Sequential Development of Theory of Mind and Relations with Receptive Language, Self-Regulation, Aggressive Behavior and Social Competence in Hearing Impaired Turkish Children

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STATEMENT OF AUTHORSHIP

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ABSTRACT

In this study, the sequential development of ToM and the concurrent associations of receptive language, self-regulation and ToM with social competence and aggressive behavior in 3- to 12-year-old Turkish children with hearing impairment (N = 70) were examined. Both individual assessments (receptive language and ToM) and parent reports (self-regulation, ToM and social behaviors) were used to measure the study variables. Guttman scaling analysis showed that ToM acquisition displayed the following sequence from easy to difficult: diverse desires, diverse beliefs, social pretence, false belief and hidden emotion. Controlling for child's age, the severity of hearing loss was negatively correlated with receptive language and ToM; but age of device use was not linked to any of the developmental outcomes investigated. We conducted a path analysis controlling for severity of hearing loss and age of the children. Social competence was predicted by receptive language, and aggressive behavior was predicted both by lower levels of receptive language and self-regulation. The paths from child's age and severity of hearing impairment to ToM were mediated by receptive language; and the path from age to aggressive behavior was mediated by self-regulation. The findings are discussed with regards to the role of the environment in the acquisition of ToM, and the role of language and self-regulation in social behaviors in children with hearing impairment.

Keywords: Theory of mind, receptive language, self-regulation, social competence, aggressive behavior, hearing impaired children, cochlear implants.

ÖZET

Bu çalışmada 3 ve 12 yaş arasındaki 70 işitme engelli Türk çocuklarda zihin kuramı gelişimi ve zihin kuramı becerisinin alıcı dil, öz düzenleme, saldırganlık ve sosyal yetkinlik ile olan ilişkileri incelenmiştir. Katılımcı çocuklarla birebir ölçümlerin yanı sıra (alıcı dil ve zihin kuramı), ebeveyn anketleri (öz düzenleme, zihin kuramı ve sosyal beceriler) ile very toplanmıştır. Zihin kuramı becerisinin farklı bilişsel düzeyleri takip ederek geliştiği bulunmuştur. Guttman analizi sonucunda bu bilişsel düzeylerin kolaydan zora sıralandığı gösterilmiştir, sırasıyla: Farklı istek, farklı inanış, sosyal taklit, yanlış inanış ve saklı duygu. Çocuğun yaşı kontrol edildiğinde, duyma kaybı seviyesinin alıcı dil ve zihin kuramı becerisi ile negative korelasyon gösterdiği; ama işitme cihazı kullanımı yaşının çalışma değişkenlerinin hiç biri ile ilişki göstermediği bulunmuştur. Duyma kaybı seviyesi ve çocukların yaşı control edilerek yol analizi yapılmıştır. Sonucunda, sosyal yetkinliğin alıcı dil becerisi tarafından ve saldırganlık seviyesinin hem alıcı hem de öz düzenleme tarafından yordandığı bulunmuştur. Zihin kuramı ve duyma kaybı seviyesi ile çocuğun yaşı arasındaki ilişkilerde alıcı dilin aracı değişken olduğu görülmüştür. Çocuğun yaşı ve saldırganlık arasındaki ilişkide de öz düzenleme değişkeninin aracı değişken olduğu görülmüştür. Bulgular, işitme engelli çocuklarda, zihin kuramı gelişiminde çevresel faktörlerin ve dil becerisi ile öz düzenleme becerisinin sosyal gelişim üzerindeki etkileri ele alınarak tartışılmıştır.

Anahtar Kelimeler: Zihin kuramı, alıcı dil, öz düzenleme, sosyal yetkinlik, saldırganlık, işitme engelli çocuklar, koklear implant.

