rural regions

One-way Analysis of Variance (ANOVA) was conducted to compare the living conditions and parenting in urban and rural regions. The results are summarized in Table 4.3. The results indicated that the income-to-needs ratio, fathers' education level, food insecurity, home stimulation, physical resources in the neighborhood, neighborhood stress, and mothers' expectations for children's educational attainment were significantly higher in urban regions compared to rural regions. On the other hand, the social and physical structure of the neighborhood and support from the neighbors were higher in rural regions as compared to urban regions. However, mothers' education level, material hardship, household chaos, mothers' autonomy support, indicative reasoning, and sensitivity were not significantly different among urban and rural poverty.

Table 4.3

One-way ANOVA results comparing the living conditions of urban and rural regions

	Urban	Rural	F	p
	<i>M</i>	<i>M</i>		
Income-to-needs ratio	.28	.24	8.09	.01
Mothers' education level	2.75	2.60	1.72	.19
Fathers' education level	3.10	2.81	5.17	.02
Material hardship	5.12	4.94	.44	.51
Food insecurity	1.62	1.08	6.70	.01
Chaos in the household	1.89	1.90	.04	.85
Home stimulation	.08	-.10	17.08	.00
Social and physical structure of the neighborhood	2.56	3.15	105.07	.00
Support from the neighbors	2.34	2.87	30.00	.00
Physical resources in the neighborhood	1.74	1.48	24.54	.00
Neighborhood stress	1.61	.81	18.81	.00
Maternal autonomy support	4.33	4.25	1.35	.25
Maternal inductive reasoning	4.39	4.26	3.49	.06
Maternal sensitivity	1.05	1.05	.01	.94
Mothers' expectations for children's educational attainment	5.12	4.90	5.38	.02

Additionally, the living conditions of rural regions were examined separately to provide descriptions for the living conditions in these places. Firstly, the closest places to the villages of participants were examined. 40.8% of the mothers reported the closest place as a village, 4% reported as a town, 54.4% reported as a county, and .8% reported as a province. Additionally, public transportation was available for 86.5% of the villages of participants. 54% reported that the frequency of the public transportation was more than three times in a day, 27% reported as once or twice, 4.8% reported as a few times in a week, 4% reported as once in a week, and 10.3% reported as none. Besides, 10.3% of participants reported the number of markets as none, 27.8% reported as one, and 61.9% reported as more than one.

Moreover, the frequency of going to the city center was examined for both parents and children. 7.2% of the parents reported that they were going to the city center a few times a week, 32.8% reported as once a week, 47.2% reported as once a month, and 12.8% reported as a few times in a year. Additionally, 2.4% of the children were going to the city center a few times in a week, 20.8% were going once a week,

48.8% were going once a month, 21.6% were going a few times in a year, 3.2% were going once a year, and 3.2 % were never going to the city center.

4.6.2 Comparison of urban and rural mothers' beliefs on child development

Mothers' answers in response to the open-ended question, "What is necessary for a child to develop and grow up?" were evaluated. In total, 220 mothers answered to this question (121 from urban, and 99 from rural). Responding and non-responding mothers were compared in terms of their education and income levels. They were not significantly different with regard to their education ($F(1, 273) = 1.75, p = .187$) and income levels ($F(1, 273) = 2.44, p = .12$). Additionally, urban and rural mothers did not differ in terms of their response rates ($\chi^2(1, 275) = .30, p = .586$). Approximately 20% ($N = 45$) of the cases were coded by a second coder to assess interrater reliability. Reliability values lower than .70 were discussed and recoded. The intraclass correlation coefficient (ICC) results indicated that the interrater reliabilities ranged between .79 and 1.00.

Mothers' answers to their beliefs on child development were coded according to the themes, and frequencies of the themes were examined for urban and rural samples separately. Themes are given in Table 4.4 in detail. Frequencies of the themes were compared for urban and rural regions via Chi-square test. The results indicated that only neighborhood opportunities ($\chi^2(1, 220) = 3.93, p = .047$) were more frequently reported by rural mothers. Urban and rural mothers' responses did not differ in other themes.

Table 4.4

Frequencies for the themes in response to mothers' answers to the question "What is necessary for a child to develop and grow up?"

Themes	Urban (%)	Rural (%)	<i>p</i>
Nutrition	67.8	59.6	.209
Family climate (i.e. peaceful family atmosphere)	34.7	36.4	.799
Love	29.8	25.3	.458
Play/friends	19.8	11.1	.078
Care/spending time together	19	24.2	.346
Education	17.4	20.2	.590
Sleep	14	11.1	.515
Respect for children's ideas/wishes	12.4	15.2	.554
Educational materials and activities	9.9	7.1	.455
Parental behaviors (i.e. rewarding, being consistent, patient, and thoughtful)	7.4	15.2	.068
Guidance about life (giving advice)	7.4	2	.067
Social activities	6.6	3	.225
Sports	5	4	.745
Morality and religion	5	2	.247
Financial opportunities	5	2	.247
Neighborhood opportunities (i.e. parks)	4.1	11.1	.047
Health	4.1	3	.664
Responsibility and self-esteem	4.1	2	.375
Hygiene	3.3	6.1	.329
Clothing	3.3	0	.068
Taking the child out (i.e. park)	2.5	2	.820
Sheltering	1.7	0	.199
Rules and discipline	1.7	4	.279
Physical resources at home (i.e. having separate room)	.8	3	.224
Happiness	.8	2	.448
Nature	.8	0	.365
Everything	0	3	.054
Paternal support	0	2	.116

4.6.3 Comparison of urban and rural mothers' conversations with their children

Mothers' answers in response to the open-ended question "What do you talk about with your child? What kind of questions does your child ask to you?" were

coded. In total, 216 mothers answered to this question (117 from urban, and 99 from rural). Responding and non-responding mothers were compared in terms of their education and income levels. They were not significantly different with regard to their education ($F(1, 273) = .78, p = .379$) and income levels ($F(1, 273) = .36, p = .547$). Additionally, urban and rural mothers did not differ in terms of their response rates ($\chi^2(1, 275) = .00, p = .992$). Approximately 20% ($N = 45$) of the cases were coded by a second coder to assess interrater reliability. Reliability values lower than .70 were discussed and recoded. The intraclass correlation coefficient (ICC) results indicated that the interrater reliabilities ranged between .79 and 1.00.

Mothers' answers were coded according to the themes, and frequencies of the themes were examined for urban and rural samples separately. Themes are given in Table 4.5 in detail. Frequencies of the themes were compared for urban and rural regions via the Chi-square test. The results showed that urban mothers more frequently reported conversations related to giving advice to children ($\chi^2(1, 216) = 5.62, p = .018$) and stimulating activities ($\chi^2(1, 216) = 4.41, p = .036$); whereas, rural mothers more frequently reported conversations related to future ($\chi^2(1, 216) = 6.29, p = .012$) and household chores ($\chi^2(1, 216) = .8.24, p = .004$). Urban and rural mothers' reports did not differ in other themes such as things the child wonders, school, friends, daily activities, and family related events.

Table 4.5

Frequencies for the themes in response to mothers' answers to the question "What do you talk about with your child? What kind of questions does your child ask?"

Themes	Urban (%)	Rural (%)	p
Things that s/he wonders or does not know	59.8	53.5	.352
School (teachers)	27.4	36.4	.155
Advices for child	17.9	7.1	.018
Friends	15.4	10.1	.249
Daily activities (i.e. mothers' daily acts)	13.7	17.2	.477
Stimulating activities (i.e. cartoons, books)	12	4	.036
Family related events (i.e. events about parents' childhood)	9.4	6.1	.364
Future (i.e. child's occupation)	7.7	19.2	.012
Animals	5.1	3	.442
Activities to be done	5.1	9.1	.254
Problems/sad events (i.e. issues with friends)	5.1	6.1	.766
Foods (i.e. what s/he eats in the school)	4.3	6.1	.552
Rules and discipline	4.3	2	.351
Child's behaviors (i.e., fighting with siblings, being messy)	3.4	4	.810
Religion	3.4	2	.533
Love	2.6	3	.835
Child asking for permission	2.6	2	.761
Private issues	1.7	1	.662
Do not talk	1.7	0	.191
Household chores (i.e. how to cook)	.9	9.1	.004

4.6.4 Comparison of urban and rural children's daily activities

Mothers' answers regarding children's daily activities (what their children play with) were examined for urban and rural regions. Frequencies of children's daily activities were compared for urban and rural regions via the Chi-square test (see Table 4.6). The results revealed that children in urban regions were playing with tablets ($\chi^2(1, 273) = 4.45, p = .035$) more frequently, whereas, children in rural regions were playing with animals ($\chi^2(1, 272) = 5.08, p = .024$) and farms/vegetables ($\chi^2(1, 274) = 5.41, p = .020$). On the other hand, urban and rural children were not different in daily

activities such as using smart phones, riding bicycles, playing with balls, mud, repairing tools, and friends.

Table 4.6

Frequencies for children's daily activities

Playing with/in	Urban (%)	Rural (%)	<i>p</i>
Tablets	32	20.6	.035
Smart phones	70.5	67.7	.619
Bicycles	65.1	57.1	.181
Balls	77	74.6	.640
Mud or soil	67.1	69.8	.631
Animals	34.9	48.4	.024
Farms/vegetables	23.6	36.5	.020
Repairing or agricultural tools	30.6	32.5	.733
Friends outside	76.5	72.2	.416

4.7 Testing Hypothesis 2: Comparison of children's executive function skills living in urban and rural regions

Children's executive function skills living in urban and rural poverty were compared through Analysis of Covariance (ANCOVA). In these analyses, children who attended kindergarten for more than 6 months, and children who were older than 78 months were excluded. In the analyses, children's age and the duration of attending kindergarten were controlled. The results are provided in Table 4.7. The results of the ***Corsi Block Tapping task*** indicated that children's age ($F(1, 237) = 9.95, p = .002$) and the duration of attending kindergarten ($F(1, 237) = 4.52, p = .04$) were significantly related to children's performance. However, urban and rural children did not significantly differ in their Corsi scores ($F(1, 237) = 3.32, p = .07$). The results of the ***Forward Digit Span task*** showed that children's age ($F(1, 237) = 2.30, p = .13$) and duration of attending kindergarten ($F(1, 237) = 2.47, p = .12$) were not associated with children's performance in the task. Additionally, living in urban and rural poverty did not differ in terms of children's performances in this task ($F(1, 237) = 2.00, p = .16$). On the other hand, children's age ($F(1, 237) = 10.28, p = .002$) and duration of attending kindergarten ($F(1, 237) = 17.69, p < .001$) were significantly related to children's performance in the ***Backward Digit Span task***. Additionally, children's scores who were living in urban and rural regions were not significantly different (F

(1, 237) = 3.01, $p = .08$). Furthermore, according to the results of the *Day and Night task*, children's age ($F(1, 237) = 2.20, p = .14$) and the duration of attending kindergarten ($F(1, 237) = .59, p = .44$) were not related to children's performance. Additionally, children's performance who were living in urban and rural regions were not significantly different ($F(1, 237) = 3.52, p = .06$). Lastly, the results of the *Dimensional Change Card Sort task* showed that children's age was significantly related to children's performance ($F(1, 237) = 5.29, p = .02$). However, the duration of attending kindergarten ($F(1, 237) = 1.49, p = .22$) was not associated with children's scores in Dimensional Change Card Sort task. Additionally, children's scores living in urban-rural regions were not significantly different ($F(1, 237) = .20, p = .65$).

In summary, as children became older, their performance in the Corsi Block Tapping task, Backward Digit Span task, and Dimensional Change Card Sort task improved. Additionally, as the duration of attending kindergarten increased, children got higher scores in Corsi Block Tapping and Backward Digit Span tasks. On the other hand, children's EF skills were not different among urban and rural children.

Table 4.7

The means and ANCOVA results of executive functions tasks for children living in urban and rural poverty

	Urban	Rural		F	p
	M (SD)	M (SD)			
			Age	9.95	.002
Corsi Block	10.02	8.95	Duration of attending	4.52	.04
Tapping	(4.14)	(3.50)	kindergarten		
			Urban-rural	3.32	.07
			Age	2.30	.13
Forward Digit	8.43	7.91	Duration of attending	2.47	.12
Span	(2.61)	(2.37)	kindergarten		
			Urban-rural	2.00	.16
			Age	10.28	.002
Backward Digit	1.15	.73	Duration of attending	17.69	.000
Span	(1.80)	(1.55)	kindergarten		
			Urban-rural	3.01	.08
			Age	2.20	.14
Day and Night	20.71	17.83	Duration of attending	.59	.44
	(10.35)	(11.19)	kindergarten		
			Urban-rural	3.52	.06
			Age	5.29	.02
Dimensional	11.95	12.08	Duration of attending	1.49	.22
Change Card	(5.95)	(6.21)	kindergarten		
Sort			Urban-rural	.20	.65

4.8 Testing Hypothesis 3: Predictors of executive function

Hierarchical regression analyses were conducted to examine the predictors of children's executive function skills. In the first step, children's age, poverty level of the family, and the duration of attending kindergarten; in the second step, children's receptive vocabulary, home stimulation and chaos, positive parenting, maternal sensitivity, mothers' expectations for children's educational attainment, neighborhood quality, and children's temperamental characteristics (reactivity and perceptual sensitivity); in the third step interaction terms of urban-rural poverty and predictor variables were entered. Since there were many predictor variables to test for interactions, interaction terms were separated into 4 groups (parenting, home

environment quality, poverty/neighborhood, child temperament) in order to increase the power of the study. Analyses were repeated for all EF tasks. The results are reported based on the analysis for the interaction of urban-rural poverty and parenting dimensions. Any changes in the other analyses were reported additionally when the results differed.

The results of *Corsi Block Tapping task* indicated that children's age ($\beta = .23$, $SE = .05$, $p = .001$), the duration of attending kindergarten ($\beta = .14$, $SE = .14$, $p = .047$), children's receptive vocabulary ($\beta = .18$, $SE = .02$, $p = .006$) positively predicted children's performance. The details of the results are provided in Table 4.8.

The regression results for *Forward Digit Span task* indicated that poverty level of the family ($\beta = .19$, $SE = .29$, $p = .015$), children's receptive vocabulary ($\beta = .19$, $SE = .01$, $p = .005$), and perceptual sensitivity of children ($\beta = .18$, $SE = .29$, $p = .007$) positively predicted children's scores in the task. The results are summarized in Table 4.9.

According to the results of *Backward Digit Span task* (see Table 4.10), children's age ($\beta = .22$, $SE = .02$, $p = .001$), the duration of attending to kindergarten ($\beta = .27$, $SE = .06$, $p < .001$), children's receptive vocabulary ($\beta = .21$, $SE = .01$, $p = .001$), children's perceptual sensitivity ($\beta = .14$, $SE = .18$, $p = .03$) were positively and significantly associated with children's performance in the task. Moreover, the interaction of urban-rural poverty and positive parenting was significant ($\beta = -.18$, $SE = .41$, $p = .04$). Simple slope analyses were conducted through a macro (Dawson, 2014). The results indicated that simple slope for urban poverty was significant ($t = 2.34$, $p = .02$; see Figure 4.1). According to the results, children living in urban poverty had higher scores in the Backward Digit Span task if their mothers were showing higher levels of positive parenting; whereas, they had lower scores if their mothers were showing low levels of positive parenting. On the other hand, the scores of children living in rural poverty were not influenced by the levels of their mothers' positive parenting behaviors.

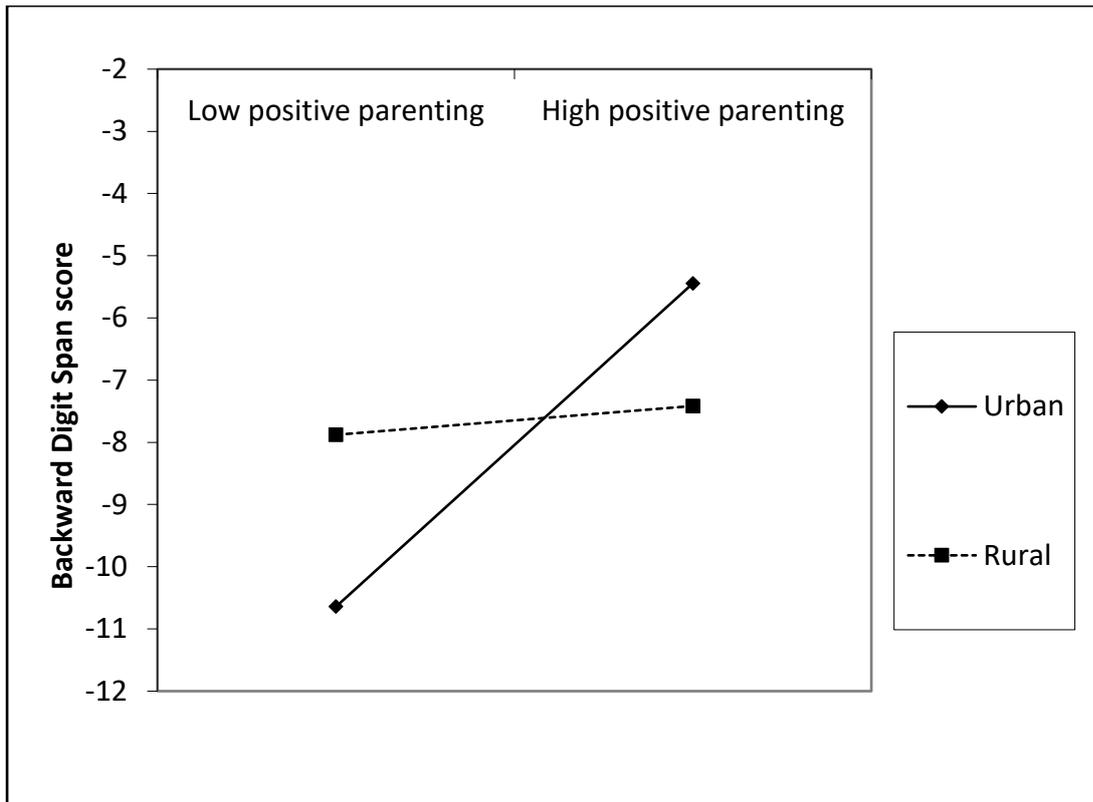


Figure 4.1. The interaction plots for urban-rural poverty and positive parenting in Backward Digit Span task

Additionally, the interactions of urban-rural poverty with household chaos was also significant for the Backward Digit Span task ($\beta = -.19$, $SE = .49$, $p = .04$). However, according to the simple slope test, slopes for urban ($t = 1.47$, $p = .14$) and rural poverty ($t = -.85$, $p = .40$) were not significant.

Hierarchical regression analyses for the *Day and Night task* indicated that receptive vocabulary ($\beta = .27$, $SE = .05$, $p < .001$) was positively related to children's scores. Additionally, the relation between children's age and Day and Night score was significant in other models (i.e., $\beta = .14$, $SE = .13$, $p = .045$ in the model testing the interactions with the home environment). The results are given in Table 4.11.

The regression results for the *Dimensional Change Card Sort* task revealed that children's age ($\beta = .19$, $SE = .08$, $p = .005$) and receptive vocabulary ($\beta = .22$, $SE = .03$, $p = .001$) were positively and significantly associated with children's scores in this task (see Table 4.12). Additionally, the interaction of urban-rural poverty and positive parenting was significant ($\beta = .21$, $SE = 1.58$, $p = .032$). According to the simple slope test results, simple slope for rural poverty was significant ($t = 2.24$, $p = .03$; see Figure 4.2). The results showed that children living in rural poverty scored

higher in Dimensional Change Card Sort task if their mothers displayed higher levels of positive parenting behaviors; whereas, they scored lower if their mothers displayed lower levels of positive parenting behaviors. In urban poverty, children’s performance did not differ according to low and high positive parenting behaviors.