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Chapter 1

INTRODUCTION

Language is a basic and very important skill that is linked to functioning in different domains of development, such as social interactions (Gallagher, 1993), the ability to understand other people's mental states (Astington & Jenkins, 1999; de Villiers & de Villiers, 2014; Milligan, Astington, & Dack, 2007; Schick, de Villiers, de Villiers, & Hoffmeister, 2007) and self-regulation (Petersen, Bates, & Staples, 2015). Hearing impairment interferes with proper language development in different ways, based on the type, age and duration of the impairment and device use (see Vaccari & Marschark, 1997, for a review). In the United States, 90% of the children with hearing impairment are born to hearing families (Mitchell & Karchmer, 2004). When there is a hearing status mismatch between the child and parents, language input remains absent or inefficient (Vaccari & Marschark, 1997), which leads to delays in language (Goldin-Meadow, 2003; Marschark, 1993). It is argued that this delay in language development also leads to difficulties in the ability to understand mental states (Peterson, 2004; Peterson & Siegal, 2000), and increases problems in positive social development and self-regulatory skills (Mitchell & Quittner, 1996). Findings have revealed that children with hearing impairment display less prosocial behaviors and higher levels of aggressive behavior and attention difficulties (Eldik, Treffers, Veerman & Verhulst, 2004; Nowakowski, Tasker, & Schmidt, 2009). Majority of this knowledge for social and cognitive development of deaf children comes from studies conducted in English speaking countries (Vaccari & Marschark , 1997), where nation-wide data for deaf children is available (Killoran, 2007). Reliable statistical or qualitative data and developmental research on deaf children is not available in many developing countries.

It is reported that 360 million people are hearing disabled (5.3%) and 32 million of them are under the age of 14 worldwide (World Health Organization (WHO); 2010). According to

factual report of National Institute on Deafness and Other Communication Disorders (NIDCD, 2011), deaf children in the U.S. who received hearing implants before 18 months of age had better hearing and speech abilities compared to later implanted children. Children were found to show immediate improvements if they were implanted before the age of 2 (Svirsky, Teoh & Neuburger, 2004), and showed close-to-normal development at later ages in terms of language development (Geers & Nicholas, 2013). Such an early intervention is possible in Western countries where newborn screening tests are mandatory and strongly recommended (Newborn and infant hearing screening, 2010). For example, in 2007, 94% of all newborn babies went through a hearing screening test in the United States and 64% of them received intervention (i.e., implantation, speech therapy). In Turkey, which is classified as a developing country (Statistical Annex, 2012) approximately 2 million people from all ages – which makes 4% of the general population- suffer from deafness and 0.2% of them are under the age of 9 (TÜİK, 2002). Out of every 1000 babies, 6 of them is born congenitally deaf (Genc, Erturk, & Belgin, 2005), but the earliest diagnosis is usually around the age of 3 (Belgin, Akdas, Boke, & Caglar, 1991). Many children with hearing loss can get an implantation operation at a later age, as medical screening of hearing impairment is not equally accessible to all newborns, and implantation operations are not available countrywide (Altay & Konrot, 2006). Thus, Turkish children with hearing impairment face the risks of late diagnosis and limited access to hearing aids, and proper language input, either signed or spoken. This is a notable problem as language is a significant developmental skill. Poor language skills may increase difficulties in attention (Barker et al., 2009; Smith, Quittner, Osberger, & Miyamoto, 1998) and cause delays in false belief understanding (Schick, de Villiers, de Villiers, & Hoffmeister, 2007). Impairment or delay in language is also likely to cause problems in social interactions. Receptive language (Gertner, Rice, & Hadley, 1994), effortful control (Laible, Carlo, Murphy, Augustine, & Roesch, 2014; Fabes et al., 1999), and ToM abilities (Astington & Jenkins, 1995; Capage &

Watson, 2001) are significant predictors of social competence. Similarly, aggressive behavior is shown to be linked to lower receptive language (Petersen et al., 2013) self-regulation (Eisenberg et al., 2009) and ToM (Sutton, Smith, & Swettenham, 1999). Numerous studies reported that deaf children experience more behavioral problems such as aggressive and delinquent behavior compared to their hearing peers (Mitchell & Quittner, 1996). One of the aims of this study is to investigate the concurrent role of these developmental skills in social competency and aggressive behavior in deaf children in Turkeywhere standard programs for the rehabilitation of deaf children are not applied equally countrywide.