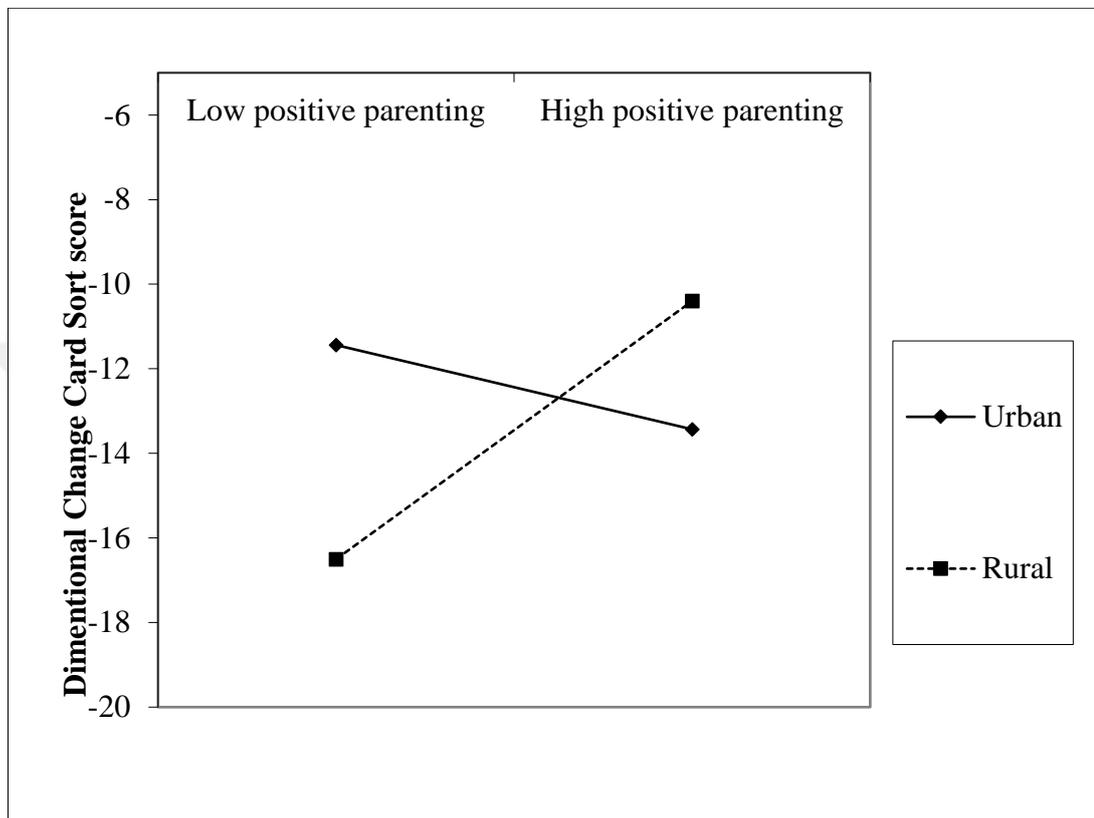


Figure 4.2. The interaction plots for urban-rural poverty and positive parenting in the Dimensional Change Card Sort task

Moreover, in the results of Dimensional Change Card Sort task, the interactions of urban-rural poverty with household chaos ($\beta = -.22, SE = 1.87, p = .02$), and children’s anger/frustration ($\beta = -.21, SE = .93, p = .021$) were also significant. However, simple slopes of interactions for chaos ($t = 1.65, p = .10$ for urban; $t = -1.62, p = .11$ for rural) and anger/frustration ($t = 1.67, p = .10$ for urban; $t = -1.61, p = .11$ for rural) were not significant.

Table 4.8

Predictors of Corsi Block Tapping task

		β	<i>SE</i>	<i>p</i>
1st step	Child age	.23	.05	.001
	Duration of kindergarten	.14	.14	.047
	Poverty	-.05	.44	.494
	$\Delta R^2(\text{Finc})$	.09(7.95)		.000
	$R^2_{adj}(F)$	.08(7.95)		.000
	Urban-rural	.13	1.37	.478
2nd step	Receptive vocabulary	.18	.02	.006
	Home stimulation	-.06	.83	.500
	Home chaos	-.07	.61	.324
	Positive parenting	.08	.75	.400
	Maternal sensitivity	.13	.91	.180
	Mothers' expectations for children's educational attainment	.02	.45	.845
	Neighborhood quality	-.04	.45	.602
	Anger/frustration	.01	.29	.921
	Perceptual sensitivity	.11	.44	.091
	$\Delta R^2(\text{Finc})$	.07(1.79)		.064
	$R^2_{adj}(F)$	.11(3.27)		.000
	Urban-rural*Positive parenting	-.08	.99	.380
	Urban-rural*Maternal sensitivity	-.24	1.19	.190
	Urban-rural*Mothers' expectations for children's educ. attainment	.06	.64	.494
Urban-rural*Home stimulation	.02	1.42	.839	
3rd step	Urban-rural*Home chaos	.09	1.18	.351
	Urban-rural*Poverty	-.03	.78	.207
	Urban-rural*Neighborhood quality	-.11	.86	.737
	Urban-rural*Anger/frustration	-.06	.59	.507
	Urban-rural*Perceptual sensitivity	-.05	.87	.630
	$\Delta R^2(\text{Finc})$	.01(.89)		.448
	$R^2_{adj}(F)$	.11(2.82)		.000

Note: The results of the main effects of variables were taken from the third steps of regression analyses conducted on the interaction of urban-rural poverty and parenting dimensions.

Table 4.9

Predictors of Forward Digit Span task

		β	<i>SE</i>	<i>p</i>
1st step	Child age	.09	.03	.165
	Duration of kindergarten	.08	.09	.232
	Poverty	.19	.29	.015
	$\Delta R^2(Finc)$	.04(3.03)		.030
	$R^2_{adj}(F)$	.03(3.03)		.030
	Urban-rural	.03	.89	.882
2nd step	Receptive vocabulary	.19	.01	.005
	Home stimulation	.09	.53	.258
	Home chaos	.02	.39	.748
	Positive parenting	-.03	.49	.752
	Maternal sensitivity	.11	.59	.271
	Mothers' expectations for children's educational attainment	.06	.29	.493
	Neighborhood quality	-.001	.29	.986
	Anger/frustration	-.03	.19	.681
	Perceptual sensitivity	.18	.29	.007
	$\Delta R^2(Finc)$	.10(2.68)		.004
	$R^2_{adj}(F)$	.09(2.81)		.001
	Urban-rural*Positive parenting	.01	.01	.888
	Urban-rural*Maternal sensitivity	-.11	-.11	.546
	Urban-rural* Mothers' expectations for children's educ. attainment	.01	.01	.909
3rd step	Urban-rural*Home stimulation	-.04	.91	.698
	Urban-rural*Home chaos	-.08	.76	.381
	Urban-rural*Poverty	.02	.50	.821
	Urban-rural*Neighborhood quality	.08	.55	.352
	Urban-rural*Anger/frustration	.04	.38	.632
	Urban-rural*Perceptual sensitivity	-.004	.56	.968
	$\Delta R^2(Finc)$	.002(.14)		.935
	$R^2_{adj}(F)$	.08(2.28)		.004

Note: The results of the main effects of variables were taken from the third steps of regression analyses conducted on the interaction of urban-rural poverty and parenting dimensions.

Table 4.10

Predictors of Backward Digit Span task

		β	<i>SE</i>	<i>p</i>
1st step	Child age	.22	.02	.001
	Duration of kindergarten	.27	.06	.000
	Poverty	-.02	.18	.776
	$\Delta R^2(\text{Finc})$	.15(13.51)		.000
	$R^2_{adj}(F)$	.14(13.51)		.000
2nd step	Urban-rural	-.01	.57	.966
	Receptive vocabulary	.21	.01	.001
	Home stimulation	-.04	.34	.613
	Home chaos	-.002	.25	.976
	Positive parenting	.23	.31	.014
	Maternal sensitivity	.04	.38	.698
	Mothers' expectations for children's educational attainment	-.10	.19	.251
	Neighborhood quality	-.04	.19	.574
	Anger/frustration	-.001	.12	.987
	Perceptual sensitivity	.14	.18	.030
	$\Delta R^2(\text{Finc})$	.09(2.66)		.004
	$R^2_{adj}(F)$	.20(5.39)		.000
	3rd step	Urban-rural*Positive parenting	-.18	.41	.042
Urban-rural*Maternal sensitivity		-.08	.27	.654
Urban-rural* Mothers' expectations for children's educ. attainment		.07	.50	.441
Urban-rural*Home stimulation		-.16	.59	.092
Urban-rural*Home chaos		-.19	.49	.036
Urban-rural*Poverty		-.12	.33	.172
Urban-rural*Neighborhood quality		-.03	.36	.759
Urban-rural*Anger/frustration		-.08	.24	.341
Urban-rural*Perceptual sensitivity		-.06	.36	.503
$\Delta R^2(\text{Finc})$		.02(1.51)		.214
$R^2_{adj}(F)$	.20(4.69)		.000	

Note: The results of the main effects of variables were taken from the third steps of regression analyses conducted on the interaction of urban-rural poverty and parenting dimensions.

Table 4.11

Predictors of Day and Night task

		β	<i>SE</i>	<i>p</i>
1st step	Child age	.12	.13	.066
	Duration of kindergarten	.05	.39	.446
	Poverty	-.05	1.25	.518
	$\Delta R^2(Finc)$	.03(2.04)		.110
	$R^2_{adj}(F)$	.01(2.04)		.110
	Urban-rural	.08	3.86	.656
2nd step	Receptive vocabulary	.27	.05	.000
	Home stimulation	.07	2.33	.431
	Home chaos	-.01	1.72	.904
	Positive parenting	.07	2.12	.464
	Maternal sensitivity	-.003	2.56	.979
	Mothers' expectations for children's educational attainment	.02	1.26	.866
	Neighborhood quality	-.01	1.26	.895
	Anger/frustration	.10	.83	.128
	Perceptual sensitivity	-.07	1.24	.285
	$\Delta R^2(Finc)$	.10(2.57)		.006
	$R^2_{adj}(F)$	.08(2.48)		.004
	Urban-rural*Positive parenting	-.17	2.80	.086
	Urban-rural*Maternal sensitivity	-.21	3.37	.267
	Urban-rural* Mothers' expectations for children's educ. attainment	.01	1.80	.922
Urban-rural*Home stimulation	.06	4.01	.536	
Urban-rural*Home chaos	-.09	3.33	.334	
3rd step	Urban-rural*Poverty	-.11	2.21	.275
	Urban-rural*Neighborhood quality	-.02	2.43	.812
	Urban-rural*Anger/frustration	-.11	1.65	.223
	Urban-rural*Perceptual sensitivity	-.11	2.45	.288
	$\Delta R^2(Finc)$	.02(1.30)		.274
	$R^2_{adj}(F)$	.08(2.27)		.005

Note: The results of the main effects of variables were taken from the third steps of regression analyses conducted on the interaction of urban-rural poverty and parenting dimensions.

Table 4.12

Predictors of Dimensional Change Card Sort task

		β	<i>SE</i>	<i>p</i>
1st step	Child age	.19	.08	.005
	Duration of kindergarten	.07	.22	.309
	Poverty	.09	.70	.235
	$\Delta R^2(\text{Finc})$	.04(3.05)		.029
	$R^2_{adj}(F)$	.03(3.05)		.029
2nd step	Urban-rural	.06	2.18	.757
	Receptive vocabulary	.22	.03	.001
	Home stimulation	.04	1.32	.597
	Home chaos	-.001	.97	.986
	Positive parenting	-.07	1.20	.483
	Maternal sensitivity	-.08	1.44	.401
	Mothers' expectations for children's educational attainment	-.003	.71	.976
	Neighborhood quality	.02	.71	.747
	Anger/frustration	-.02	.47	.807
	Perceptual sensitivity	.08	.70	.220
	$\Delta R^2(\text{Finc})$	.08(1.96)		.038
	$R^2_{adj}(F)$	.07(2.25)		.009
	Urban-rural*Positive parenting	.21	1.58	.032
	Urban-rural*Maternal sensitivity	.03	1.90	.893
	Urban-rural* Mothers' expectations for children's educ. attainment	.03	1.02	.749
Urban-rural*Home stimulation	.02	2.25	.861	
Urban-rural*Home chaos	-.22	1.87	.020	
3rd step	Urban-rural*Poverty	-.04	1.25	.689
	Urban-rural*Neighborhood quality	.16	1.37	.081
	Urban-rural*Anger/frustration	-.21	.93	.021
	Urban-rural*Perceptual sensitivity	.10	1.38	.317
	$\Delta R^2(\text{Finc})$	.02(1.67)		.174
	$R^2_{adj}(F)$	.07(2.15)		.007

Note: The results of the main effects of variables were taken from the third steps of regression analyses conducted on the interaction of urban-rural poverty and parenting dimensions.

CHAPTER 5

DISCUSSION

The current study focused on the EF skills of children raised in urban versus rural poverty contexts. First, poverty level of the families, parenting quality, home environment and neighborhood quality, mothers' beliefs on child development, the content of mothers' conversations with their children, and children's daily activities were compared for urban and rural poverty. Secondly, the EF skills of children living in urban and rural poverty were compared. Thirdly, the interactions of urban and rural poverty with poverty level of the family, home and neighborhood quality, parenting, and children's temperament on children's EF development were tested.

5.1 Discussion of the Findings Testing Hypothesis 1

The first hypothesis of the study aimed to compare urban and rural regions in terms of the poverty level of the families, home and neighborhood quality, and parenting behaviors. First, the poverty level was expected to be different in urban and rural regions. Specifically, income, education levels, and food insecurity were expected to be higher in urban regions, whereas, the comparison of material hardship would be exploratory. The results indicated that the income-to-needs ratio, fathers' education level, and food insecurity were higher in urban regions compared to rural regions. The higher levels of income and fathers' education in urban regions were in line with the hypothesis of the current study and supported the previous studies (i.e., Lampard et al., 2000; Roscigno et al., 2006). Low levels of food insecurity in rural poverty can be explained via the agricultural activities in rural regions. Families living in rural regions are more likely to engage in agricultural activities, and agricultural activities reduce the risk of food insecurity (Zezza & Tasciotti, 2010). Unexpectedly, mothers' education levels were similar in urban and rural poverty. Girls from low-SES families are less likely to attain higher levels of education in Turkey (Durgun, 2011).

Mothers in the current study are likely to come from low-SES families. Therefore, their parents might have led them to attain low education levels (i.e. primary school education), and it may not be different among urban and rural regions. Additionally, material hardship was similar in urban and rural poverty. The measure was assessing the availability of materials such as plasma TV, tablet, internet connection, car, and smartphone, and the comparison was conducted based on the total score of unavailability of these materials. When the items were compared separately, families from urban poverty were more likely to experience material hardship for having houses and cars, whereas, families from rural poverty had hardship for possessing computers, internet connection, and washing machine. Additionally, families from urban poverty were more likely to have aids from institutions. Therefore, the nature of experiences of material hardship showed differences although the total scores were similar in urban and rural poverty.

In terms of home quality, stimulation was expected to be higher in urban regions, whereas the comparison of chaos was exploratory. The results revealed that stimulation was higher in urban poverty, as expected. It was also in line with the findings of the previous studies (i.e., Nacak et al., 2011). Since the income levels were higher in urban regions, the purchasing power of buying stimulating toys or the opportunities for attending stimulating activities might be higher for urban parents (Votruba-Drzal, 2003). Additionally, higher education levels of fathers in urban regions might contribute to providing a stimulating home environment. On the other hand, urban and rural poverty did not differ in terms of household chaos. Chaotic conditions are an important aspect of poverty; that is, these houses are unpredictable, noisy, and crowded, and they do not have routines (Evans et al., 2005; Ferguson, Cassells, MacAllister, & Evans, 2013). It seems that living in urban and rural regions did not make a difference in terms of the chaotic conditions in the households.

In terms of neighborhood quality, urban and rural poverty were different in the expected ways. Specifically, physical resources and stress were higher in urban neighborhoods, whereas the social and physical structure of the neighborhood and support from the neighbors were higher in rural regions. These findings supported the hypotheses of the current study and findings of the previous studies. Previous studies indicated that access to resources is limited (Vernon-Feagans et al., 2010), but social networks are stronger (Pinderhughes et al., 2001) in rural regions. Additionally, due to high crime rates, urban neighborhoods are more stressful (Amato & Zuo, 1992; Ewart

& Suchday, 2002). Therefore, rural regions seem advantageous in terms of stronger social networks and less stressful environments, whereas urban regions are advantageous in terms of the availability of physical resources such as health care services, shopping centers, and playgrounds. In addition to neighborhood support, the items of the social and physical structure of the neighborhood scale used in the current study were also associated with the cohesion among neighbors, proximity to relatives, and security for children. Considering these items, it might be suggested that there is more social support and network among people in the rural regions in the Turkish context.

Then, mothers' parenting behaviors were compared. Since previous studies provided contradictory findings, the comparison was conducted as exploratorily. Mothers' inductive reasoning with children and supporting children's autonomy were measured through mothers' own reports, and maternal sensitivity was measured through children's reports. The results showed that mothers in both contexts were similar in terms of autonomy support, inductive reasoning, and maternal sensitivity. Previous studies provided contradictory findings in terms of parenting quality in urban and rural contexts. For instance, there are studies showing that parents show more negative parenting behaviors in rural regions (Bornstein et al., 2008). However, a study conducted in Turkey indicated that low-educated urban and rural mothers were similar in their parenting behaviors such as warmth, inductive reasoning, and punitive behaviors (Nacak et al., 2011). Therefore, living in urban and rural poverty might differently influence parenting behaviors in different countries. In the Turkish context, it seems that mothers show similar parenting behaviors in urban and rural poverty to a large extent. The similarity might be explained by the finding that mothers' education levels were also similar in the current study. Since mothers' education is an important predictor of parenting behaviors (Carr & Pike, 2012), the similarity in the parenting behaviors might be expected for the urban and rural regions. Additionally, social support might provide another explanation. Although urban poverty seemed advantageous in terms of the opportunities (i.e., income, stimulation), higher levels of social support might have buffered the negative influences of limited opportunities in the rural regions. Therefore, rural mothers might have benefited from social support in their neighborhood, and this social support might have contributed to improve mothers' parenting in rural regions.

Moreover, mothers' beliefs about their children's educational attainment and child development, mothers' conversations with their children, and children's daily activities were compared in urban and rural poverty contexts. Firstly, mothers' reports on their expectations regarding their children's educational attainment (the highest level they expect their children to complete such as graduating from high school or university) were examined. Urban mothers expected their children to attain higher education levels compared to rural mothers. This finding is consistent with the previous findings (i.e., McCracken & Barcinas, 1991). In line with their expectations about their children's educational attainment, rural parents reported that they invest less to their children's education (Rosigno et al., 2006). Indeed, parents who do not expect their children to pursue an academic life may not invest resources in their children's education.

Secondly, mothers' answers were examined exploratorily in response to the open-ended question "What is necessary for a child to develop?". To a large extent urban and rural mothers' views were similar. Specifically, nutrition, family climate, and love were the most commonly reported themes in both urban and rural mothers' answers. Only the importance of neighborhood quality was more frequently highlighted by rural mothers, which might be due to the limited opportunities of the neighborhoods in these regions. Thirdly, urban versus rural mothers' answers to the open-ended question regarding the content of their conversations with their children were compared. Both urban and rural mothers reported that they were more likely to talk about the things that their children were curious about or they talk about the school. There were some differences in the content of the conversations; specifically, urban mothers were conversing more about advice and stimulating activities, whereas rural mothers were conversing more about future and household chores. These differences might be resulting from the differences in their life styles. For instance, in urban regions, parents converse more about stimulating activities with their children since they engage in stimulating activities more frequently, which was also shown in the current study. On the other hand, in rural regions, children might help household chores more frequently, therefore, they might converse more about the household chores. In sum, despite some differences in general urban and rural mothers' beliefs were quite similar. These results were in line with another study conducted in Turkey. Nacak et al. (2011) compared low-educated urban and rural mothers and reported that they were very similar in terms of children's developmental expectations for reaching

certain developmental milestones (i.e., social and cognitive development, self-regulation). Similarities in mothers' parental beliefs might be resulting from their similar education levels. Additionally, it is likely that urban mothers might have a rural background. Then, they might be continuing to show parenting behaviors that they have learnt in the rural regions rather than obtaining more beneficial parental beliefs and behaviors in the urban life. Since maternal beliefs are predictors of parenting behaviors (Bornstein, 2012), the similarities in their beliefs might result in similarities in their parenting behaviors, which was also shown in the current study (i.e., autonomy support and sensitivity). Consequently, considering all these findings, it can be inferred that urban and rural parents do not differ much in terms of their child-rearing beliefs and behaviors.

Lastly, mothers' reports on their children's daily activities were examined exploratorily. The results showed that children in urban poverty were playing with tablets, whereas children in rural poverty were playing with animals and playing on farms more frequently. Previous studies also examined the activities of urban and rural children. For instance, Loucaides, Chedzoy, and Bennett (2004) examined the environment of children's physical activities. They reported that children in rural regions had a larger and safer space in the neighborhood, yet, urban children had more materials related to physical activity in their home settings. A study conducted in Turkey also revealed that children in urban regions are more likely to favor indoor activities (i.e., reading), whereas rural children are more likely to play outdoor sports (i.e., volleyball) (Özdirenç, Özcan, Akın, & Gelecek, 2005). These results are partially in line with the findings in the current study. Although the differences in children's plays were in line with these findings (i.e., urban children playing tablets, rural children playing in the farms), there was no difference in the frequency of playing outside with their friends. It might be due to the characteristics of the neighborhoods in which urban families were living. Since the data of the urban poverty were collected from suburbs, they were far from the traffic and crowd in the city centers. Thus, children may find opportunities to play outside. Moreover, there were also similarities in the indoor activities of children, such as playing with smartphones which might be explained by the availability of smartphones both in urban and rural houses. Indeed, the frequencies of ownership of smartphones were 85% in urban, and 78% in rural households in the current sample, and the frequencies were not significantly different ($\chi^2(1, 274) = 1.73, p = .188$). Due to the similarity in the availability of the

smartphones, both urban and rural children might be using smartphones at similar levels. As a support of this argument, a study conducted in Turkey indicated that parents of preschool children were allowing their children to play with smartphones (i.e., approximately one-third of children playing with smartphones everyday); and they were considering smartphones as a way of keeping children busy when they had jobs to do or when children were crying or eating something. Through this positive attitude towards smartphones in the Turkish sample, the similarity in the percentages of having smartphones in the families might explain this non-significant difference in urban and rural children. In sum, in addition to maternal beliefs (i.e. child development) and parenting behaviors (i.e. autonomy support and sensitivity), children's activities were highly similar in urban and rural regions.

5.2 Discussion of the Findings Testing Hypothesis 2

The second hypothesis of the study argued that children living in rural regions would show poorer performance in EF skills compared to children living in urban regions. With this aim, EF skills of children living in urban and rural poverty were compared; however, the results indicated that children living in urban and rural poverty were not significantly different in their EF skills. Similar to the current study, Tine (2014) compared the verbal and visuospatial WM of sixth-grade children living in both low and high-income level families in urban and rural regions. She found that children from high-income families did not differ in terms of urban and rural regions. On the other hand, low-income rural children performed poorer in visuospatial WM, whereas they performed better in verbal WM compared to low-income children living in urban regions. The author argued that there was an asymmetrical weakness in children's WM in the rural regions; therefore, different types of poverty might be associated with different outcomes regarding WM. Contrary to the findings provided by Tine (2014), in the current study children performed similar in urban and rural poverty. The different results between these studies might be resulting from the differences in the living conditions of the countries. The study of Tine (2014) was conducted in the United States, and the conditions might differ in the U.S. and Turkey in terms of urban and rural poverty. Another study conducted in Chile did not find a difference in children's WM among urban and rural regions (Rojas-Barahona et al., 2015); which is in line with the findings of the current study.

In the current study, children living in urban and rural poverty showed similar EF skills. The reason behind this unexpected finding might be resulting from the similarities in mothers' beliefs and parenting behaviors in urban and rural regions. As shown in the current study, mothers' parenting behaviors and beliefs on child development were very similar in addition to the content of the conversations with their children, which reflects their interactions with their children. Since parenting behaviors are important for the development of children's EF (Bernier et al., 2012; Camerota & Willoughby, 2019), it is quite likely that similar parenting behaviors would be associated with similar outcomes in children. Although many maternal behaviors and beliefs were similar, there were some differences in urban and rural regions. However, these differences might have balanced the effects of each other. To illustrate, considering the content of the conversations, urban mothers were talking more frequently about stimulating activities –which is important for children's development (Hughes & Devine, 2019)-, whereas, rural mothers were talking about household chores more frequently. Therefore, it seems that rural mothers compensated their limited opportunities for stimulation by replacing them with the opportunities they have had. Moreover, in rural regions, mothers might be providing scaffolding for children through verbal interactions (i.e., fabulating) to compensate the limited opportunities for providing stimulating materials (i.e., children's books). In both conditions, children experience various opportunities to learn new skills, which might result in improvements in their EF skills. Considering all these, in addition to the similarities in mothers' child-rearing practices, mothers were replacing the opportunities lacking in their environment through what was available to them, which were resulting in quite similar EF skills in children.

Additionally, children's daily activities and living conditions might provide another possible explanation for the similarity in children's EF skills. Although children in urban regions had more opportunities in their home environment and neighborhood in the current study, children in rural regions were more engaged in agriculture. In the literature, in addition to studies indicating the contributions of home stimulation and neighborhood quality on children's EF (i.e., Hughes & Devine, 2019; Roy, McCoy, & Raver, 2014), there are studies showing that the greenness in the environment has positive impacts on children's EF development (i.e., Dadvand et al., 2015). Additionally, when children's daily activities were examined, they were quite similar. For instance, children from both groups were playing with smartphones,

bicycles, balls, mud, and repairing tools. It seemed that children in urban and rural living conditions had different sources of stimulation, thereby, the nature in which rural children live might have compensated for the lack of stimulation in their homes and neighborhoods. Then, these different kinds of stimulation might have resulted in similarities in their EF skills.

5.3 Discussion of the Findings Testing Hypothesis 3

The third hypothesis of the study examined whether urban and rural poverty interacted with the poverty level of the family, parenting dimensions, home and neighborhood quality, and children's temperament. There were two interaction terms, namely, interaction between urban/rural poverty and positive parenting predicting children's WM and set-shifting. In the *backward digit span task*, in urban regions, positive parenting was associated with better performance, whereas, in rural regions, low and high positive parenting did not differ. On the contrary, in the *DCCS* task, in rural regions, high positive parenting was related to better performance, whereas, in urban regions, low and high positive parenting had similar effects on children's performance. Considering these results, mothers' positive parenting behaviors were more important for verbal WM in urban poverty; whereas, they were more important for children's mental set-shifting skills in rural regions. Therefore, positive parenting was a protective factor for different EF components in different contexts. It might be related to children's specific needs for support for the development of these skills in specific contexts, and positive parenting behaviors might have supported children's needs for the development of these skills. For instance, in urban poverty, children might have difficulty learning the specific abilities for the backward digit span task, which is a complex WM task to achieve; and parents' behaviors might be important to support these skills. For instance, they might be helping them acquire strategies to improve their WM. Additionally, in rural poverty, children might need support for the development of mental set-shifting, which is a more complex EF component that builds on other EF components (Diamond, 2013). Especially in rural poverty, children might need more support for the development of this complex EF component to deal with the limited opportunities in these regions (Vernon-Feagans et al., 2010). In future studies, the interactions between mothers and children might be observed to determine

how these interactions lead to improvements in specific performances in these specific contexts namely rural versus urban.

Since there were no other interaction terms, the main effects of other variables on children's EF were examined. Firstly, children's receptive vocabulary was positively associated with all EF tasks. Therefore, children having improved receptive vocabulary showed a better performance in the EF tasks. This finding is in line with the previous studies indicating that children's language skills (i.e., receptive vocabulary; sentence structure) are associated with their EF skills (i.e., Daneri et al., 2019; Gooch et al., 2016). According to Vygotsky, the speech used in conversations among adults and children is internalized by children, and the internalization of speech is associated with improvements in the control of children's attention, thoughts, and behaviors (Fox & Riconscente, 2008; Müller & Kerns, 2015, pp. 604). Similarly, Luria (1961) has argued that as children grow older, they can use more complex language, which helps them coordinate their actions (Müller & Kerns, 2015, pp. 604). Therefore, the complexity of children's language is helpful for children to control, plan, and organize their behaviors in more efficient ways, and therefore, it is associated with the manifestation of better EF skills.

Secondly, perceptual sensitivity as a temperamental characteristic of children was positively related to children's performance in the forward and backward digit span tasks. Therefore, children who were sensitive to the environmental stimulations performed better in -phonological WM. This finding is in line with previous studies arguing that children with high perceptual sensitivity are more responsive to the verbal or visual cues in the environment (Rothbart et al., 2001). Similar studies were conducted within the scope of an associated construct named sensory processing sensitivity, which is also related to sensitivity to social and environmental stimuli (Acevedo, Aron, Pospos, & Jessen, 2018). For instance, Adams et al. (2015) examined the association between sensory processing and EF in pre-term preschool children; and found that problems in sensory processing were associated with the impairment in WM and inhibition. Sensitivity to environmental cues is associated with more awareness, calmness, and self-control (Acevedo et al., 2018); therefore, children with high perceptual sensitivity might be more sensitive and alert to the cues and make more efficient strategies to perform better in the EF tasks. In the current study, perceptual sensitivity was only related to WM. A possible explanation might be related to different dimensions of sensitivity. For instance, different subscales have been

reported in different studies (i.e., aesthetic sensitivity, ease of excitation, low sensory threshold) (Aron et al., 2012). Consequently, rather than the general sensitivity, different dimensions of sensitivity might be associated with other components of EF, and further studies might explore these associations.

Contrary to the expectations, the poverty level of the family was positively associated with children's scores in the forward digit span task, whereas poverty was not related to other EF tasks. In other words, as the poverty level of the family increased, children's verbal WM became better. However, in the literature, studies reported that poverty is a risk factor for children's EF development, including WM (i.e., Lipina et al., 2013; Rhoades et al., 2011). Moderating mechanisms might explain the unexpected relationship between poverty and children's WM. For instance, Raver et al. (2013) reported that the effects of chronic poverty (based on income-to-needs ratio) on children's EF was depending on the temperament of children. For instance, highly reactive children were more sensitive to the levels of adversity, that is, they were negatively affected in their EF skills when they experienced more financial strains (defined as psychological strains due to material hardship). On the other hand, less reactive children were similarly affected from low and high financial strains in their EF skills. Therefore, children's temperament might moderate the association between poverty and EF; and the direction of the association might change based on the poverty conditions. Moreover, some mediating mechanisms might explain the non-significant relations between poverty and other EF components. For instance, in the literature, parenting and home quality have been reported as possible mediators in this relationship (i.e., Hackman et al., 2015). Therefore, rather than the direct association, poverty might be related to children's EF skills through mediator variables.

In addition to these significant results, there were some variables that were not associated with children's EF performance which were reported as being associated with EF skills in the previous studies. For instance, home environment quality in terms of stimulation and chaos was not related to children's EF skills. In a number of studies, stimulation (Hughes & Devine, 2019) and chaos (Hughes & Ensor, 2009) have been reported as predictors of children's EF. A stimulating home provides children a learning environment to attain certain skills such as EF (Rosen et al., 2019), and chaotic conditions lead to cognitive problems due to the overstimulation caused by the noise and disorder in these houses (Evans, Kliwer, & Martin, 1991). However, there are also studies reporting non-significant associations between home stimulation and

EF. For instance, Dilworth-Bart (2012) found that home environment quality and EF skills were not significantly associated. He argued that home quality was assessed based on the reports of the mothers, and it was not mainly assessing the observation of interactions of mothers with their children. Therefore, although stimulating materials are reported as available in the home environment by mothers, it might be necessary to observe the way that the materials in the home environment are used, and the way that mothers interact with their children. Consequently, the presence of materials might not mean that they are efficiently used for children to create a learning environment. Additionally, in a study testing the mediating role of home environment quality between SES and EF, responsivity, enrichment, and family companionship mediated this relationship, whereas, learning materials and physical environment did not (Sarsour et al., 2011). Therefore, rather than general stimulation, certain dimensions of stimulation might be associated with children's EF development. In addition to stimulation, there are studies reporting that household chaos was not associated with children's inhibition and set-shifting skills (St. John & Tarullo, 2019; Micalizzi, Brick, Flom, Ganiban, & Saudino, 2019). As St. John and Tarullo (2019) argued, household chaos might affect children's EF through the mediation of parenting behaviors. In the literature, there are studies supporting this argument; that is, parenting behaviors (i.e., responsivity/acceptance) mediate the relations between chaos and EF (i.e., Vernon-Feagans et al., 2016). Therefore, as a further step, the indirect effect of chaos on EF skills might be tested.

Among the parenting dimensions, mothers' sensitivity was not a predictor of children's EF skills. However, maternal sensitivity was reported as a predictor of children's EF in the previous studies (i.e., Bernier et al., 2012; Camerota & Willoughby, 2019) despite few studies reporting non-significant associations (i.e., Rochette & Bernier, 2014). However, studies testing the effect of maternal sensitivity on children's EF mainly used observational measures (i.e., Camerota & Willoughby, 2019; Hackman et al., 2015). The current study evaluated mothers' sensitivity based on children's reports. Therefore, differences in the findings might be derived from different measurement methods. Moreover, the maternal sensitivity scale was used in the current study for the first time, and its validity has not been tested previously. Indeed, the scale was not correlated with positive parenting in the current study, although they aimed to assess similar concepts. It might have resulted from measurement differences since mothers' and children's reports might not overlap as

reported in a number of studies (i.e., De Los Reyes, Goodman, Kliewer, & Reid-Quinones, 2010; Korelitz & Garber, 2016). On the other hand, the validity of the scale might be checked in further studies by including a more heterogeneous sample by including children from other SES levels.

Moreover, neighborhood quality was not related to the EF performance of children unexpectedly. There are studies in the literature reporting the effect of neighborhood quality on children's EF (i.e., Roy et al., 2014). For instance, John and Tarullo (2019) reported that neighborhood chaos was associated with children's WM and inhibition. On the other hand, there are studies reporting non-significant relations between neighborhood quality and EF (i.e., Beaver, Wright, & Delisi, 2007). For instance, Hackman et al. (2014) found that concentrated neighborhood disadvantage was not related to children's WM. The non-significant association between neighborhood quality and children's EF might be explained via mediator variables. Rather than the direct association, neighborhood quality might affect children's EF through mediator variables such as home stimulation and parenting quality. For instance, Kohen et al. (2008) reported that neighborhood cohesion was not directly associated with child outcomes (i.e., behavior problems, verbal ability); rather, it was indirectly related to child outcomes through maternal depression and parenting quality. Therefore, as a further step, the indirect association between neighborhood quality and children's EF might be tested.

Additionally, children's anger/frustration temperament was not associated with their EF skills. In the literature, certain temperament dimensions have been studied in relation to EF. For instance, in a study (Morasch & Bell, 2011), children's high inhibitory control temperament was positively associated with children's inhibition (EF). On the other hand, there are studies reporting non-significant associations. For instance, Ursache et al. (2013) reported that children's emotional reactivity temperament was not related to children's EF; it was only related to EF through the moderation of children's regulatory skills. Rather than testing anger/frustration as a predictor, it might be tested as a moderator variable in order to examine whether this temperament makes children more susceptible to certain environmental contexts in further studies.

Children's age and the duration that children attended kindergarten were controlled in the analyses since they might be confounding variables affecting children's EF. Firstly, children's age was positively associated with all EF tasks except

forward digit span task. Since children's EF development develops starting from early childhood until adulthood (i.e., Zelazo & Müller, 2002), it is expected that as children grow older, they become more proficient in their EF skills. Unexpectedly, children's age was not related to children's performance in the forward digit span task. Diamond (2013) reported that the forward digit span task is mainly used to assess short-term memory and requires the participant to hold information in mind; whereas, the backward digit span task is a measure of WM since it requires both holding the information in mind and manipulating that information. Studies also showed that the backward digit span task is more difficult than the forward version (i.e., Kessels, van den Berg, Ruis, & Brands, 2008). Moreover, as mentioned earlier, short-term memory develops earlier than the WM (Diamond, 2013); therefore, children might have gained enough skills for the performance in short-term memory in this age group resulting in a non-significant association between children's age and forward digit span task performance.

Secondly, attending kindergarten was positively related to children's performance in Corsi block tapping and backward digit span tasks. There are studies reporting the positive effects of schooling on children's EF development (i.e., Ponitz et al., 2009). In kindergartens, children engage in stimulating activities (La Paro et al., 2009); these activities might improve their EF skills. Moreover, it was reported that the quality of kindergarten is more advantageous for children from low and middle-income families (Schulting, Malone, & Dodge, 2005). Therefore, it might be expected that children might have benefited from the stimulating environment of the kindergartens in the current sample. Since it was a predictor of only the Corsi block tapping task and backward digit span task, the nature of the activities in the kindergarten might be supporting the WM skills of children rather than the other components. In further studies, the quality of the activities in the kindergartens might be examined in detail, and their associations with specific EF components might be identified.

Considering the results, it might be argued that environmental factors also contribute to the development of EF skills which are highly heritable (Friedman et al., 2016). For instance, positive parenting behaviors were important for children's certain EF skills in different contexts. As argued by the experiential canalization (Gottlieb, 1997), biological and environmental factors interact predicting children's developmental outcomes. Moreover, in this theory, it is argued that there are

alternative sources of stimulation in the contexts which are considered as adverse conditions; and these alternative sources shape children's development (Blair & Raver, 2012a). Considering the findings of the current study, the similarity of rural children's EF skills to the urban children might be explained via the alternative stimulations in these environments such as being involved in household chores and engaging in agricultural activities.

5.4 Contributions and Strengths of the Study

In the literature, there are studies examining the effect of poverty on children's EF development (i.e., Lipina et al., 2013; Rhoades et al., 2011); and they reported that poverty is a risk factor for children's EF. However, the roles of urban and rural poverty might be different, and there are few studies comparing urban and rural poverty in terms of children's EF development (i.e., Rojas-Barahona et al., 2015; Tine, 2014). However, these studies compared only certain dimensions of EF (i.e., WM; Tine, 2014) and reported contradictory findings. Therefore, the current study compared WM, inhibition, and mental set shifting dimensions of EF in urban and rural poverty and including all these dimensions was an important contribution of the study. Moreover, rather than using scales, children's EF was tested via observational tasks, and this is an important strength of the current study. Moreover, to our knowledge, there is no study conducted in Turkey comparing the roles of urban and rural poverty on children's EF development. Therefore, the current study contributed to the research in Turkish literature. Additionally, the data were collected from two metropolitan cities, which might be considered as a strength of the study. Moreover, the moderator role of urban-rural poverty has been tested in the current study. To our knowledge, this is the first study that tested urban-rural poverty as a moderator predicting children's EF.

Additionally, the current study compared the living conditions, parenting quality, mothers' beliefs on child development, and conversations with their children in urban and rural regions. Studies conducted in Turkey are limited comparing these concepts (i.e., Nacak et al., 2011). Therefore, the comparisons provided by the current study might be used to explain the differences in child outcomes in urban and rural poverty. Determining the similarities and differences in these regions might be beneficial for understanding their manifestations on children's development in future

studies. Therefore, the description of urban and rural poverty is another important contribution of the current study.

5.5 Limitations of the Study

The findings of the study should be evaluated considering several limitations. First, the data were collected from two cities in Turkey, and this restricts the generalizability of the findings to the population in Turkey. Secondly, since data were collected from Ankara and Mersin, which were metropolitan cities, children's performances might be different in smaller cities. Therefore, the findings should be evaluated with caution to understand the urban and rural differences in Turkey. Thirdly, the data were collected from children who were attending kindergarten. As the results have indicated, the duration of attending kindergarten was positively associated with children's EF. Therefore, attending kindergarten created a confounding variable for the results, and the nature of the sample is an important limitation of the study, although it was controlled in the analyses. Additionally, parents who send their children to kindergartens might put more emphasis on their children's education considering that many children do not attend kindergartens. Therefore, the sample might be biased, and in further studies, children who were not attending kindergarten should be included.

Fourthly, the scales assessing poverty, home and neighborhood quality, parenting, children's temperament, and children's EF problems were completed via mothers' reports. Mothers might have completed the scales to show their behaviors as better than their actual behaviors due to social desirability bias. Moreover, their introspective abilities might be limited to evaluate their behaviors correctly, although they do not have social desirability bias. Fifthly, since the sample was a poverty sample, mothers had low education levels. Therefore, it is difficult to ensure that all mothers understood the items in the scales as correctly. Additionally, the maternal sensitivity scale was developed for the current study considering previous scales, and the validity study of the scale was not conducted. In further studies, the validity of the scale should be checked. Additionally, an important limitation of the study is the lack of assessments regarding genetic transmission of EF skills. For instance, parents' EF skills were not included in the current study. Therefore, it is difficult to infer about the heritability of children's EF skills. Lastly, the design of the study was cross-sectional.

Therefore, longitudinal studies are needed to clarify the directions of associations and the effects of poverty on children's EF in the long run.

5.6 Implications and Future Suggestions

Despite the limitations, the current study has some implications and suggestions for later research. For instance, the findings of the study might be utilized for the development of intervention programs. The findings revealed that attending kindergarten and receptive vocabulary were predictors of children's EF. Therefore, since children living in poverty are at risk for the development of EF (i.e., Lipina et al., 2013), their families might be encouraged to send their children to kindergartens. Moreover, intervention programs might be designed to improve children's vocabulary to support their EF development. In this respect, families might be encouraged to read books to their children, or book reading activities might be included more frequently in the kindergarten curriculum. Moreover, since positive parenting was important for specific EF components in specific contexts, interventions might focus on improving mothers' positive parenting behaviors.

The findings of the current study might also be used to design further studies. For instance, samples from different regions of Turkey might be included and compared in terms of urban-rural differences. In this way, specific contextual factors and regional differences that affect children's EF might be determined. Moreover, in addition to the direct effects of contextual and child-related factors, the associations among the concepts might be tested via a comprehensive model including the direct and indirect associations.

5.7 Conclusion

The current study indicated that urban and rural regions differ in certain domains such as poverty (income-to-needs ratio, fathers' education level, and food insecurity), home stimulation, neighborhood quality (i.e., support from neighbors, neighborhood stress), and mothers' expectations for children's educational attainment. On the other hand, in addition to the similarity in mothers' parenting behaviors, the most commonly reported themes were similar for urban and rural mothers in terms of the content of their conversations with their children and mothers' beliefs about child

development. When children's EF was compared, children living in urban and rural poverty were not different in their EF skills. Finally, the predictors of EF were examined; and the results showed that children's age, the duration of attending kindergarten, receptive vocabulary, and children's perceptual sensitivity were associated with children's EF. Additionally, urban-rural poverty interacted with mothers' positive parenting behaviors predicting children's verbal WM and mental set-shifting skills. Consequently, the current study described the urban and rural poverty differences in terms of living conditions, parenting, and children's EF, in addition to exploring the predictors of EF in urban and rural poverty in a Turkish sample.