In the following sections, we reviewed the literature on ToM development and its relations with language and self-regulation. Then, we presented a summary of the findings on the relations between social competence and aggressive behavior, and their links to language, self-regulartion and ToM and focused on the cognitive and social development of children with hearing impairment.

Chapter 2

LITERATURE REVIEW

2.1 Theory of Mind (ToM)

Theory of mind (ToM) is conceptualized as understanding one's own and other people's "minds", and that people's mental states might be different from reality resulting in different actions (Flavell, 1999; Perner, 1991; Wellman, Cross, & Watson, 2001). The literature distinguishes ToM abilities as implicit and explicit (Clements & Perner, 1994). Implicit ToM is conceptualized as an inherent capability to understand other people's state of minds and intentions without being aware of it (Ruffman, 2014). In order to measure this ability, researchers used non-verbal false belief tasks where an agent acts upon his/her belief, either this belief being true or false (Onishi & Baillargeon, 2005; Song & Baillargeon, 2008). Implicit understanding of intentional actions are found to be early precursors of later explicit ToM performance in preschool period (Aschersleben, Hofer, & Jovanovic, 2008). Explicit ToM refers to being able to verbally state one's own and other people's mental states, and measured through verbal ToM tasks along with the efficient use of language during preschool period (Wellman, 2014). It significantly improves between the ages of 3 and 5 and is expected to become full-fledged around the age of 5 (Wellman et al., 2001). Explicit ToM, by definition, requires engaging in social interactions. In fact, the relation between social skills and ToM understanding of preschool children were repeatedly studied by many researchers (Wellman, 2014). For instance, elevated levels of false belief understanding in preschool were related to peer acceptance (Slaughter, Dennis & Pritchard, 2002; Slaughter, Imuta, Peterson & Henry, 2015) and socially competent behavior (Jenkins & Astington, 2000; Lalonde & Chandler, 1995).

ToM understanding is a multi-faceted construct (Astington & Baird, 2005) because it covers beliefs, desires, intentions, emotions, and other mental states (Wellman & Liu, 2004). Accordingly, ToM is about the ability to understand that people might want different desires

(diverse desire), people might have incompatible thought on the same things (diverse beliefs), people can acquire knowledge about something when they see it (knowledge access) and people are able to hide their true emotions and display another (hidden emotion) (Wellman, 2014; Wellman & Liu, 2004). Contrary to this notion, the most studied aspect of ToM is false belief understanding which refers to the ability to understand that people might have beliefs that are different from reality and they might act based on these mistaken beliefs (Wellman et al., 2001), due to its informative nature about how mental states influence actions (Wellman, 2014).

Cross-cultural studies on typically developing children revealed that the sequential acquisition of these abilities are subject to cultural variations in terms of what is emphasized in a particular culture. For example, in a culture where knowledge transfer through generations is highly appreciated, children might easily gain an understanding of knowledge access, but children might quickly acquire an ability to understand beliefs if they were socialized to express personal opinions (Slaughter & Zapata, 2014). For children in Western countries (i., e, the U.S. and Australia) the sequential acquisition of ToM goes from easy to difficult: diverse desires (DD), diverse beliefs (DB), knowledge access (KA), false belief (FB), and hidden emotion (HE) (Peterson, Wellman & Liu, 2005; Wellman, Fang & Peterson, 2011; Wellman & Liu, 2004). However, for children in Eastern countries (i.e., China and Iran), the pattern of the acquisition is slightly different: diverse desires (DD), knowledge access (KA), diverse beliefs (DB), false belief (FB), and hidden emotion (HE) (Kuntoro, Saraswati, Peterson, & Slaughter, 2013; Shahaeian, Peterson, Slaughter, & Wellman, 2011; Wellman et al., 2011). These differences of ToM development between different countries were attributed todifferences in cultural practices. Development of knowledge access was affected by the appreciation of "knowledge" in Eastern countries such as China (Slaughter & Zapata, 2014).