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APPENDICES

A. METU HUMAN SUBJECTS ETHICS COMMITTEE

UYGULAMALI ETİK ARAŞTIRMA MERKEZİ
APPLIED ETHICS RESEARCH CENTER



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Sayı: 28620816/ 2460

08 AĞUSTOS 2018

Konu: Değerlendirme Sonucu

Gönderen: ODTÜ İnsan Araştırmaları Etik Kurulu (İAEK)

İlgi: İnsan Araştırmaları Etik Kurulu Başvurusu

Sayın Prof.Dr. Sibel Kazak BERUMENT

Danışmanlığını yaptığımız doktora öğrencisi Şükran OKUR'un "**Okul Öncesi Çocuklarda Yürütücü İşlev Becerilerinin Yordayıcıları: Kentsel ve Kırsal Yoksulluk**" başlıklı araştırması İnsan Araştırmaları Etik Kurulu tarafından uygun görülerek gerekli onay **2018-SOS-132** protokol numarası ile **08.08.2018 - 30.12.2019** tarihleri arasında geçerli olmak üzere verilmiştir.

Bilgilerinize saygılarımla sunarım.

Prof. Dr. Ş. Halil TURAN
Başkan V

Prof. Dr. Ayhan SOL
Üye

Prof. Dr. Ayhan Gürbüz DEMİR
Üye

Doç. Dr. Yaşar KONDAKÇI
Üye

Doç. Dr. Zana ÇITAK
Üye

Doç. Dr. Emre SELÇUK
Üye

Dr. Öğr. Üyesi Pınar KAYGAN
Üye

B. PERMISSION FROM MINISTRY OF EDUCATION



T.C.
MİLLÎ EĞİTİM BAKANLIĞI
Temel Eğitim Genel Müdürlüğü

Sayı : 70297673-605.01-E.18856266
Konu : Şükran OKUR

10.10.2018

ORTA DOĞU TEKNİK ÜNİVERSİTESİ REKTÖRLÜĞÜNE

- İlgi: a) Orta Doğu Teknik Üniversitesi Rektörlüğünün, Genel Müdürlüğümüzde
02/10/2018 tarihinde ve 18022465 sayıda işlem gören Anket Çalışması Hak.
b) Millî Eğitim Bakanlığının 22/08/2017 tarihli ve 2017/25 sayılı Genelgesi

Üniversiteniz Psikoloji Anabilim dalı doktora programı öğrencisi Şükran OKUR'un öğretim üyesi Prof. Dr. Sibel KAZAK BERUMENT'in danışmanlığında yürütmekte olduğu "Okul Öncesi Çocuklarda Yürütücü İşlev Becerilerinin Yordayıcıları; Kentsel ve Kırsal Yoksulluk" konulu araştırma talebi hakkındaki ilgi (a) yazı ve ekleri Genel Müdürlüğümüzde oluşturulan komisyon tarafından incelenmiştir.

Söz konusu araştırma önerisinin veri toplama araçları ile birlikte sunulduğu görülmüştür. Ayrıca araştırma önerisinin "Süre ve Olanaklar" başlığında araştırmanın 2019 yılı aralık ayına kadara süreceğine dair bir ifadeye yer verildiği görülmüş olup ilgili genelgenin 4 üncü maddesi gereğince; araştırma izinleri bir öğretim yılı süresince verilebildiğinden ilgili çalışmanın 2019-2020 eğitim öğretim yılına uzaması durumunda araştırmacı tarafından yeniden izin talep edilmesi gerektiği değerlendirilmiştir.

Bu doğrultuda araştırmada yer alan uygulamaların **eğitim ve öğretimi aksatmayacak şekilde** katılımcılara **gönüllülük esasına** dayalı olarak uygulanması, uygulamalarda sadece yazımız ekinde gönderilen **mühürlü anketin** kullanılması ve elde edilen kişisel verilerin **(doğum yeri. vb)** gizliliği hususuna dikkat edilerek araştırma sonucunda elde edilen raporun basılı ve dijital ortamda Genel Müdürlüğümüze teslim edilmesi gerekmektedir.

Bu çerçevede araştırmanın Genel Müdürlüğümüze bağlı ilkokullar ve ana sınıflarında 2018-2019 eğitim öğretim yılında yürütülmesi uygun bulunmuştur.

Bilgilerinizi ve gereğini rica ederim.

Dr. Cem GENÇOĞLU
Bakan a.
Genel Müdür

- Ekler:
1-İlgi (a) yazı ve ekleri
2-Mühürlü Anket (20 sayfa)

**BELGENİN ASLI
ELEKTRONİK İMZALIDIR**

Atatürk Biv. 06648 Kızılay/ANKARA
Elektronik Ağ: www.meb.gov.tr
e-posta: adsoyad@meb.gov.tr

Ayrıntılı bilgi için: M. AKARSU Şef
Tel: (0 312) 413 13 31
Faks: (0 312) 417 71 08

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C. DEMOGRAPHIC INFORMATION FORM (PILOT STUDY)

Demografik Bilgi Formu

	ANNE için	BABA için
Yaşı:		
Eğitim durumu:	<input type="checkbox"/> Okuma-yazma bilmiyor <input type="checkbox"/> Okuma yazma biliyor <input type="checkbox"/> İlkokul <input type="checkbox"/> Ortaokul <input type="checkbox"/> Lise <input type="checkbox"/> Ön Lisans <input type="checkbox"/> Lisans	<input type="checkbox"/> Okuma-yazma bilmiyor <input type="checkbox"/> Okuma yazma biliyor <input type="checkbox"/> İlkokul <input type="checkbox"/> Ortaokul <input type="checkbox"/> Lise <input type="checkbox"/> Ön Lisans <input type="checkbox"/> Lisans
Mesleği:		

ÇOCUKLAR için

Çocuğunuzun yaşı:

Toplam kaç çocuğunuz var?

Yaşları nelerdir?

D. HOME ENVIRONMENT INTERVIEW (PILOT STUDY)

Ev Ortamı Görüşmesi

- 1) Çocuđunuz bir gn boyunca nasıl vakit geiriyor? Gn boyunca neler yapıyor?
- 2) Çocuđunuz nelerle, nerede ve kiminle oynuyor?
- 3) Çocuđunuzla hangi konular hakkında konuşuyorsunuz? Çocuđunuz size neler soruyor?
- 4) Çocuđunuzun gn boyunca yaptığı şeyler hafta içi ve hafta sonu fark ediyor mu?
- 5) Çocuđunuzun gn boyunca yaptığı şeyler yazın ve kışın fark ediyor mu?

E. DEMOGRAPHIC INFORMATION FORM

DEMOGRAFİK BİLGİ FORMU

ANNE için	
Yaşı	
Eğitim durumu	<input type="checkbox"/> Okuma-yazma bilmiyor <input type="checkbox"/> Okuma yazma biliyor <input type="checkbox"/> İlkokul <input type="checkbox"/> Ortaokul <input type="checkbox"/> Lise <input type="checkbox"/> Ön Lisans <input type="checkbox"/> Üniversite (Lisans)
Mesleği	
Bugüne kadar en uzun yaşadığınız yer nasıl bir yerdi?	<input type="checkbox"/> Köy <input type="checkbox"/> Kasaba <input type="checkbox"/> Şehir <input type="checkbox"/> Büyük şehir merkezi <input type="checkbox"/> Yurt dışı
Şu an yaşadığınız yerin adı	
Medeni haliniz	<input type="checkbox"/> Evli ve birlikte yaşıyor <input type="checkbox"/> Evli ama eşinden ayrı yaşıyor <input type="checkbox"/> Eşinden ayrılmış <input type="checkbox"/> Eşini kaybetmiş

BABA için	
Yaşı	
Eğitim durumu	<input type="checkbox"/> Okuma-yazma bilmiyor <input type="checkbox"/> Okuma yazma biliyor <input type="checkbox"/> İlkokul <input type="checkbox"/> Ortaokul <input type="checkbox"/> Lise <input type="checkbox"/> Ön Lisans <input type="checkbox"/> Üniversite (Lisans)
Mesleği	
Bugüne kadar en uzun yaşadığı yer nasıl bir yerdi?	<input type="checkbox"/> Köy <input type="checkbox"/> Kasaba <input type="checkbox"/> Şehir <input type="checkbox"/> Büyük şehir merkezi <input type="checkbox"/> Yurt dışı

Ailenizin toplam aylık geliri (Bu bölümü lütfen boş bırakmayınız)

Toplam Aylık Gelir:TL

ÇOCUKLAR için

Toplam kaç çocuğunuz var?

	Yaşı	Cinsiyeti		Yaşı	Cinsiyeti
1. Çocuk			4. Çocuk		
2. Çocuk			5. Çocuk		
3. Çocuk			6. Çocuk		

HANE GELİR – GİDER ANKETİ

Evinizde toplam kaç kişi yaşıyor?		
Siz ve eşiniz dışında evinizde para kazanmak amacıyla çalışan biri var mı?	<input type="checkbox"/> Hayır <input type="checkbox"/> Evet ise Aile bütçenize aylık katkısı nedir? TL	
Oturduğunuz ev size mi ait?	<input type="checkbox"/> Hayır <input type="checkbox"/> Evet ise Aylık kiranız ne kadar? TL	
Herhangi bir kurum/kuruluş ya da vakıftan para, gıda, kıyafet veya yakacak yardımı alıyor musunuz?	<input type="checkbox"/> Evet <input type="checkbox"/> Hayır	
Memleketinizden, akrabalarınızdan ya da komşularınızdan para, gıda, kıyafet veya yakacak yardımı alıyor musunuz?	<input type="checkbox"/> Evet <input type="checkbox"/> Hayır	
Aşağıda listelenen eşyalar için “sahibiz” ya da “sahip değiliz” seçeneklerinden birini işaretleyin.		
	Sahibiz	Sahip değiliz
Televizyon		
Plazma televizyon		
Tablet		
Bilgisayar		
İnternet bağlantısı		
Araba		
Buzdolabı		
Çamaşır makinesi		
Bulaşık makinesi		
Mikro dalga fırın		
Kalorifer		
Akıllı telefon		
Faize kalmış kredi kartı borcunuz var mı?	<input type="checkbox"/> Evet <input type="checkbox"/> Hayır	

F. FOOD INSECURITY INDEX

GIDA GÜVENCESİ ENDEKSİ

Aşağıdaki soruları son 1 yılı düşünerek cevaplayın.

1. Yemek yapacak malzeme (mesela sebze, et gibi) almak için hiç ailenizin parasının bittiği oldu mu?	<input type="checkbox"/> Evet <input type="checkbox"/> Hayır
2. Yeterli yiyecek alacak paranız olmadığı için, siz ya da evinizdeki bir başka yetişkinin, hiç doyacak kadar yemek yiyemediği oldu mu?	<input type="checkbox"/> Evet <input type="checkbox"/> Hayır
3. Yeterli yiyecek alacak paranız olmadığı için, çocuğunuz ya da çocuklarınızın, hiç doyacak kadar yemek yiyemediği oldu mu?	<input type="checkbox"/> Evet <input type="checkbox"/> Hayır
4. Evde yiyecek bir şey olmadığı için, çocuğunuz ya da çocuklarınız hiç aç olduklarını söyledi mi?	<input type="checkbox"/> Evet <input type="checkbox"/> Hayır
5. Yiyecek alacak yeterli paranız olmadığı için, çocuğunuz ya da çocuklarınız hiç aç olarak yatağa gitti mi?	<input type="checkbox"/> Evet <input type="checkbox"/> Hayır
6. Yeterli yiyecek alacak paranız olmadığı için, hiç çocuğunuzun ya da çocuklarınızın yemeklerinin boyutunu küçülttünüz mü ya da çocuklarınız öğün atladı mı?	<input type="checkbox"/> Evet <input type="checkbox"/> Hayır
7. Yeterli yiyecek alacak paranız olmadığı için, siz ya da evinizdeki bir başka yetişkin, hiç yemeğinin boyutunu küçülttü mü ya da öğün atladı mı?	<input type="checkbox"/> Evet <input type="checkbox"/> Hayır
8. Yemek yapacak malzeme almak için çok az paranız kaldığından, ailenizi doyurmak için, hiç sınırlı sayıda malzemeyi uzun süre kullandınız mı (mesela patates, makarna gibi)?	<input type="checkbox"/> Evet <input type="checkbox"/> Hayır

G. HOME ENVIRONMENT QUESTIONNAIRE

Ev Ortamı Anketi

1. Çocuğunuzun aynı evde yaşadığı kaç tane kardeşi (üvey kardeşleri de dahil) var? (Toplam kardeş sayısını yazın)	Kardeş sayısı	
2. Siz ya da bir başkası çocuğunuza hikaye okur mu? Ne sıklıkla okur?	<input type="checkbox"/> Evet <input type="checkbox"/> Hayır	<input type="checkbox"/> Yılda birkaç kez <input type="checkbox"/> Ayda birkaç kez <input type="checkbox"/> Haftada bir kez <input type="checkbox"/> Haftada en az 3 kez <input type="checkbox"/> Her gün <input type="checkbox"/> Günde birçok kez
3. Çocuğunuzun kendisine ait çocuk kitabı var mı? Yaklaşık kaç tane var?	<input type="checkbox"/> Evet <input type="checkbox"/> Hayır	<input type="checkbox"/> 10 ya da daha fazla <input type="checkbox"/> 3 – 9 arası <input type="checkbox"/> 1 ya da 2
4. Çocuğunuzun sayıları, renkleri, şekilleri, meslekleri öğreten oyunları/oyuncakları var mı? Yaklaşık kaç tane var?	<input type="checkbox"/> Evet <input type="checkbox"/> Hayır	<input type="checkbox"/> Bir <input type="checkbox"/> İki <input type="checkbox"/> Üç <input type="checkbox"/> Dört ya da daha fazla
5. Çocuğunuzun hiç yapbozu var mı?	<input type="checkbox"/> Evet <input type="checkbox"/> Hayır	
6. Çocuğunuzun bloklar, legolar, oyun hamuru gibi oyuncakları var mı?	<input type="checkbox"/> Evet <input type="checkbox"/> Hayır	
7. Çocuğunuzun el becerilerini destekleyen oyunları ve oyuncakları var mı? (ipe dizmek için boncuk, küçük bloklar, oyuncak bebeğe giydirmek için giysiler, vb.)	<input type="checkbox"/> Evet <input type="checkbox"/> Hayır	
8. Çocuğunuzun kullanabileceği boya, tebeşir veya kalem gibi malzemeleri var mı?	<input type="checkbox"/> Evet <input type="checkbox"/> Hayır	
9. Çocuk dışında aile üyelerinin okuyabileceği kitaplarınız var mı? Yaklaşık kaç tane var?	<input type="checkbox"/> Evet <input type="checkbox"/> Hayır.....tane Kitap türü:.....	
10. Ailenizin düzenli olarak aldığı dergi var mı? Yaklaşık kaç tane var?	<input type="checkbox"/> Evet <input type="checkbox"/> Hayır	<input type="checkbox"/> Bir <input type="checkbox"/> İki <input type="checkbox"/> Üç <input type="checkbox"/> Dört ya da daha fazla
11. Çocuğunuz bilgisayar, tablet ya da telefonda çocuk şarkıları, hikayeler, masallar dinler mi?	<input type="checkbox"/> Evet <input type="checkbox"/> Hayır	<input type="checkbox"/> Her gün <input type="checkbox"/> Haftada birkaç kez <input type="checkbox"/> Ayda birkaç kez <input type="checkbox"/> Yılda birkaç kez
12. Çocuğunuz, televizyon, bilgisayar ya da telefonda çocuklara yönelik çizgi filmler ya da programlar izler mi?	<input type="checkbox"/> Evet <input type="checkbox"/> Hayır	
13. Evde, siz ya da bir başkası çocuğunuzun rakamları, sayıları öğrenmesine yardım eder mi?	<input type="checkbox"/> Evet <input type="checkbox"/> Hayır	

14. Evde, siz ya da bir başkası çocuğunuzun harfleri öğrenmesine yardım eder mi?	<input type="checkbox"/> Evet <input type="checkbox"/> Hayır
15. Evde, siz ya da bir başkası çocuğunuzun renkleri öğrenmesine yardım eder mi?	<input type="checkbox"/> Evet <input type="checkbox"/> Hayır
16. Evde, siz ya da bir başkası çocuğunuzun şekilleri (kare, üçgen, yuvarlak gibi) ve büyüklükleri (büyük-küçük, az-çok, uzun-kısa gibi) öğrenmesine yardım eder mi?	<input type="checkbox"/> Evet <input type="checkbox"/> Hayır
17. Çocuğunuza şarkı, şiir veya tekerleme öğrenmesi için yardımcı olur musunuz?	<input type="checkbox"/> Evet, her fırsatta <input type="checkbox"/> Evet, arada sırada <input type="checkbox"/> Hayır, pek uğraşmıyorum
18. Çocuğunuza bir yeri ya da bir şeyi tarif edebilmesi için altında, üstünde, yanında, arkasında, daha büyük, daha küçük gibi terimleri öğretir misiniz?	<input type="checkbox"/> Evet, her fırsatta <input type="checkbox"/> Evet, arada sırada <input type="checkbox"/> Hayır, pek uğraşmıyorum
19. Siz ya da başka bir aile üyesi çocuğunuzu dışarıya çıkarma fırsatı bulur mu? Örneğin, alış-verişe, parka, pikniğe, araba gezintisine vb. Yaklaşık ne sıklıkla çocuğunuzu dışarıya çıkarırsınız?	<input type="checkbox"/> Evet <input type="checkbox"/> Hayır <input type="checkbox"/> Yılda birkaç kez ya da daha az <input type="checkbox"/> Ayda yaklaşık bir kez <input type="checkbox"/> Ayda yaklaşık iki ya da üç kez <input type="checkbox"/> Haftada birkaç kez <input type="checkbox"/> Yaklaşık günde bir kez
20. Çocuğunuz kendi yaşındaki çocuklarla oynayabileceği bir yerlere gider mi? (Çocuk parkına gitmek, sokakta oyun oynamak gibi)	<input type="checkbox"/> Evet, sık sık <input type="checkbox"/> Evet, arada sırada <input type="checkbox"/> Evet, nadiren <input type="checkbox"/> Hayır
21. Geçtiğimiz yıl içerisinde siz ya da başka bir aile üyesi çocuğunuzu herhangi bir çocuk, bilim, sanat, tarih müzesine ya da başka bir müzeye götürdü mü? Yaklaşık kaç kere götürdü?	<input type="checkbox"/> Evet <input type="checkbox"/> Hayır <input type="checkbox"/> Bir ya da iki kez <input type="checkbox"/> Birkaç kez <input type="checkbox"/> Yaklaşık ayda bir kez <input type="checkbox"/> Yaklaşık haftada bir kez ya da daha sık
22. Geçtiğimiz yıl içerisinde siz ya da başka bir aile üyesi, çocuğunuzu festival, sergi, tarihi yerler, panayır, kermes, şenlik gibi kültürel etkinliklere ya da başka herhangi bir kültürel etkinliğe götürdü mü? Yaklaşık kaç kere götürdü?	<input type="checkbox"/> Evet <input type="checkbox"/> Hayır <input type="checkbox"/> Bir ya da iki kez <input type="checkbox"/> Birkaç kez <input type="checkbox"/> Yaklaşık ayda bir kez <input type="checkbox"/> Yaklaşık haftada bir kez ya da daha sık
23. Geçtiğimiz yıl içinde çocuğunuzla birlikte, başka bir yere (köy, kasaba, yayla ya da başka bir şehir) gezmeye gittiniz mi?	<input type="checkbox"/> Evet, birkaç kez <input type="checkbox"/> Evet, bir kez <input type="checkbox"/> Hayır
24. Geçtiğimiz yıl içinde, çocuğunuz dini aktivitelere (camiye, kiliseye ya da sinagoga gitmek vb.) katıldı mı? Yaklaşık ne sıklıkla katıldı?	<input type="checkbox"/> Evet <input type="checkbox"/> Hayır <input type="checkbox"/> Yaklaşık haftada bir kez <input type="checkbox"/> En az ayda bir kez <input type="checkbox"/> Yılda bir kaç kez
25. Son bir ay içerisinde, çocuğunuzu sadece onun hoşuna gideceği düşüncesi ile bir yerlere götürdünüz mü? Yaklaşık kaç kere götürdünüz?	<input type="checkbox"/> Evet <input type="checkbox"/> Hayır kez

26. Sıradan bir günde, çocuğunuz, evde ya da evinizin dışında bir yerde (örneğin bakıcısında), ne kadar süre televizyon izler? (saat olarak yazın)	..... saat
27. Kahvaltı ya da öğle yemeğinde çocuğun kendi isteklerini dile getirmesine izin verir misiniz? (Örneğin, kahvaltıda reçel-ekmek yemek istiyorum gibi)	<input type="checkbox"/> Evet <input type="checkbox"/> Hayır
28. Çocuğunuz günde en az bir öğün yemeği babası, siz ve varsa kardeşleriyle birlikte yer mi?	<input type="checkbox"/> Evet <input type="checkbox"/> Hayır
29. Çocuğunuzun yaptığı resim, boyama, yapıştırma ya da proje gibi faaliyetlerini evinizin bir yerine koyar mısınız?	<input type="checkbox"/> Evet <input type="checkbox"/> Hayır
30. Çocuklar bazen uslu davranırlar, bazen de davranmazlar. Geçtiğimiz hafta içerisinde, çocuğunuz sizi kızdırdığında, ona hiç vurduğunuz oldu mu? Eğer olduysa yaklaşık kaç kez oldu?	<input type="checkbox"/> Evet <input type="checkbox"/> Hayır kez
31. Çocuğunuzun kullanabildiği bir tableti var mı? Evet ise, günde yaklaşık kaç saat tablet ile oynar?	<input type="checkbox"/> Evet <input type="checkbox"/> Hayır saat
32. Çocuğunuz, size ait telefonlar ile oynar mı? Evet ise, günde yaklaşık kaç saat telefon ile oynar?	<input type="checkbox"/> Evet <input type="checkbox"/> Hayır saat
33. Çocuğunuz aşağıdakilerden hangileri ile oynar? (Birden fazla seçebilirsiniz)	
<input type="checkbox"/> Bisiklet <input type="checkbox"/> Top <input type="checkbox"/> Toprak/Çamur <input type="checkbox"/> Hayvanlar <input type="checkbox"/> Tarlada sebzelerle <input type="checkbox"/> Tarım/tamir aletleriyle (kazma, çekiç gibi) <input type="checkbox"/> Sokakta arkadaşları ile	

H. CONFUSION, HUBBUB, AND ORDER SCALE (CHAOS)

EVİM NASIL?

Ev ortamınız ile ilgili olarak sizin görüş, duygu ve düşüncenize en uygun olan seçeneği “Hiç Doğru Değil”den “Çok Doğru”ya giden 1 ile 4 arasındaki uygun gördüğünüz rakamı daire içine alarak belirtiniz.

	Hiç Doğru Değil	Pek Doğru Değil	Doğru	Çok Doğru
1. Evimizde kargaşa ve dağınıklık çok az olur.	1	2	3	4
2. Evde aradığımız bir şeyi genellikle bulabiliriz.	1	2	3	4
3. Neredeyse her zaman bir telaş içindeyizdir.	1	2	3	4
4. Evimizde genellikle her şey yerli yerindedir.	1	2	3	4
5. Ne kadar uğraşsaksak uğraşalım, genellikle hep geç kalırız.	1	2	3	4
6. Evimizde her zaman her şey altüst olur.	1	2	3	4
7. Evde birbirimizin sözünü kesmeden konuşabiliriz.	1	2	3	4
8. Evimizde gürültü patırtı eksik olmaz.	1	2	3	4
9. Ailecek ne planlarsak planlayalım, genelde gerçekleştiremeyiz.	1	2	3	4
10. Bizim evde gürültüden kendi sesini bile duyamazsın.	1	2	3	4
11. Sıklıkla, evde başkalarının yaptığı tartışmalar içine ben de çekilirim.	1	2	3	4
12. Evimiz kafa dinlemek için iyi bir yerdir.	1	2	3	4
13. Evimizde telefon konuşması bitmek tükenmek bilmez.	1	2	3	4
14. Evimizde ortam sakindir.	1	2	3	4
15. Evimizde düzenli bir rutin vardır. Güne başlarken ne olacağı bellidir.	1	2	3	4

I. NEIGHBORHOOD QUALITY

MAHALLE ÖLÇEĞİ

1. Aşağıda yazılı olan bir dizi mahalle özelliğinin, sizin mahalleniz için ne kadar doğru ne kadar yanlış olduğunu “Çok doğru”, “Doğru”, “Yanlış” veya “Tamamen yanlış” şıklarından birini seçerek işaretleyiniz.

	Hiç Doğru Değil	Pek Doğru Değil	Doğru	Çok Doğru
1. Mahallemizde evler düzgün	1	2	3	4
2. Mahallemiz güvenli	1	2	3	4
3. Mahallemiz çocukların dışarıda oynaması için güvenli	1	2	3	4
4. Mahallemizde çocuğumun arkadaş çevresi var	1	2	3	4
5. Mahallemiz akrabaların/tanıdıkların oturduğu yerlere yakın	1	2	3	4
6. Mahallemizde herkes aynı köyden/bölgeden	1	2	3	4
7. Mahallemizde çocukların örnek alabileceği yetişkinler var	1	2	3	4
8. Mahallemiz temiz, bakımlı	1	2	3	4
9. Mahallemiz sessiz / sakin	1	2	3	4
11. Mahallemizde oturan insanlardan memnun değilim	1	2	3	4
12. Mahallemiz pahalı	1	2	3	4
13. Mahallemizde yaşayanlar birbirlerinden çok farklı	1	2	3	4

2. Mahallenizde yaşayan kişiler arasındaki yakınlık ve yardımlaşma ile ilgili cümleler için “Çok doğru”, “Doğru”, “Yanlış” veya “Tamamen yanlış” şıklarından birini işaretleyiniz.

	Hiç Doğru Değil	Pek Doğru Değil	Doğru	Çok Doğru
1. Mahalledeki sorunlar için mahalleli bir araya gelir.				
2. Bir sorunum olduğunda mahalleli yardımcı olur.				
3. Acil olarak bir miktar paraya ihtiyacım olsa, mahallede yaşayan birilerinden borç isteyebilirim.				

4. Bir yere gitmem gerekse, mahallede birisinden çocuğuma bakmasını isteyebilirim.				
5. Çocuğumun bir sorunu olduğunda, mahallede birisiyle paylaşıp dertleşebilirim.				
6. Hasta olsam, mahalleden birileri bana yardım eder.				
7. Banka, hastane ya da devlet dairesi gibi yerlere gitmem gerekse mahalleden birisi yardımcı olabilir				

3. Mahallenizde aşağıda sayacağım imkânlardan hangilerinin olup olmadığını söyleyebilir misiniz? Bu imkânların her birisi için “Yok”, “Var ama yetersiz”, “Emin değilim”, veya “Var ve yeterli” şıklarından birini lütfen seçin.

	Yok	Var Ama Yetersiz	Var ve Yeterli
1. Oyun parkları	1	2	3
2. Spor alanları	1	2	3
3. Alışveriş merkezi/market	1	2	3
4. Polis merkezi/Karakol	1	2	3
5. Sağlık merkezi/Klinik/Hastane	1	2	3
6. İlköğretim Okulu	1	2	3
7. Kreş/yuva	1	2	3
8. Kurslar	1	2	3
9. Halk eğitim merkezi	1	2	3
10. Kültür Merkezi	1	2	3

Aşağıda yazan ve mahallenizde size stres yaratabilecek olayların olup olmadığını işaretler misiniz?

	Yok	Var
1. Fiziksel kavga	1	2
2. Standartların altında yaşama koşulları (örneğin mahallede sürekli patlayan su borusu)	1	2
3. Hijyenik/temiz olmayan yaşam koşulları (örneğin böcek kaplaması/ istilasası)	1	2
4. Gürültü	1	2
5. Aşırı kalabalıklık/ evlerin kalabalıklığı	1	2

Burada belirtilmemiş olup mahallenizde olan ve size stres yaratan/huzurunuzu kaçıran başka olaylar var mı?

Evet _____ Hayır _____

Cevabınız evetse neler olduğunu buraya yazar mısınız?

J. LIVING CONDITIONS IN RURAL REGIONS

KÖY YAŞAMI ÖLÇEĞİ

Köyünüze en yakın yerleşim birimi nasıl bir yer?

- Köy
- Kasaba
- İlçe
- İl

Köyünüze toplu taşıma (otobüs/dolmuş) ile ulaşım sağlanıyor mu?

- Evet
- Hayır

Köyünüze toplu taşıma ile ulaşıyorsa, ne kadar sıklıkla ulaşıyor?

- Günde 1-2 kez
- Günde 3 ve fazla
- Haftada birkaç kez
- Haftada bir kez
- Diğer.....

Ne kadar sıklıkla şehir merkezine gidiyorsunuz? (alışveriş veya başka ihtiyaçlarınızı karşılamak için)

- Haftada birkaç kez
- Haftada bir kez
- Ayda bir kez
- Yılda birkaç kez
- Yılda bir kez
- Hiç

Çocuğunuz ne kadar sıklıkla şehir merkezine gidiyorsunuz?

- Haftada birkaç kez
- Haftada bir kez
- Ayda bir kez
- Yılda birkaç kez
- Yılda bir kez
- Hiç

Köyünüzde ihtiyaçlarınızı karşılayabileceğiniz market var mı?

- Hiç yok
- Bir tane var
- Birden fazla var

K. PARENTING QUALITY

EBEVEYNLİK ÖLÇEĞİ

	Hiçbir zaman	Çok seyrek	Bazen	Çoğu zaman	Her zaman
1. Çocuğumu bir şeyleri kendi başına yapması konusunda cesaretlendiririm.	1	2	3	4	5
2. Çocuğum bana bir şey anlatırken sözünü kesmeden dinlerim.	1	2	3	4	5
3. Çocuğumun duygularını serbestçe ifade etmesine izin veririm.	1	2	3	4	5
4. Çocuğuma yaptığı şeyin önemli olduğunu hissettiririm.	1	2	3	4	5
5. Ebeveynlik konusunda bir yanlış yaptığımda çocuğumdan özür dilerim.	1	2	3	4	5
6. Çocuğumun kişisel görüşlerine saygı gösteririm.	1	2	3	4	5
7. Çocuğumun iyi ve kötü davranışı karşısında neler hissettiğimi ona açıklarım.	1	2	3	4	5
8. Çocuğumun kendi başına becerebileceği şeyleri denemesi için ona fırsat tanırım.	1	2	3	4	5
9. Çocuğumun kendine özgü bir bakış açısı olduğunu kabul ederim.	1	2	3	4	5
10. Çocuğuma bir şey alırken onun da fikrini alırım.	1	2	3	4	5
11. Çocuğuma bağımsız olmayı öğrenmesi konusunda yardımcı olurum.	1	2	3	4	5
12. Çocuğumun büyüdükçe yeni şeyler denemeyi göze alması gerektiğine inanırım.	1	2	3	4	5
13. Çocuğuma, davranışlarının sonuçlarını açıklarım.	1	2	3	4	5
14. Çocuğuma bazı şeylerin neden gerekli olduğunu açıklamaya çalışırım.	1	2	3	4	5
15. Çocuğuma, kurallara neden uyması gerektiğini açıklarım.	1	2	3	4	5
16. Çocuğuma, neden cezalandırıldığını veya kısıtlandığını açıklarım.	1	2	3	4	5
17. Çocuğuma, kuralların nedenini açıklarım.	1	2	3	4	5
18. Çocuğum yanlış davrandığı zaman, onunla mantıklı bir şekilde konuşur ve olayın üzerinden geçerim.	1	2	3	4	5

L. MATERNAL SENSITIVITY SCALE

Algılanan Anne Duyarlılığı Ölçeği

“Şimdi sana annelerin çocuklarına nasıl davrandıklarıyla ilgili bazı cümleler okuyacağım. Annenin bu davranışları yapıp yapmadığını “Evet/Hayır” diyerek cevaplamamı istiyorum.”

	Hayır	Evet, Bazen	Evet, Her zaman
1. Bir şeyi yapmakta zorlandığında –mesela yapboz oynarken, hamurdan şekil yaparken, lego oynarken-, annen sana yardım eder mi?	0	1	2
2. Yardıma ihtiyacın olduğunda, annen sana “yardım ister misin” diye sorar mı?	0	1	2
3. Bir şeyi yapmak istemediğinde, annen, yapman için ısrar eder mi (seni zorlar mı)?	0	1	2
4. Oyun oynarken, annen sana oyunu nasıl oynaman gerektiğini söyler mi? Mesela “öyle oyna, böyle oyna” der mi?	0	1	2
5. Annene bir şey anlatırken, senin anlattıklarını dinler mi?	0	1	2
6. Annene soru sorduğunda, sorunu cevaplar mı?	0	1	2
7. Annen, seninle oynamaktan hoşlanır mı?	0	1	2
8. Yeni bir şey gördüğünüzde, annen “bak ne güzel, oynamak/denemek ister misin” diye sorar mı?	0	1	2
9. Korktuğunda, ağladığında, düştüğünde, annen seninle hemen ilgilenir mi?	0	1	2
10. Annene soru sorduğunda, “sen küçüksün, anlamazsın” der mi?	0	1	2
11. Bir şeyi yapamadığında, annen sana kızar mı?	0	1	2
12. Yemeğini bitiremediğin zaman, annen, yemeğini bitirmen seni için zorlar mı?	0	1	2
13. Annen, sana “ne oynamak istersin, nereye gitmek istersin, ne yemek/giymek istersin” diye sorar mı?	0	1	2
14. Annen, senin hakkında güzel şeyler söyler mi?	0	1	2
15. Bir şeyi yapmakta zorlandığında, annen sana farklı bir şekilde denemeni söyler mi?	0	1	2
16. Sen oynarken, annen senin yakınlarında olur mu?	0	1	2

M. MATERNAL BELIEFS

a) Çocuđunuzun ne kadar süre eđitimine devam edeceđini dűşünüyorsunuz?

- İlkokul
- Ortaokul
- Lise
- Ön Lisans
- Üniversite (Lisans)
- Lisansüstü

b) Sizce bir çocuđun gelişmesi ve büyümesi için neler gereklidir?

c) Çocuđunuzla hangi konular hakkında konuşursunuz? Çocuđunuz size neler sorar?

N. CHILDREN'S TEMPERAMENTAL CHARACTERISTICS

Çocuk Davranış Anketi

Aşağıda çocukların birtakım durumlar karşısında gösterdiği davranışların listesi verilmiştir. Lütfen bu ifadeler için çocuğunuzun son "6 ay"ını düşünerek o davranışı ne sıklıkta yaptığını işaretleyiniz.

	Hiçbir zaman	Çok seyrek	Bazen	Çoğu zaman	Her zaman
1. Yatağa gitmesi söylendiğinde öfkelenir.	1	2	3	4	5
2. Oturma odasındaki yeni eşyaları hemen fark eder.	1	2	3	4	5
3. Dokunduğu nesnenin pürüzsüz ya da pürüzlü olduğunu fark eder.	1	2	3	4	5
4. İnsanların yüz özelliklerindeki farklılıklar hakkında genellikle yorum yapmaz (burun ya da kulağın büyüklüğü, dişlerin bozukluğu).	1	2	3	4	5
5. Oynamak istediği bir şeyi bulamayınca öfkelenir.	1	2	3	4	5
6. Biraz eleştirildiğinde bile çığına döner.	1	2	3	4	5
7. Anne ya da babası görünüşünde bir değişiklik yaptığında fark edip söyler.	1	2	3	4	5
8. Bir şey yapmasına izin verilmediğinde engellenmiş hisseder ve sinirlenir.	1	2	3	4	5
9. Alçak sesleri bile dinler görünür (örneğin; bir fısıltı olduğunda dikkatini verir ve dinler).	1	2	3	4	5
10. İstedikini almadığında öfke krizine girer.	1	2	3	4	5
11. Anne veya babası yeni bir kıyafet giydiğinde fark eder.	1	2	3	4	5
12. Anne ve babasının dış görünüşlerindeki değişiklikleri genellikle fark etmez.	1	2	3	4	5
13. Diğer çocuklar tarafından kışkırtıldığında öfkelenip çığına döner.	1	2	3	4	5
14. Bir hata yaptığında sinirlenir.	1	2	3	4	5
15. Oyunu bırakması söylenip, çağırıldığında sinirlenir (oyunu bırakmaya hazır değilken).	1	2	3	4	5

	Hiçbir zaman	Çok seyrek	Bazen	Çoğu zaman	Her zaman
16. Bir görevi yapmakta zorlandığında kolayca sinirlenir (örneğin; lego inşa etmek, resim yapmak, kıyafetlerini giymek).	1	2	3	4	5
17. Parfüm, sigara ya da yemek kokusu gibi kokuları genellikle fark etmez.	1	2	3	4	5
18. Başka bir çocuk oyuncasını aldığı anda nadiren sinirlenir/karşı çıkar.	1	2	3	4	5
19. Bir nesne üzerindeki küçük bir çöpü, lekeyi bile fark eder.	1	2	3	4	5
20. Yiyeceklerin farklı dokuda oluşuna (örneğin; tamamen ezilmemiş sebze püresi gibi pütürcüklü yiyecekler) oluşuna genellikle tepki vermez.	1	2	3	4	5
21. Sevmediği bir yiyeceği yemesi gerektiğinde hırçınlaşır/huysuzlaşır.	1	2	3	4	5

O. CHILDHOOD EXECUTIVE FUNCTIONING INVENTORY

Çocukluk Dönemi Yönetici İşlev Envanteri Ebeveyn Formu

Aşağıda bir dizi ifadeler bulacaksınız. Lütfen, her ifadenin çocuğunuzda görülme sıklığını “hiçbir zaman, çok seyrek, bazen, çoğu zaman, her zaman” (1’den 5’e kadar) seçeneklerinden birini daire içine alarak gösteriniz.

	Hiçbir zaman	Çok seyrek	Bazen	Çoğu zaman	Her zaman
1. Uzun talimatları hatırlamakta zorluk yaşar.	1	2	3	4	5
2. Yapmak istemediği bir şeyi yapmak için çabalar.	1	2	3	4	5
3. Bir etkinliğin ortasında, ne yapıyor olduğunu hatırlamada zorluk yaşar.	1	2	3	4	5
4. Bir ödül vaat edilmezse, daha az ilgisini çeken görevleri tamamlamakta zorluk yaşar.	1	2	3	4	5
5. Düşünmeden bir şeyleri yapma eğilimi vardır.	1	2	3	4	5
6. Birkaç işi yapması istenildiğinde, sadece ilkini veya sonuncuyu hatırlar.	1	2	3	4	5
7. Bir şeyde zorlandığında, yeni çözüm yolları bulmakta zorlanır.	1	2	3	4	5
8. Yapması gereken bir şey varken, daha ilgi çekici bir şey olursa dikkati dağılır.	1	2	3	4	5
9. Bir şeyi almaya gönderildiğinde, ne alacağını unutur.	1	2	3	4	5
10. Özel bir durum (örn; okul gezisine gitmek, bir eğlenceye gitmek vb.) olduğu zaman aşırı derecede heyecanlanır.	1	2	3	4	5
11. Sıkıcı bulunduğu işleri yapmada zorluk yaşar.	1	2	3	4	5
13. “Yapma, dur” denilmesine rağmen, kendini tutmakta veya zapt etmekte zorluk yaşar.	1	2	3	4	5
15. Dikkatini verebilmesi için, verilen işin ilgi çekici bulması gerekir.	1	2	3	4	5
16. Uygun olmayan durumlarda, gülmek için kendini tutması zordur.	1	2	3	4	5
18. Durdurulması söylendikten hemen sonra bir etkinliği durdurmakta zorlanır. Örneğin, durdurması istendikten sonra birkaç kez daha zıplar veya bilgisayarda bir süre daha oynar.	1	2	3	4	5
19. Nasıl yapıldığı gösterilmezse , verilen sözlü talimatları anlamakta zorlanır.	1	2	3	4	5
21. Deneyimlerinden ders çıkarmada zorluk yaşar.	1	2	3	4	5
22. Diğer çocuklar ile karşılaştırıldığında daha haşarı şekilde davranır.	1	2	3	4	5

23. Geriye doğru sayı sayma gibi zihinsel işlemlerde zorlanır.	1	2	3	4	5
24. Bir işle uğraşırken başka şeyleri aklında tutmakta zorlanır.	1	2	3	4	5
25. Basit işleri yaparken bile sesli düşünür.	1	2	3	4	5
26. Kendi yaşındaki çocuklar ile karşılaştırıldığında, zaman kavramını (gün, ay, yıl, saat gibi) anlamakta zorlanır.	1	2	3	4	5



P. CONSENT FORM

Gönüllü Katılım ve Veli Onay Formu

Sevgili Anne,

Bu çalışma, Orta Doğu Teknik Üniversitesi Psikoloji Bölümü doktora öğrencisi Şükran Okur tarafından Prof. Dr. Sibel Kazak Berument danışmanlığında yürütülmektedir.

Çalışmanın amacı, kırsal ve kentsel yerleşim yerlerinde yaşayan çocukların aklında sayı tutabilme, üzerinde resimler olan kartları sınıflandırabilme ve davranışlarını kontrol edebilme becerileri ile dil gelişimi açısından karşılaştırılmasıdır. Ayrıca, ev ortamı ve çevre özelliklerinin, çocukların bu becerilerinin gelişimi üzerine etkisi araştırılmaktadır.

Çalışma kapsamında, sizden ev ortamınız, mahalleniz, çocuğunuza yönelik davranışlarınız ve çocuğunuzun mizaç özellikleri ile ilgili birtakım anketler doldurmanızı isteyeceğiz.