The sequential acquisition of ToM in atypically developing children also shows different developmental patterns. For example, false belief was the hardest mental state for

Australian children with autism: They showed a pattern of DD>DB>KA>HE>FB (Peterson et al., 2005; Peterson, Wellman, & Slaughter, 2012). This is true for children with Asperger syndrome as well (Peterson et al., 2012). Similarly, institution-reared children's ToM development revealed a different pattern when compared to previous literature: DD>DB>KA>FB (Etel & Yagmurlu, 2014). However, sequential development of ToM for deaf children showed both similarities and differences. Australian late signing (who started learning sign language at a later age and had no signing family member) and native signing deaf children (who were systematically exposed to sign language beginning from infancy by at least one deaf family member) were found to show the same pattern (DD>DB>KA>FB>HE) compared to hearing children, but late signers were delayed in acquiring this sequence (Peterson et al., 2005). Extensions to this pattern have been made by taking abilities of understanding social pretence and sarcasm into account. Peterson and Wellman (2009) revealed that deaf children acquired social pretence (SP) in an earlier sequence (DD-DB-SP-KA-FB-HE) than hearing children (DD-DB-KA-SP-FB-HE). However, this was not the case for sarcasm understanding (SARC). It was the most difficult mental state for both hearing and deaf children, scalable at the end of the pattern that Wellman and Liu (2004) revealed: DD>DB>KA>FB>HE>SARC (Peterson et al., 2012). Participants of these two studies were deaf children using sign language in daily life, as well as during data collection. To our knowledge, sequential development of ToM of deaf children using cochlear implants with no knowledge of sign language was investigated by only one study that revealed these children acquired hidden emotion earlier than false belief in the sequence (Remmel & Peters, 2009)They argued that developing children might have to deal with social rejection by learning to hide and monitor emotions, similar to Peterson et al.'s (2005) findings of children with autism (Remmel & Peters, 2009).Yet, attempts to extend the ToM scale (Wellman & Liu, 2004) have not been made for this group. Moreover, it was not investigated out of Western context before. To address this lack in research, this study focused how social pretence and sarcasm understanding

would reveal themselves simultaneously within Wellman & Liu's (2004) ToM sequence, in oral-deaf children using hearing devices with no sign language ability.

2.1.1 Theory of mind and Language

Given that understanding mental states in social interactions requires the comprehension and production of language (de Villiers & de Villiers, 2014), language ability is considered to be a significant predictor of ToM (Harris, 2005). Yet, the specific role that language plays on ToM development is highly debated. Some researchers argued that false belief understanding regulated by domain-general cognitive processes and this processes require language (Bloom & German, 2000; Jacques & Zelazo, 2005). Others, on the other hand, claimed that there were causal links between language and construction of ToM (de Villiers, 2005; Harris, 2005). To address these questions, studies focused on the relationship between false belief understanding and different aspects of language such as general language ability, syntax, semantics, and receptive skills. Of all these, receptive language was the mostly studied aspect (see Milligan, et al., 2007), and it was argued to be a better measure for false belief understanding (Milligan et al., 2007). In fact, it was shown to be a significant predictor of ToM performance (Happé, 1995). It was found to be related with ToM both concurrently (Carlson, Mandell, & Williams, 2004) and longitudinally (Meins, Fernyhough, Arnott, Leekam, & Rosnay, 2013). For example, receptive language at the age of 2 predicted ToM abilities at the age of 4, which was measured by Wellman & Liu's (2004) ToM battery (Meins et al., 2013).