Çocuğunuzun katılmayı olarak ne yapmasını istiyoruz? Çocuğunuzun gelişimini değerlendirmek için oyun formatında bazı uygulamalar yapacağız. Örneğin, bazı sayıları aklında tutup söylemesini, verdiğimiz resimli kartları belli kurallara göre sınıflandırmasını ve bazı davranışlarını kontrol edebilmesini isteyeceğiz. Ayrıca, anne davranışları ile ilgili bir anket sorularını cevaplamasını bekliyoruz. Çalışmaya başlamadan çocuğunuzun da sözlü olarak katılımıyla ilgili rızasını alacağız.

Katılımınızla ilgili bilmeniz gerekenler:

Bu çalışmaya katılmak tamamen gönüllülük esasına dayalıdır. Çalışmaya katılmayı reddedebilir veya istediğiniz zaman çalışmayı bırakabilirsiniz. Araştırma esnasında cevap vermek istemediğiniz sorular olursa boş bırakabilirsiniz. *Ancak, her bir soru bizim için önemli olduğundan, soruları mümkün olduğunca boş bırakmamanızı rica ediyoruz.*

Araştırmaya katılanlardan toplanan veriler tamamen gizli tutulacak, veriler ve kimlik bilgileri herhangi bir şekilde eşleştirilmeyecektir. Katılımcıların isimleri bağımsız bir listede toplanacaktır. Ayrıca toplanan verilere sadece araştırmacılar ulaşabilecektir. Bu araştırmanın sonuçları bilimsel yayınlarda veya eğitim amaçlı kullanılabilir, fakat katılımcıların kimliği gizli tutulacaktır.

Çalışma sonunda çocuklara sürpriz hediyelerimiz olacaktır.

Çalışmayla ilgili soru ve yorumlarınızı araştırmacıya 0506-378-12-44 numarasından iletebilirsiniz.

Yukarıdaki bilgileri okudum. Bu çalışmaya tamamen gönüllü olarak katılıyorum ve çocuğumun bu çalışmada yer almasını onaylıyorum. (Aşağıdaki bilgileri doldurup imzalayınız).

Annenin Adı Soyadı:.....

Çocuğun Adı Soyadı:.....

Çocuğun Doğum Tarihi:

Tarih

İmza

Formda önemli bilgilerde eksiklikler olması durumunda (eğer tercih ederseniz) size ulaşabileceğimiz bir telefon numarası yazmanızı rica ediyoruz. Tel:.....

R. CURRICULUM VITAE

Personal Information

Name-Surname: Şükran Okur
e-mail: sukran.okur@gmail.com

Education

Years	Degree	Department	College
2005-2010	B.A.	Psychology	Boğaziçi University
2013-2015	MSc.	Developmental Psychology	Middle East Technical University
2015-2020	Ph.D.	Developmental Psychology	Middle East Technical University

Work Experience

Years	Position	Institution
2011-2013	Psychologist	Dr. Ekrem Tok Mental Health and Diseases Hospital
2013-2020	Research Assistant	Middle East Technical University

Publications

- Gölcük, M., Okur, Ş., & Berument, S.K. (2015). A storybook reading intervention: Improvements in receptive language and story comprehension skills of children from low-income background. *Hacettepe University Faculty of Health Sciences Journal, 1*, 89-96. doi: 10.21020/sbfjournal.50224.
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S. TURKISH SUMMARY / TÜRKE ÖZET

Erken Çocukluk Döneminde Yönetici İşlev Becerilerinin Yordayıcıları: Kentsel ve Kırsal Yoksulluk

GİRİŞ

Yönetici işlev becerileri çok çalışılan bir terim olmasına rağmen, fikir birliğine varılan bir tanımı yoktur. Farklı araştırmacılar farklı tanımlar kullanmışlardır. Örneğin, Welsh, Pennington ve Groisser (1991) bilişsel ve nöropsikolojik bir bakış açısıyla yönetici işlevleri planlama, sistematik araştırma ve dürtü kontrolü gibi amaç odaklı davranışlar olarak tanımlamışlardır. Hughes ve Graham (2002) ise yönetici işlevlerin amaç odaklı davranışlardan sorumlu olan ve birtakım bilişsel süreçleri içeren genel bir terim olduğunu savunmuşlardır. Sonuçta, Martin ve Failows (2010) farklı tanımlamaların ortak noktalarını incelemiş ve ortak temanın kişinin davranışlarını kontrol etmek olduğunu raporlamışlardır.

Yönetici işlevlerin gelişimi biyolojik temellere bağlıdır. Yönetici işlevler prefrontal korteksin işlevleri ile ilişkilidir (Anderson ve Reidy, 2012). Prefrontal korteks, hem çevreden hem de kişinin içsel duygusal ve otonomik süreçlerinden bilgi alır; sonrasında bu bilgiler prefrontal kortekse iletilir (Powell ve Voeller, 2004). Bu gelen bilgiler kısa ve uzun vadeli planlar olarak değerlendirilir. Prefrontal korteksin gelişiminin tamamlanması yavaş gerçekleşmektedir (Fuster, 2002). Çocukların bilişsel gelişimi de bu gelişime paralel olarak gerçekleşmektedir.

Yönetici işlevlerle ilgili bir diğer tartışmalı konu da yönetici işlevlerin alt boyutlarıdır. Best ve Miller'a (2010) göre bu alandaki en önemli tartışmalardan biri yönetici işlevlerin tek bir boyuttan mı yoksa birçok alt boyuttan mı oluştuğudur. Baddeley (1996; 1998) merkezi yöneticinin olduğunu ve bunun bütün kararları alan küçük bir adama benzediğini savunmuştur. Barkley (1996) ise davranış ketlemenin temel mekanizma olduğunu iddia etmiştir. Bu görüşlere göre, yönetici işlevler tek bir yapıdan oluşmaktadır ve alt boyutlara indirgenemez (Martin ve Failows, 2010). Diğer yandan, yönetici işlevlerin ayrıştırılabilen parçalardan oluştuğunu savunan araştırmacılar da bulunmaktadır (Hughes, 1998). Bu araştırmacılar, faktör analizi

yaparak yönetici işlevlerin alt boyutlarını tespit etmeye çalışmaktadırlar. Ancak, bu araştırmacıların savunduğu alt boyutlar birbirinden farklılık göstermektedir. Sonuçta, Miyake ve ark. (2000) bütüncül bir model önermişlerdir. Yaptıkları analizler sonucu yönetici işlevlerin üç boyuttan oluştuğunu savunmuşlardır. Bu boyutlar, zihinsel esneklik, çalışan bellek ve ketlemedir. Daha sonraki yapılan çalışmalar, çoğunlukla bu boyutları kullanmışlardır (Diamond, 2013; Rosen ve ark., 2019). Dolayısıyla, bu çalışmada da bu boyutlar kullanılmıştır.

Çalışan bellek, sorgulama, anlama ve öğrenme gibi karmaşık görevler sırasında bilgiyi aklında tutma becerisidir (Baddeley, 2010). Çalışan belleğin en önemli modeli Baddeley ve Hitch (1974) tarafından sunulmuştur. Bu modelde, bir tane merkezi yöneticinin yanı sıra iki köle sistem bulunmaktadır: seslendirme döngüsü ve görsel-mekansal kopyalama. Merkezi yönetici, bu iki sistemden gelen bilgiyi birleştirir. Çalışan bellek, yaşamın ilk yılından itibaren oluşmaya başlar. Örneğin, altı aylık bebekler saklanan bir objeyi belli bir süre geçtikten sonra bulabilirler (Reznick ve ark., 2004). İki yaşından itibaren, çocukların çalışan bellek becerileri, onlara gösterilen nesnelere hatırlama becerilerini ölçen görsel ve sözel görevlerle değerlendirilir (Garon ve ark., 2008). Dört yaş civarında akıllarında 2-3 madde tutabilirken, 12 yaş civarında yaklaşık 6 maddeyi tutabilirler (Gathercole, 1998). Sözel bellek becerileri erken ve orta çocukluk dönemi boyunca gelişir (Gathercole, 1998). Diğer yandan, görsel-uzamsal bellek gelişimince ise özellikle 5-11 yaş aralığında önemli gelişmeler gerçekleşir.

Ketleme, içeriden ve dışarıdan gelen çeldiricilere karşın kişinin dikkat, davranış, duygu ve düşünceleri kontrol edebilme ve uygun davranışı sergileyebilme becerisidir (Diamond, 2013). Barkley'e (1997) göre, davranışsal ketleme, baskın olan bir davranışı baskılayabilme, devam eden bir davranışı durdurabilme ve rekabet halindeki durumlarda istenilen davranışı sergileyebilme becerisi olarak tanımlanmıştır. Ketleme becerisi, yaşamın birinci yılından itibaren ortaya çıkmaktadır (Garon ve ark., 2008). Örneğin, doyumu erteleme paradigmasında, çocuğa ilgisini çeken bir oyuncak ya da atıştırılabilirlik gösterilir ve çocuktan araştırmacı odaya dönene kadar buna dokunmaması istenir (Mischel ve ark., 1989). Eğer beklemeyi başarırlarsa, oyuncak ya da atıştırılabilirlikten daha fazla verileceği, bekleyemezlerse daha azını alacakları söylenir. Çocuklar büyüdükçe, vaat edilen daha büyük ödüller için bekleyebilirler. Örneğin, 3 yaşındaki çocuklar kısa vadeli küçük ödülleri tercih ederken, 4 yaşındakiler beklemeyi tercih etmektedirler (Lemmon ve Moore, 2007).

Özellikle 3-5 yaş aralığı bu becerilerin gelişimi için oldukça önemlidir (Best ve Miller, 2010). 5 yaşından itibaren bu becerilerin gelişimi yavaşlamaktadır. 5-8 yaş aralığında özellikle çalışan bellek becerisi gerektiren görevlerde, çocukların performansları gelişmektedir (Best ve Miller, 2010). Bu becerilerin gelişimi ergenlik döneminde de devam etmektedir (Leon-Carrion ve ark., 2004). Ketleme becerilerini değerlendiren görevler, yalnızca ketleme becerisini ölçmemekte, ayrıca çalışan bellek becerisi de gerektirmektedir (Best ve Miller, 2010). Özellikle görevler daha karmaşıklaştıkça, çalışan belleğe olan ihtiyaç da artmaktadır. Dolayısıyla, bazı araştırmacılar bu iki boyutun birbirinden bağımsız olmadığını savunmaktadırlar (Davidson ve ark., 2006). Ancak, daha sonra yapılan deneysel çalışmalar bu iki boyutun bağımsız kavramlar olduğunu göstermişlerdir (Beveridge ve ark., 2002).

Zihinsel esneklik, bir zihinsel durumdan ya da kuraldan diğerine geçebilme becerisidir (Miyake ve ark., 2000). Zihinsel esneklik hem davranış esnekliğini hem de dikkat esnekliğini kapsamaktadır (Garon ve ark., 2008). Davranışsal esnekliği değerlendirmede sıklıkla kullanılan görevlerden biri A değil B görevidir (Piaget, 1954). Bu görevde, bir oyuncak önce A kutusunun altına saklanır ve çocuğun oyuncuğu bulması beklenir. Bir süre sonra oyuncak B kutusunun altına saklanır ve çocuklardan oyuncuğu A kutusu yerine B kutusunun altında bulması beklenir. 7-8 ay itibariyle bebekler oyuncuğu B kutusunun altında bulabilirler. Dikkat esnekliğini değerlendirmede kullanılan en önemli ölçüm araçlarından biri Boyut Değiştirerek Eşleme Görevidir (Zelazo, 2006). Bu görevde, çocuklar onlara verilen kartları önce renklerine sonra da şekillerine göre sınıflandırırlar. 3 yaş çocuklarının çoğu renklerine göre sınıflandırmada başarılı olurken, 4-5 yaş çocuklarının çoğu şekillerine göre sınıflandırma aşamasında da başarılı olurlar. Her iki oyunun karışık olarak oynandığı aşamada ise 5 yaş çocuklarının yaklaşık yarısı başarı gösterirler. Zihinsel esneklik becerisi çalışan bellek ve ketleme becerilerinin gelişimine bağlıdır (Diamond, 2013). Dolayısıyla zihinsel esneklik bu iki beceriden daha sonra gelişir. Zihinsel esneklik gelişimi yetişkinlik yıllarına kadar devam eder (Crone ve ark., 2006).

Yönetici işlevlerin gelişimi prefrontal korteksin gelişimiyle paraleldir (Powell ve Voeller, 2004). Zelazo ve Müller'e (2002) göre, yönetici işlev becerileri yaşamın ilk yılında ortaya çıkar ve özellikle 2-5 yaşları arasında önemli gelişmeler olur. 12 yaş civarında çocukların performansı bir yetişkinin performansına yakındır, ancak bazı becerilerin gelişimi yetişkinlik yıllarına kadar devam eder. Araştırmalara göre, ilk başta gelişen yönetici işlev becerisi çalışan bellektir (Garon ve ark., 2008). 6 aylık

bebekler aklında bazı bilgileri tutabilir. Daha sonra, ilk yılının ikinci yarısında ketleme becerisi gelişmeye başlar. Zihinsel esneklik becerileri diğer iki boyutun gelişimine bağlı olduğu için daha geç gelişir. Davranışsal esneklik ilk yılın ikinci yarısında ortaya çıkarken, dikkat esnekliği 2-3 yaş civarında ortaya çıkar. Ketleme becerileri büyük oranda okul öncesi dönemde gelişirken, çalışan bellek ve zihinsel esnekliğin gelişimleri yetişkinliğe kadar lineer bir şekilde gelişir.

Yönetici işlev becerilerinin gelişimi biyolojik ve çevresel faktörlere bağlıdır (Best ve Miller, 2010). Örneğin, Friedman ve ark. (2016) ikizlerle yaptıkları boylamsal çalışmada yönetici işlevlerin büyük oranda kalıtsal olduğunu göstermişlerdir. Ancak, çevresel faktörler de bu becerilerin gelişiminde önemlidir. Alan yazında, çeşitli faktörlerin yönetici işlevler üzerinde etkili olduğunu göstermişlerdir.

Çocukların çeşitli özelliklerinin yönetici işlev becerileri ile ilişkili olduğu gösterilmiştir. Örneğin, çocukların dil becerileri yönetici işlev becerileri ile güçlü bir şekilde ilişkilidir (Daneri ve ark., 2018). Çocukların çeşitli mizaç özelliklerinin de yönetici işlev becerileri ile ilişkili olduğu rapor edilmiştir. Özellikle zor mizaç özelliğinin yönetici işlev becerileri için bir risk faktörü olduğu belirtilmiştir (Raver ve ark., 2013). Dolayısıyla bu çalışmada çocukların tepkiselliği incelenmiştir. Tepkiselliğe ek olarak, algısal hassasiyet mizaç özelliğinin de yönetici işlev becerilerini etkileyebileceği düşünülmüştür. Algısal hassasiyeti yüksek olan çocuklar, çevredeki uyaranlara karşı daha hassas olduğu için farklı çevresel koşullardan farklı şekillerde etkilenebilirler (Rothbart ve ark., 2001). Bu nedenle bu çalışmaya, mizaç kapsamında tepkisellik ve algısal hassasiyet mizaç özellikleri dahil edilmiştir. Ayrıca, çocukların cinsiyetinin de yönetici işlevler üzerinde etkisi olduğunu gösteren çalışmalar bulunmaktadır (Klenberg ve ark., 2001). Ancak, bu konudaki bulgular tutarlı bir sonuç göstermemektedir.

Yönetici işlevleri etkileyen bir diğer faktör ebeveynliktir. Çeşitli ebeveynlik davranışlarının çocukların yönetici işlev becerisi gelişimini etkilediği belirtilmektedir. Örneğin, Fay-Stammach ve ark. (2014) duyarlılık, uyaran sağlama, özerklik destekleyici davranışlar, saldırganca davranışlar gibi ebeveyn davranışlarının çocukların yönetici işlev becerileri ile ilişkili olduğunu rapor etmişlerdir. Ebeveynliğe ek olarak, ev ortamının özelliklerinin de yönetici işlev becerileri ilişkili olduğu belirtilmektedir. Örneğin, ev ortamında çocukların gelişimi için uyarıcı olan aktivite ve materyallerin varlığı, çocukların yönetici işlev becerilerini olumlu yönde etkilemektedir (Hughes ve Devine, 2019; Rosen ve ark., 2019). Uyanların yanı sıra,

ev ortamındaki kaotik ve düzensiz koşulların da yönetici işlev becerileri için bir risk olduğu belirtilmiştir (Hughes ve Ensor, 2009). Ev ortamına ek olarak, mahalle ortamındaki kaosun da çocukların yönetici işlev becerilerini etkilediği raporlanmıştır (St. John ve Tarullo, 2019).

Ailenin sosyoekonomik düzeyinin (SED) de çocukların yönetici işlev becerileri ile ilişkili olduğu sıklıkla belirtilmektedir (Dilworth-Bart, 2012). Özellikle yoksulluk, çocukların bu becerileri için önemli bir risk faktörüdür (Raver ve ark., 2013). Yoksulluğun tanımı tartışmalı bir konu olsa da son yıllarda yoksulluğun çok yönlü olarak ölçülmesi gerektiği savunulmaktadır (Bourguignon ve Chakravarty, 2019). Dolayısıyla, sadece gelir bazlı ölçüm yerine, daha kapsamlı bir değerlendirme gerektiği savunulmaktadır. Örneğin, Alkire ve Santos (2014) geliştirdikleri ölçüm aracıyla yoksulluğu eğitim, sağlık ve yaşam standardı alt başlıklarından oluşmak üzere on gösterge üzerinden değerlendirmişlerdir.

Yoksulluk bir risk faktörü olmakla birlikte kentsel ve kırsal yoksulluğun yaşam koşulları farklılaşmaktadır. Örneğin, kırsal alanlarda yaşayanlar kentsel alanlara göre daha yoksuldur (Weber ve ark., 2005). Kentsel bölgelerde yaşayanlar, kırsal bölgelerde yaşayanlara kıyasla daha yüksek eğitilmiş, bilgiye ve imkanlara daha kolay ulaşır, daha düşük doğum oranlarına sahip ve politik görüşlerinde daha liberaldirler (Champion ve Hugo, 2017). Diğer yandan, suç oranı, eşitsizlik ve stres kentsel bölgelerde daha fazladır (Alemdar ve ark., 2012). Ayrıca, kırsal bölgelerde yaşayan aileler daha düşük eğitilmiş ve daha düşük gelir düzeyine sahiptirler (Lampard ve ark., 2000; Roscigno ve ark., 2006). Ek olarak, kırsal bölgelerde yaşayan anneler daha müdahaleci, cezalandırıcı ve otoriter olmalarının yanı sıra (Bornstein ve ark., 2008; Lampard ve ark., 2000), çocuklarının gelişimi üzerindeki rolünü küçümsemekte ve çocuklarının eğitime daha az yatırım yapmaktadırlar (Lampard ve ark., 2000; Roscigno ve ark., 2006).

Yoksulluk beraberinde birçok risk faktörü de getirdiği için çocukların gelişimini olumsuz yönde etkilemektedir. İlk olarak, yoksulluk çocukların yaşadığı ev ortamının kalitesini olumsuz yönde etkilemektedir. Örneğin, çocuklar için uyarıcı olan materyal ve aktiviteler daha kısıtlıdır (Votruba-Drzal, 2003). Ayrıca, yoksul ailelerin evleri daha düzensiz ve kaotik olarak raporlanmıştır (Evans ve ark., 2005). Bunların yanı sıra, yoksulluk koşulları ebeveynlik için de bir risk faktörüdür (Evans ve ark., 2008). Örneğin, yoksul annelerin daha cezalandırıcı, çocuğun ihtiyaçlarına daha az cevap veren kişiler olduğu rapor edilmiştir (Magnuson ve Duncan, 2002). Türkiye’de

yapılan bir çalışma, kentsel ve kırsal bölgelerde yaşayan düşük eğitimli annelerin ebeveynliğini karşılaştırmıştır (Nacak ve ark., 2011). Çalışma bulgularına göre, kentsel ve kırsal bölgelerde yaşayan anneler birçok ebeveynlik davranışı, çocukların gelişimine yönelik beklentiler ve ev ortamında sağladıkları uyaranlar bakımında benzerdirler. Son olarak, yoksul aileler çoğunlukla daha dezavantajlı mahallelerde yaşamaktadırlar ve bu durum ebeveynlik kalitesi için bir risk faktörüdür (Molnar ve ark., 2003). Dolayısıyla, yoksullukla ilişkili bu risk faktörleri çocukların yönetici işlev becerileri için önemli riskler oluşturmaktadır.

Yoksulluğun yönetici işlevler üzerine etkisi sıklıkla raporlanmaktadır. Örneğin, Blair ve ark. (2011) etnik köken, gelir düzeyi, ve anne eğitiminin çocukların yönetici işlevlerini ebeveynlik aracılığı ile yordadığını belirtmişlerdir. Ayrıca, dezavantajlı ev koşulları da yönetici işlevler için risk faktörü olarak bildirilmiştir. Yoksulluk yönetici işlevler için risk faktörü olsa da kentsel ve kırsal yoksulluğun etkileri farklılaşabilir. Örneğin, Tine (2014) 10-12 yaş arası kentsel ve kırsal yoksullukta yaşayan çocukların çalışma belleği becerilerini karşılaştırmıştır. Bulgulara göre, kırsal yoksullukta yaşayan çocuklar sözel çalışma belleğinde daha iyi, görsel çalışma belleğinde ise daha kötü performans göstermişlerdir. Diğer bir çalışma ise kentsel ve kırsal bölgelerde yaşayan çocukların çalışma belleğinde bir fark olmadığını belirtmiştir (Rojas-Barahona ve ark., 2015). Yetişkinlerle yapılan bir çalışma ise kentsel bölgelerde yaşayan kişilerin yönetici işlevlerinin kırsal bölgelerde yaşayanlara göre daha iyi olduğu raporlamıştır (Gupta ve ark., 2011). Dolayısıyla, alan yazındaki çalışmalar çelişkili bulgular bildirdiğinden daha fazla çalışma yapılması yararlı olacaktır.

Bu çalışmanın birinci amacı kentsel ve kırsal bölgelerdeki yaşam koşullarının ve ebeveynlik davranışları ile inançlarının karşılaştırılmasıdır. Çalışmanın ikinci amacı, kentsel ve kırsal yoksullukta yaşayan çocukların yönetici işlev becerilerinin karşılaştırılmasıdır. Çalışmanın üçüncü amacı ise, kentsel/kırsal yoksulluk ile ailenin yoksulluk düzeyi, ebeveynlik, ev ortamı özellikleri, mahalle özellikleri ve çocukların mizaç özelliklerinin etkileşimlerinin çocukların yönetici işlev becerilerine etkisini incelemektir. Dolayısıyla, kentsel ve kırsal bölgelerde yaşam koşulları ve ebeveynliğin farklılık göstermesi beklenmektedir. Kırsal bölgelerde yaşayan çocukların yönetici işlev becerilerinin daha zayıf olması beklenmektedir. Ayrıca, kentsel/kırsal yoksulluk ile yaşam koşulları, ebeveynlik ve mizaç etkileşimlerinin yönetici işlevlere etkisi belirli bir hipotez olmadan incelenecektir.

YÖNTEM

Örnekleme

Çalışmanın katılımcıları 276 anne-çocuk çiftidir. Katılımcılara Ankara ve Mersin illerinin düşük sosyoekonomik düzeydeki kentsel ve kırsal bölgelerinden ulaşılmıştır. Katılımcıların %54.3'ü ($N = 150$) kentsel bölgelerde (71 Ankara, 79 Mersin), %45.7'si ($N = 126$) ise kırsal bölgelerde (62 Ankara, 64 Mersin) yaşamaktadır. Çocukların yaşları 49 ve 82 ay arasında değişmektedir ($Ort = 66.16$, $SS = 5.75$). Çocukların %51.8'i kız, %48.2'si erkektir. Anasınıfına gitme süreleri 0 ve 22 ay arasında değişmektedir.

Annelerin yaşları 23 ve 48 yaş arasındadır ($Ort = 32.40$, $SS = 5.84$). Annelerin %95.3'ü ev hanımı ve %94.6'sı evli ve eşiyle birlikte yaşamaktadır. Anne ve babaların detaylı demografik bilgileri Tablo 3.1'de verilmiştir.

276 çocuktan anasınıfına altı aydan daha uzun süre gitmesi ve 78 aydan büyük olması gibi nedenlerle analiz sonuçlarını etkilememesi için 35 çocuk çıkarılmıştır. Kalan çocukların yaşları 49 ve 78.5 arasındadır ($Ort = 65.82$, $SS = 5.45$). Kalan katılımcıların %51.5'i kentsel bölgelerde, %48.5'i ise kırsal bölgelerde yaşamaktadır. Anasınıfına gitme süresi ise ortalama 3.65 aydır ($SS = 1.94$).

Ölçüm Araçları

Demografik Bilgi Formu. Ebeveynlerin eğitimi, mesleği, geliri, çocukların yaşları ve evde yaşayan kişi sayısını içeren detaylı bir demografik bilgi formu oluşturulmuştur.

Yoksulluk. Ailelerin yoksulluk seviyeleri dört farklı gösterge ile ölçülmüştür. Bu değişkenler z puanına çevrilerek yoksulluk puanı oluşturulmuştur.

Gelir-ihtiyaç oranı. Ailenin aylık geliri, ülke genelinde yoksulluk sınırı olarak belirlenen gelir düzeyine bölünerek bu değişken oluşturulmuştur. Yüksek puanlar yüksek yoksulluk düzeyini göstermektedir.

Ebeveynlerin eğitim düzeyi. Anne ve babaların en son mezun oldukları okula göre eğitim düzeyleri sıralanmıştır (1-okuma-yazma bilmiyor, 6- üniversite). Anne ve babanın eğitimlerinin ortalaması alınmıştır. Bu değişken, sonrasında ters kodlanarak yoksulluk değişkenine dahil edilmiştir.

Gıda güvencesizliği. Gıda güvencesizliği Community Childhood Hunger Identification Project (CCHIP) Hunger Index (Food Research and Action Center, 1995) aracılığı ile değerlendirilmiştir. Ölçüm aracı, evde kaynakların olmamasından kaynaklanan gıda yetersizliği, yemek yapmak için yeterli gıda olmaması ve gıda

azlığından dolayı yeme düzeninde değişiklikler yapılması gibi sorular içermektedir. Sorular evet/hayır şeklinde cevaplanmakta olup yüksek puanlar yüksek düzeyde gıda güvencesizliğini göstermektedir. Ölçeğin iç tutarlılık puanı .81 olarak bulunmuştur.

Materyal sıkıntısı. Ailelerin materyal sıkıntısını ölçmek için Hane Gelir-Gider Anketi'nden yararlanılmıştır (TEÇGE; Baydar, Kuntay, Goksen, Yagmurlu ve Cemalcılar, 2008). Ölçek, plazma televizyon, internet bağlantısı, araba gibi maddelerin olup olmadığı ölçülmüştür. Ayrıca, eve sahip olma, akrabalarından ve kurumlardan yardım alma gibi ek maddeler eklenmiştir. Yüksek puanlar yüksek düzeyde materyal sıkıntısını göstermekte olup ölçeğin iç tutarlılığı .64 olarak bulunmuştur.

Ev Ortamındaki Uyarılar. Ev ortamında çocuklar için uyarıcı olan aktivite ve materyaller Ev Ortamı Anketi'ne ek olarak (Miser ve Hupp, 2012) ve EGÖ-TR'den eklenen maddeler (Baydar ve Bekar, 2007) aracılığı ile değerlendirilmiştir. Ölçek toplamda 30 maddeden oluşmaktadır. Ölçeklerin cevap aralıkları farklı olduğu için maddeler z puanına çevirilerek toplanmıştır. Ayrıca, pilot çalışmadan yola çıkarak çocukların günlük hayatında yaptığı aktiviteler (bisiklet sürmek, hayvanlarla oynamak gibi) eklenmiştir. Bu maddeler Ev Ortamı Anketi kapsamında değerlendirilmemiş olup, aktivitelerin sıklığı kırsal ve kentsel bölgeler için ayrıca karşılaştırılmıştır.

Ev Ortamındaki Kaos. Ev ortamındaki kaotik koşullar Aile Çevresi Kaos Ölçeği (Matheny, Wachs, Ludwig ve Philips, 1995; Sümer, Harma ve Solak, 2013) ile değerlendirilmiştir. Ölçek 15 maddeden oluşmaktadır. Ölçeğin iç tutarlılık değeri .79 olarak bulunmuştur.

Mahalle Özellikleri. Çevrede yer alan olanaklar ve sosyal destek, Mahalle Ekolojileri Anketi (Baydar, Kuntay, Goksen, Yagmurlu ve Cemalcılar, 2007) ile değerlendirilmiştir. Bu ölçekte, mahallenin sosyal ve fiziksel yapısı (12 madde), komşulardan alınan sosyal destek (7 madde) ve mahallenin fiziksel özellikleri (10 madde) ölçülmüştür. Ayrıca, mahalledeki stres faktörleri de 5 maddelik bir ölçüm aracı ile değerlendirilmiştir (Kotchick, Dorsey ve Heller, 2005). İç tutarlılık değerleri sırasıyla .85, .92, .83 ve .70 olarak bulunmuştur.

Kırsal Bölgelerin Yaşam Koşulları. Kırsal bölgelerdeki ulaşım koşullarını, en yakın yerleşim yerinin büyüklüğünü, ebeveyn ve çocukların şehir merkezine gitme sıklığını ve köydeki market sayısını içeren bir demografik form hazırlanmıştır.

Ebeveynlik. Annelerin özerklik destekleyici davranışları, Ebeveyn Tutum Ölçeği'nin (Demir ve Şendil, 2008) demokratik ebeveynlik alt ölçeğinden alınan 12

madde ile, annelerin çocuklarına yönelik açıklayıcı akıl yürütme davranışları ise Çocuk Yetiştirme Anketi'nden alınan (Paterson ve Sanson, 1999; Yagmurlu ve Sanson, 2009) 6 maddelik alt boyut ile değerlendirilmiştir. Ölçekler, anne raporuna dayalı olarak ölçülmüştür. Ölçeklerin iç tutarlılık kat sayıları özerklik destekleyici davranışlar için .86, açıklayıcı akıl yürütme davranışları için ise .84 olarak bulunmuştur. Bu iki ölçeğin puanları birleştirilerek pozitif ebeveynlik değişkeni oluşturulmuştur.

Algılanan anne duyarlılığı ise gözleme dayalı ölçeklerden yola çıkarak (Berument ve ark., 2018) bu çalışma için oluşturulan bir ölçüm aracı ile değerlendirilmiştir. Ölçek, 16 maddeden oluşmakta ve çocukların raporuna dayalı olarak kullanılmaktadır. İç tutarlılık analizlerinde beş madde çıkarılmış ve kalan 11 maddenin iç tutarlılık kat sayısı .79 olarak bulunmuştur.

Annelerin Çocukların Eğitimine Yönelik Beklentileri. Annelere tek maddelik bir soru ile çocuklarının eğitimine ne kadar devam edeceği sorulmuştur. Cevaplar ilkokuldan üniversiteye kadar derecelendirilmiştir. Yüksek puanlar yüksek düzeyde eğitim beklentisine karşılık gelmektedir.

Annelerin Çocuk Gelişimine Yönelik Tutumları. Annelere çocuk gelişimine yönelik inançları ve çocuklarıyla olan sohbetlerinin içeriklerine dair iki açık uçlu soru sorulmuştur. İlk soru "Sizce bir çocuğun gelişmesi ve büyümesi için neler gereklidir?", ikinci soru ise "Çocuğunuzla hangi konular hakkında konuşursunuz? Çocuğunuz size neler sorar?" olarak belirlenmiştir. Annelerin cevapları temalarına göre sınıflandırılmıştır.

Çocukların Mizaç Özellikleri. Çocukların tepkisellik ve algısal hassasiyet mizaç özellikleri Çocuk Davranış Anketi (Rothbart, Ahadi, Hershey ve Fisher, 2001) aracılığı ile değerlendirilmiştir. Tepkisellik boyutu 13 maddeden, algısal hassasiyet alt boyutu ise 12 maddeden oluşmaktadır. İç tutarlılık analizlerinde alt ölçeklerden birer madde çıkarılmış ve tepkiselliğin iç tutarlılığı .88, algısal hassasiyetin iç tutarlılığı ise .66 olarak bulunmuştur.

Çocukların Alıcı Dil Becerileri. Türkçe İfade Edici ve Alıcı Dil Testi'nin (TİFALDİ; Berument ve Güven, 2013) alıcı dil alt boyutu kullanılmıştır. TİFALDİ 2-12 yaş arası çocukların dil becerilerini değerlendirmek için kullanılan standart bir testtir. Alıcı dil testinde, çocuklardan söylenen kelimeye karşılık gelen resmi 4 seçenek arasından bulmaları istenmektedir. Çocukların cevaplarına göre yaşları temel alınarak bir standart puan hesaplanmaktadır.

Anne Raporuna Dayalı Yönetici İşlev Problemleri. Çocukların günlük yaşamdaki yönetici işlev problemleri Çocukluk Dönemi Yönetici İşlev Envanteri (Kayhan, 2009; Thorell ve Nyberg, 2008) ile anne raporuna dayalı olarak değerlendirilmiştir. Bu ölçüm aracının, toplamda 22 maddeden oluşan çalışma belleği, ketleme ve düzenleme alt ölçekleri kullanılmıştır. Yüksek puanlar, yüksek düzeyde problemi göstermektedir. Alt boyutların iç tutarlılık kat sayıları çalışma belleği için .83, ketleme için .67 ve düzenleme için .70 olarak bulunmuştur.

Çalışma Belleği. Çocukların sözel çalışan bellek becerileri İleri ve Geri Sayı Uzamı Görevleri (Davis ve Pratt, 1996; Gathercole ve Pickering, 2000) ile değerlendirilmiştir. İleri sayı uzamı görevinde çocuklara bazı sayılar söylenmiş ve çocuklarda bu sayıları aynı sıra ile tekrarlamaları istenmiştir. Geri sayı uzamı görevinde ise söylenen sayıları tam tersi sıra ile tekrarlamaları istenmiştir. Test iki deneme aşamasından sonra, iki basamaklı set ile başlamıştır. Her aşamada 4 test bulunmaktadır. Çocuklar her sette en az ikisini doğru yaparlarsa bir sonraki sete devam etmişlerdir. Her doğru cevap 1 puan olarak kodlanmış ve toplam puanlar hesaplanmıştır.

Çocukların görsel çalışma belleği Corsi iz sürme testi (Corsi, 1972) ile değerlendirilmiştir. Testin prosedürü Türkiye’de Erken Çocukluk Gelişim Ekolojileri (TEÇGE; Baydar ve ark., 2008) Çalışmasından alınmıştır. Bu testte, beyaz bir zemin üzerinde dokuz blok bulunmaktadır. Araştırmacı, minyatür bir maymunu belli bir sıra ile blokların üzerine oturtmakta ve sonrasında çocuktan maymunu aynı sıra ile bloklara oturtmasını istemektedir. Test iki deneme aşaması ile başlamaktadır. Her bir aşamada üç test aşaması bulunmaktadır ve çocuklar en az bir seti başarı ile tamamladığında bir sonraki basamağa geçilmektedir. Her doğru cevap iki puan olup, blokların doğru ancak sıralamanın yanlış olduğu cevaplar bir puan olarak kodlanmış ve toplam puanlar hesaplanmıştır.

Ketleyici Kontrol. Çocukların ketleyici kontrol becerileri Gece-Gündüz Görevi (Carlson ve Moses, 2001; Gerstadt, Hong ve Diamond, 1994) ile değerlendirilmiştir. Bu görevde, bir gece kartı bir de gündüz kartı yer almaktadır. Çocuklardan, gündüz kartı gösterildiğinde "gece", gece kartı gösterildiğinde "gündüz" diye cevap vermeleri istenilmektedir. Testte iki deneme aşamasından sonra 16 test aşaması bulunmaktadır. Doğru cevaplar iki puan olup çocukların cevaplarını düzeltmeleri durumunda bir puan olarak kodlanmıştır.

Zihinsel Esneklik. Çocukların zihinsel esneklik becerileri Boyut Değiştirerek Eşleme Görevi (Zelazo, 2006) görevi ile değerlendirilmiştir. Bu testte iki ana kart bulunmaktadır: mavi tavşan ve kırmızı kayık. Ayrıca 14 tane test kartı vardır. Yedi tane kırmızı tavşan ve yedi tane mavi kayık. Çocuklardan, verilen 14 kartı önce renklerine göre (renk oyunu), sonra da şekillerine göre (şekil oyunu) sınıflandırmaları istenmiştir. Her bir testte altı deneme olup, en az beşini doğru sınıflayan çocuklar başarılı sayılmaktadır. Şekil oyununda başarılı olan çocuklar karma oyuna devam etmektedir. Bu aşamada ise, çocuklardan renk ve şekil oyunlarını karışık olarak oynamaları beklenmektedir. Her bir doğru cevap bir puan olup toplam puan hesaplanmaktadır.

BULGULAR

1. Hipotez Bulguları: Kentsel ve Kırsal Yoksulluğun Yaşam Koşulları, Ebeveynlik, Annelerin Çocuk Gelişimine Dair Tutumları ve Çocuklarıyla Sohbetlerinin Karşılaştırılması

Kırsal ve Kentsel Yoksulluğun Yaşam Koşulları ve Ebeveynlik Açısından Karşılaştırılması

Tek yönlü varyans analizi sonuçlarına göre kentsel bölgelerde, gelir-ihtiyaç oranı, babaların eğitim seviyesi, gıda güvencesizliği, ev ortamının uyarıcılığı, mahallenin fiziksel özellikleri, mahalle stresi ve annelerin çocuklarının alacakları eğitime dair beklentileri kırsal bölgelere göre daha fazla bulunmuştur. Diğer yandan, mahallenin sosyal ve fiziksel yapısı ile komşulardan alınan sosyal desteğin kırsal bölgelerde daha fazla olduğu görülmüştür.

Kentsel ve Kırsal Bölgelerde Yaşayan Annelerin Çocuk Gelişimine Dair İnançlarının Karşılaştırılması

Annelerin “çocukların gelişmesi ve büyümesi için neler gereklidir” açık uçlu sorusuna olan cevaplarının içerikleri kodlanmıştır. Toplamda 220 anne bu soruya cevap vermiştir (121 kentsel, 99 kırsal bölgeden). Cevapların yaklaşık %20’si ($N = 45$) ikinci bir kodlayıcı tarafından kodlanmıştır. Kodlayıcılar arası tutarlılık .70’in altında ise tartışılıp tekrar kodlanmıştır ve sonuçlar tutarlılık sayıları .79 ve 1.00 arasında değişmiştir.

Annelerin cevapları temalarına göre sınıflanmış ve temaların sıklık değerleri incelenmiştir. Temaların sıklıkları kentsel ve kırsal bölgeler için ki-kare testi ile karşılaştırılmıştır. Sonuçlara göre, mahalle imkanları ($\chi^2(1, 220) = 3.93, p = .047$)

teması kırsal bölgelerde yaşayan anneler tarafından kentsel bölgelerde yaşayan annelere kıyasla daha sık olarak rapor edilmiştir.

Kentsel ve Kırsal Bölgelerde Yaşayan Annelerin Çocuklarıyla Sohbetlerinin Karşılaştırılması

Annelerin çocuklarıyla olan sohbetlerinin içeriği kentsel ve kırsal bölgelerde yaşayan anneler için incelenmiştir. Toplamda 216 anne (117 kentsel, 99 kırsal bölgeden) soruyu cevaplamıştır. Verinin yaklaşık %20'si ($N = 45$) ikinci bir kodlayıcı tarafından kodlanmış ve farklılıklar tartışılarak yeniden kodlanmıştır. Kodlayıcılar arası tutarlılık değerleri .79 ve 1.00 arasında değişmektedir. Temaların sıklıkları kentsel ve kırsal bölgelerdeki anneler için ki-kare testi ile kıyaslanmıştır. Sonuçlara göre, kentsel bölgelerde yaşayan anneler çocuklara nasihat verme ($\chi^2(1, 216) = 5.62, p = .018$) ve uyarıcı aktiviteler ($\chi^2(1, 216) = 4.41, p = .036$) hakkında daha sık konuşurken; kırsal bölgelerde yaşayan anneler gelecek ($\chi^2(1, 216) = 6.29, p = .012$) ve ev işleri ($\chi^2(1, 216) = .8.24, p = .004$) hakkında çocuklarıyla daha sık sohbet etmektedirler.

Kentsel ve Kırsal Bölgelerde Yaşayan Çocukların Günlük Aktivitelerinin Karşılaştırılması

Çocukların günlük yaşamdaki aktiviteleri kentsel ve kırsal bölgeler için ki-kare testi ile karşılaştırılmıştır. Sonuçlara göre, kentsel bölgelerde yaşayan çocuklar tabletle ($\chi^2(1, 273) = 4.45, p = .035$) daha sık oynarken, kırsal bölgelerdeki çocuklar hayvanlarla ($\chi^2(1, 272) = 5.08, p = .024$) ve tarlada sebzelerle ($\chi^2(1, 274) = 5.41, p = .020$) daha sık oynamaktadırlar.

2. Hipotez Bulguları: Kentsel ve Kırsal Bölgelerde Yaşayan Çocukların Yönetici İşlev Becerilerinin Karşılaştırılması

Çocukların yönetici işlev becerileri kentsel ve kırsal bölgeler için tek yönlü kovaryans analizi ile test edilmiştir. Bulgular Tablo 4.7'de detaylı olarak verilmiştir. Bu analizlerde, çocukların yaşı ve anasınıfına devam etme süreli kontrol edilmiştir. *Corsi iz sürme testi* sonuçlarına göre, çocukların yaşı ($F(1, 237) = 9.95, p = .002$) ve anasınıfına devam etme süreleri ($F(1, 237) = 4.52, p = .04$) çocukların performansı ile ilişkili bulunmuştur. Kırsal ve kentsel yoksullukta yaşayan çocukların performansları arasında anlamlı bir fark bulunmamıştır ($F(1, 237) = 3.32, p = .07$). *İleri sayı uzamı görevi* sonuçlarına göre, çocukların yaşı ($F(1, 237) = 2.30, p = .13$) ve anasınıfına gitme süresi ($F(1, 237) = 2.47, p = .12$) çocukların puanlarıyla ilişkili bulunmamıştır.

Ayrıca, kırsal ve kentsel bölgelerde yaşayan çocukların bu görevdeki performansları da birbirinden anlamlı olarak farklı değildir ($F(1, 237) = 2.00, p = .16$). **Geri sayı uzamı görevi** sonuçlarına göre, çocukların yaşı ($F(1, 237) = 10.28, p = .002$) ve anasınıfına gitme süreleri ($F(1, 237) = 17.69, p < .001$) çocukların test puanları ile anlamlı olarak ilişkili bulunmuştur. Ancak, kentsel ve kırsal yoksullukta yaşayan çocukların test puanları anlamlı olarak farklılaşmamıştır ($F(1, 237) = 3.01, p = .08$). **Gece-gündüz görevi** sonuçlarına göre, çocukların yaşı ($F(1, 237) = 2.20, p = .14$) ve anasınıfına gitme süresi ($F(1, 237) = .59, p = .44$) çocukların performansı ile ilişkili bulunmamıştır. Ayrıca, kentsel ve kırsal yoksullukta yaşayan çocukların performansları arasında anlamlı bir fark gözlenmemiştir ($F(1, 237) = 3.52, p = .06$). **Boyut Değiştirerek Eşleme Görevi** sonuçlarına göre ise, çocukların yaşı performansları ile anlamlı olarak ilişkili bulunmuştur ($F(1, 237) = 5.29, p = .02$). Ancak, anasınıfına gitme süresi performansları ile anlamlı olarak ilişkili değildir ($F(1, 237) = 1.49, p = .22$). Ayrıca, kentsel ve kırsal bölgelerde yaşayan çocukların performansları da anlamlı olarak birbirinden farklılaşmamıştır ($F(1, 237) = .20, p = .65$).

Özetle, çocuklar büyüdükçe Corsi iz sürme testi, geri sayı uzamı görevi ve boyut değiştirerek eşleme görevi performansları artmıştır. Ayrıca, anasınıfına devam etme süreleri arttıkça Corsi iz sürme testi ve geri sayı uzamı görevinde daha iyi performans göstermişlerdir. Yönetici işlev becerileri karşılaştırıldığında ise, kentsel ve kırsal bölgelerde yaşayan çocukların yönetici işlev becerilerinin anlamlı olarak farklılaşmadığı görülmüştür.

3. Hipotez Bulguları: Yönetici İşlevlerin Yordayıcıları

Çocukların yönetici işlev becerilerinin yordayıcılarını test etmek için hiyerarşik regresyon analizleri yapılmıştır. Birinci basamakta, çocukların yaşı, ailenin yoksulluk seviyesi ve anasınıfına gitme süreleri; ikinci basamakta, çocukların alıcı dil becerileri, ev ortamının uyarıcılığı ve kaos, pozitif ebeveynlik, algılanan anne duyarlılığı, annelerin çocukların eğitimlerine dair beklentileri, mahalle özellikleri ve çocukların mizaç özellikleri; üçüncü basamakta ise, kentsel-kırsal yoksulluk ile yordayıcı değişkenlerin etkileşimleri analizlere dahil edilmiştir. Etkileşim analizlerinde değişkenler gruplanarak analizleri ayrı ayrı yapılmıştır. Bulgular, kentsel-kırsal yoksulluk ile ebeveynlik analizinin sonuçlarına göre rapor edilmiş olup; bulgularda bir farklılık olması durumunda diğer bulgular da rapor edilmiştir.

Corsi iz sürme testi analizinin sonuçlarına göre, çocukların yaşı ($\beta = .23$, $SE = .05$, $p = .001$), anasınıfına gitme süresi ($\beta = .14$, $SE = .14$, $p = .047$), çocukların alıcı dil becerileri ($\beta = .18$, $SE = .02$, $p = .006$) çocukların performansı ile pozitif yönde ilişkili bulunmuştur. Detaylar Tablo 4.8’de verilmiştir.

İleri sayı uzamı görevi için yapılan analiz sonuçlarında ailenin yoksulluk seviyesi ($\beta = .19$, $SE = .29$, $p = .015$), çocukların alıcı dil becerileri ($\beta = .19$, $SE = .01$, $p = .005$) ve algısal hassasiyet mizaç özelliğinin ($\beta = .18$, $SE = .29$, $p = .007$) çocukların test puanları ile pozitif yönde ilişkili olduğu görülmüştür. Detaylar Tablo 4.9’da verilmiştir.

Geri sayı uzamı görevi sonuçlarına göre, çocukların yaşı ($\beta = .22$, $SE = .02$, $p = .001$), anasınıfına gitme süresi ($\beta = .27$, $SE = .06$, $p < .001$), çocukların alıcı dil becerileri ($\beta = .21$, $SE = .01$, $p = .001$) ve algısal hassasiyet mizaç özelliği ($\beta = .14$, $SE = .18$, $p = .03$) çocukların puanları ile pozitif yönde ilişkili bulunmuştur. Ayrıca, kentsel-kırsal yoksulluk ve pozitif ebeveynlik etkileşimi anlamlı bulunmuştur ($\beta = -.18$, $SE = .41$, $p = .04$). Çizilen regresyon eğrilerine göre, kentsel yoksulluk için çizilen eğri anlamlıdır ($t = 2.34$, $p = .02$). Buna göre, kentsel yoksullukta yaşayan çocuklar, anneleri yüksek düzeyde pozitif ebeveynlik gösterirlerse geri sayı uzamı görevinde daha iyi performans gösterirken, anneleri düşük düzeyde pozitif ebeveynlik gösterirse daha düşük performans göstermişlerdir (Şekil 4.1). Diğer yandan, kırsal yoksullukta yaşayan çocukların performansları annelerinin pozitif ebeveynlik düzeyinden etkilenmemiştir.

Ek olarak, geri sayı uzamı görevi için test edilen kentsel-kırsal yoksulluk ile ev ortamındaki kaos arasındaki etkileşim de anlamlı bulunmuştur ($\beta = -.19$, $SE = .49$, $p = .04$). Ancak, basit regresyon eğrileri anlamlı değildir.

Gece-gündüz görevi için yapılan analiz sonuçlarına göre, çocukların yaşı ($\beta = .12$, $SE = .13$, $p = .066$) ve alıcı dil becerileri ($\beta = .27$, $SE = .05$, $p < .001$) çocukların puanları ile pozitif yönde ilişkili bulunmuştur. Bulgular, 4.11’de özetlenmiştir.

Boyut Değiştirerek Eşleme Görevi için yapılan analiz sonuçlarına göre, çocukların yaşı ($\beta = .19$, $SE = .08$, $p = .005$) ve alıcı dil becerileri ($\beta = .22$, $SE = .03$, $p = .001$) çocukların performansları ile pozitif yönde ilişkili bulunmuştur (Tablo 4.12). Ayrıca, kentsel-kırsal yoksulluk ile pozitif ebeveynlik arasındaki etkileşim anlamlı bulunmuştur ($\beta = .21$, $SE = 1.58$, $p = .032$). Basit regresyon eğrisi bulgularına göre, kırsal yoksulluk için çizilen eğri anlamlı bulunmuştur. Buna göre, kırsal bölgelerde yaşayan çocuklar, annelerinin yüksek düzeyde pozitif ebeveynlik göstermesi

durumunda Boyut Değiştirerek Eşleme Görevi'nde daha iyi performans gösterirken, annelerinin düşük düzeyde pozitif ebeveynlik göstermesi durumunda bu görevde daha düşük performans göstermişlerdir ($t = 2.24, p = .03$; Şekil 4.2). Kentsel yoksullukta yaşayan çocukların performansı ise, annelerinin pozitif ebeveynlik düzeyinden etkilenmemiştir.

Ek olarak, Boyut Değiştirerek Eşleme Görevi için yapılan analizlerde kentsel-kırsal yoksulluk ile ev ortamındaki kaos ($\beta = -.22, SE = 1.87, p = .02$) ve çocukların tepkisellik mizaç özelliği ($\beta = -.21, SE = .93, p = .021$) arasındaki etkileşim anlamlı bulunmuştur. Ancak, basit regresyon eğrileri anlamlı değildir. Ayrıca, kentsel-kırsal yoksulluk ile mahalle özellikleri arasındaki etkileşim de sınırda anlamlı olmasına rağmen ($\beta = .16, SE = 1.37, p = .081$), basit regresyon eğrileri anlamlı bulunmamıştır.

TARTIŞMA

Çalışmanın birinci hipotezi kapsamında kentsel ve kırsal yoksulluktaki yaşam koşulları ve ebeveynlik karşılaştırılmıştır. Bulgulara göre, gelir seviyesi, babaların eğitim düzeyi ve gıda güvencesizliği kentsel bölgelerde daha fazladır. Bulgular hipotezlerle tutarlı ve önceki çalışmaları destekler niteliktedir (örn., Lampard ve ark., 2000; Roscigno ve ark., 2006). Ev ortamı açısından ise, uyaranlar kentsel bölgelerdeki evlerde daha fazla iken, kaos kentsel ve kırsal bölgelerde benzer düzeydedir. Kentsel bölgelerde ailelerin gelirinin fazla olması bu evlerdeki uyaranların fazlalığını açıklayabilir. Kaotik koşullar yoksulluğun önemli bir özelliği olduğundan (Evans ve ark., 2005) kentsel ve kırsal bölgelerde farklılık görülmemiş olabilir. Mahalle özellikleri açısından fiziksel kaynaklar ve stres kentsel bölgelerde fazla iken, mahallenin sosyal ve fiziksel yapısı ile komşulardan alınan destek kırsal bölgelerde daha fazla bulunmuştur. Bulgular hipotezlerle ve alan yazındaki çalışmalarla tutarlıdır (örn., Ewart ve Suchday, 2002; Vernon-Feagans ve ark., 2010).

Ebeveynlik davranışları kıyaslandığında ise kentsel ve kırsal bölgelerde yaşayan annelerin açıklayıcı akıl yürütme, özerklik destekleyici davranışlar ve algılanan duyarlılık açısından farklılaşmadıkları görülmüştür. Daha önce Türkiye'de yapılan bir çalışma da kentsel ve kırsal bölgelerde yaşayan annelerin ebeveynlik davranışlarının büyük oranda benzer olduğunu göstermiştir (Nacak ve ark., 2011). Annelerin eğitim seviyesi ebeveynliğin önemli bir belirleyici olduğundan (Carr ve Pike, 2012), bu çalışmada annelerin eğitim seviyesinde bir fark olmaması ebeveynlik davranışlarının da benzer olmasını açıklayabilir.

Annelerin çocuklarının alacağı eğitime yönelik beklentileri incelendiğinde ise kentsel bölgelerde yaşayan annelerin çocuklarının daha fazla eğitim almasını bekledikleri görülmüştür. Alan yazında belirtildiği gibi kırsal bölgelerde yaşayan ailelerin çocuklarının eğitimine daha az yatırım yapması (Rosigno ve ark., 2006) bu çalışmanın bulguları ile tutarlıdır. Annelerin çocuk gelişimi için nelerin önemli olduğuna dair açık uçlu soruya cevapları incelenmiştir. Kentsel ve kırsal bölgelerdeki annelerin cevapları büyük oranda benzerdir. Beslenme, aile ortamı ve sevgi temaları en sık belirtilen temalardır. Annelerin çocuklarıyla olan sohbetleri incelendiğinde ise annelerin cevaplarının yine benzerlik gösterdiği görülmüştür. En çok çıkan temalar çocukların merak ettiği şeyler ve okul olarak ortaya çıkmıştır. Kentsel bölgelerdeki anneler nasihat ve uyarıcı aktiviteler hakkında daha çok konuşurken, kırsal bölgelerdeki anneler gelecek ve ev işleri hakkında daha çok çocuklarıyla konuştuklarını belirtmiştir. Bu farklılıklar yaşam koşullarının farklı olmasından kaynaklanabilir. Son olarak, çocukların günlük aktiviteleri incelenmiştir. Kentsel bölgelerdeki çocuklar tabletlerle, kırsal bölgelerdekiler ise hayvanlarla ve tarlada daha çok vakit geçirmektedirler. Yapılan bir çalışma kentsel bölgelerde çocukların daha çok ev içi aktiviteler yaparken, kırsal bölgelerdekilerin daha çok ev dışı aktiviteler yaptıklarını rapor etmiştir (Özdirenç ve ark., 2005). Dolayısıyla, bu çalışmanın bulgularını destekler niteliktedir.

Çalışmanın ikinci hipotezi kapsamında kentsel ve kırsal bölgelerde yaşayan çocukların yönetici işlev becerileri karşılaştırılmıştır. Kentsel ve kırsal bölgelerde yaşayan çocukların yönetici işlev becerilerinin anlamlı olarak farklılaşmadığı bulunmuştur. Daha önce yapılan bir çalışmada, kırsal bölgelerdeki çocukların kentsel bölgelerdekilere göre görsel çalışan bellekte daha kötü, sözel çalışan bellekte ise daha iyi oldukları belirtilmiştir. Bunun yanı sıra, herhangi bir fark bulamayan çalışmalar da bulunmaktadır (Rojas-Barahona ve ark., 2015). Bu çalışmada kentsel ve kırsal bölgelerdeki çocuklar arasında yönetici işlevler açısından anlamlı bir fark olmaması ebeveyn davranışlarının ve tutumlarının benzerliği ile açıklanabilir. Ebeveyn davranışları yönetici işlev becerilerinin gelişimi için önemli bir faktör olduğundan (Bernier ve ark., 2012), benzer ebeveynlik davranışları yönetici işlev becerilerinin de benzer olmasını açıklayabilir.

Çalışmanın üçüncü hipotezi kapsamında kentsel-kırsal yoksulluk ile yoksulluk düzeyi, ebeveynlik, ev ve mahalle özellikleri ile mizacın etkileşiminin yönetici işlevlere olan etkisi incelenmiştir. Kentsel-kırsal yoksulluk ile pozitif ebeveynlik

etkileşiminin olduğu görülmüştür. Yüksek düzeyde pozitif ebeveynlik, sözel çalışan bellekte kentsel bölgelerdeki çocukların performansı için önemliyken; zihinsel esneklikte kırsal bölgelerdeki çocukların performansı için önemli bulunmuştur. Dolayısıyla, pozitif ebeveynliğin farklı çevrelerde farklı beceriler için koruyucu olduğu görülmüştür. Bu durum, çocukların belli bölgelerde farklı beceriler için spesifik olarak desteğe ihtiyaçları olduğunu ve pozitif ebeveynliğin bu ihtiyaçları desteklediğini gösterebilir.

Çocukların alıcı dil becerileri bütün yönetici işlev becerileri ile pozitif yönde ilişkili bulunmuştur. Bu bulgu alan yazındaki diğer çalışmalarla uyumludur (Daneri ve ark., 2019). Çocukların dil becerilerinin gelişmiş olması davranışlarını daha iyi planlayıp kontrol etmelerine katkıda bulunduğu için yönetici işlevlerini olumlu yönde etkileyebilir (Müller ve Kerns, 2015). Çocukların algısal hassasiyet mizaç özelliği sözel ve görsel çalışan bellek becerileri ile ilişkili bulunmuştur. Algısal hassasiyeti yüksek çocuklar çevredeki uyarılara karşı daha hassas oldukları için (Rothbart ve ark., 2001) çevredeki bilgileri kodlamada daha iyi stratejiler geliştirebilirler. Çalışmada bazı beklenmeyen sonuçlar da bulunmaktadır. Örneğin, yoksulluk ile ileri sayı uzamı görevi puanları olumlu yönde ilişkilidir. Bu beklenmeyen ilişki mizaç gibi bazı değişkenlerin düzenleyici rolü ile açıklanabilir.

Anlamli çıkan ilişkilerin yanı sıra, anlamsız çıkan ilişkiler de bulunmaktadır. Ev ortamı özellikleri yönetici işlevlerle ilişkili bulunmamıştır. Ev ortamındaki uyarılar anne raporuna dayalı olarak ölçülmüş, herhangi bir gözlem yapılmamıştır. Dolayısıyla ev ortamında uyarıların varlığı bu uyarıların işlevsel bir şekilde kullanıldığını göstermeyebilir. Ev ortamındaki kaosun da yönetici işlevlerle ilişkili olmadığını gösteren başka çalışmalar da bulunmaktadır (St. John ve Tarullo, 2019). Kaosun, yönetici işlevleri direk olarak değil, ebeveynlik gibi başka değişkenler aracılığı ile etkilemiş olabileceği de düşünülebilir. Ayrıca, anne duyarlılığı da yönetici işlevlerle ilişkili bulunmamıştır. Alan yazında birçok çalışma bu ilişkinin varlığını rapor ederken (örn., Bernier ve ark., 2012), bu ilişkiyi anlamsız bulan çalışmalar da bulunmaktadır (örn., Rochette ve Bernier, 2014). Ancak, daha önceki çalışmalar anne duyarlılığını gözleme dayalı olarak ölçerken bu çalışma çocukların raporuna dayalı olarak ölçmüştür. Bulgulardaki farklılıklar ölçüm yöntemlerindeki farklılardan kaynaklanabilir. Ek olarak, tepkisellik mizaç özelliği de çocukların yönetici işlev becerileriyle ilişkili bulunmamıştır. Alan yazındaki çalışmalar bu ilişki ile ilgili farklı bulgular sunmaktadır. Bazıları bu çalışmadakinin tam tersi yönde ilişki rapor ederken

(Morasch ve Bell, 2011), bazıları aradaki ilişkinin anlamsız olduđu bildirmişlerdir (Ursache ve ark., 2013). Daha sonraki çalışmalarda, tepkiselliğin düzenleyici deęişken olarak rolü test edilebilir. Bunların yanı sıra, mahalle özellikleri de yönetici işlevlerle ilişkili bulunmamıştır. Mahalle özellikleri, çocukların yönetici işlevlerini direk olarak deęil ebeveynlik gibi deęişkenler aracılığı ile etkileyebilir. Daha sonraki çalışmalarda bu ilişkiler test edilebilir.

Kontrol deęişkenlerinin de yönetici işlevlerle ilişkisi incelenmiştir. Çocukların yaşı, ileri sayı uzamı görevi dışında tüm yönetici işlev becerileri ile ilişkili bulunmuştur. Alan yazındaki çalışmalar da çocuklar büyüdükçe yönetici işlev becerilerinin geliştiğini bildirmektedir (Zelazo ve Müller, 2002). İleri sayı uzamı ile ilişkisinin çıkmaması, bu görevin daha kolay bir görev olması ve çocukların nu görevde başarılı olacak yaşa gelmiş olması ile açıklanabilir. Ayrıca, anasınıfına devam etme süresi de Corsi iz sürme ve geri sayı uzamı görevleriyle ilişkili bulunmuştur. Anasınıflarında yapılan aktivitelerin çocukların çalışan bellek gelişimi için avantaj olduđu önceki çalışmalarda da rapor edilmiştir (Ponitz ve ark., 2009). Anasınıfına gitme süresinin dięer yönetici işlev boyutlarıyla ilişkili olmaması da anasınıfında yapılan aktivitelerin belli becerileri desteklemesi ile açıklanabilir.

Çalışmanın bulguları alan yazına önemli katkılar sağlamıştır. Kentsel ve kırsal yoksulluğun yönetici işlevlere etkisi ile ilgili çalışmalar sınırlıdır (örn., Tine, 2014). Ayrıca yapılan çalışmalar sadece belli boyutları incelediğinden bu çalışmada bütün alt boyutların dahil edilmesi çalışmanın önemli bir katkısıdır. Yönetici işlevlerin gözleme dayalı görevlerle değerlendirilmesi çalışmanın önemli bir güçlü yanındır. Ayrıca, Türkiye’de kırsal ve kentsel yoksulluğun yaşam koşulları ve ebeveynlik açısından karşılaştırılması alan yazına önemli bir katkı sağlamıştır. Bu veriler, gelecekte yapılacak çalışmaların bulgularını yorumlamaya olanak sağlayacaktır.

Çalışmanın kısıtlılıkları olarak verinin sadece iki ilden toplanmış olması, çocukların anasınıfına gidiyor olması, ölçeklerin anne raporuna dayalı olması, anne duyarlılık ölçeğinin geçerlik çalışmasının yapılmamış olması ve çalışmanın tek zamanlı ölçüme dayalı olması sıralanabilir. Ayrıca, biyolojik ölçüm alınmaması da yönetici işlev becerilerinin kalıtsallığı ile ilgili bilgi vermediğinden çalışmanın önemli bir kısıtlılığıdır.

Çalışmanın daha sonraki çalışmalara katkısı olacağı düşünülmektedir. Öncelikle bulgular müdahale programları için yol gösterici olabilir. Anasınıfına devam etme ve alıcı dil becerilerinin önemi görüldüğünden bu alanlarda aileler

yönlendirilebilir. Annelerin pozitif ebeveynlik davranışlarını arttırmaya yönelik müdahale programları oluşturulabilir. Ayrıca, değişkenler arasındaki ilişkiler kapsamlı bir modelde test edilebilir.



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