The link between false belief understanding and language abilities was demonstrated by studies conducted by atypically developing populations such as children with autism (Happé, 1995) and deafness (Peterson & Siegal, 1999; Peterson & Siegal, 2000). It was repeatedly revealed that deaf children were delayed in ToM development compared to hearing counterparts (see Garfield, Peterson, & Perry, 2001 for review) and this was shown to be true even when the verbal demands of the ToM tasks were minimized (de Villiers & de Villiers, 2012; Figueras-costa & Harris, 2001; Schick et al., 2007; Woolfe, Want, & Siegal, 2002). Deaf

children's delays in ToM understanding were shown to be related to the variations in language development generally led by timing of signed language input and access to it (Meristo et al., 2007; Woolfe et al., 2002) or usage of hearing devices (Peterson, 2004; Sundqvist, Lyxell , Jönsson, & Heimann, 2014). Deaf children of deaf parents, who were referred as native signer children, were found to be better at ToM understanding, compared to deaf children of hearing parents, who were taught sign language at a later age (Peterson et al., 2005; Schick et al., 2007), even though native signer children were approximately 10 months younger than late signer children and executive functions and non-verbal mental age were controlled (Woolfe et al., 2002). Moreover, Schick et al. (2007) revealed that native signer children performed as well as hearing children on ToM tasks. It is important to note that the native signer children in Schick et al.'s study (2007) came from a school environment that favored sign language creating a continuous conversational social environment other than home. As this is not always the case, Meristo et al. (2007) investigated bimodal linguistic school environments (both signed and spoken) and revealed native signer children in bilingual school contexts performed equally well to hearing peers and better than native signer children who were not. Same finding was obtained by Peterson and Siegal (1999) as well but they also found that oral-deaf (children who use hearing devices and have access to verbal conversation) children's performances on ToM tasks paralleled both native signer and hearing children. Remmel and Peters (2009) found that deaf children with cochlear implants aging between 3 and 12 with no knowledge of sign language performed equally well with hearing peers on Wellman & Liu's (2004) ToM scale. However, Peterson (2004) found different results with similar sample characteristics: Cochlear implanted children who never had sign language experience were found to be delayed in ToM development compared to hearing children, showing a similar performance with late signer children. These differences between findings can be due to the implantation age differences between the two studies. Remmel and Peters (2009) reported that children in their sample started using hearing devices with a mean age of 19 months. Whereas Peterson (2004) reported

that in their sample youngest implanted child was 2 years old. It is true that cochlear implants facilitate language development (Akin, Tezer, Sahin, & Akar, 2009) and increase social involvement of deaf children both at school and home (Nicholas & Geers, 2003), but age of using hearing devices might make a difference. In fact, children who had implantation before the age of 27 months had a better ToM understanding than the children who were implanted when they were older than 27 months of age (Sundqvist et al., 2014). However, findings are mixed. Sundqvist et al. (2014) found a difference on the ability to attribute and distinguish people's emotions in social situations, but they failed to do so on cognitive aspects of ToM such as understanding false-belief. On the other hand, early implanted children (mean age of implantation approx. 17 months) were delayed in understanding beliefs and desires in comparison to normally hearing children (Ketelaar, Rieffe, Wiefferink, & Frijns 2012).

Given the large variances of language modalities that deaf children and their families use, it makes it difficult to examine different aspects of language in relation to ToM development. Studies with signing deaf children (age range: 4-11) revealed that receptive language abilities correlated with ToM (Jackson, 2001), when verbal demands of ToM tasks were minimized (Woolfe et al., 2002).

2.1.2 Theory of Mind and Self-Regulation

ToM has also been shown to be related with self-regulation (Carlson & Moses, 2001). Self-regulation refers to the ability to control responses and actions of one's self (Jahromi & Stifter, 2008). The link between ToM and self-regulation has been generally investigated by false belief tasks and measures of executive function (EF). Executive function is used as a general term that encompasses skills of attention (e.g. shifting and focusing), inhibition (e.g. inhibitory control and inhibition of impulses) and working memory (see Devine & Hughes, 2014; Hughes 2011). Children become capable of understanding and distinguishing mental states of their own and other people with the development of executive function skills. For instance, Carlson and Moses (2001) found that controlling for age, gender and language, ToM

was strongly related to inhibitory control in children of 3 and 4 years of age. Also, ability to inhibit conflict (Chasiotis, Kiessling, Winter, & Hofer, 2006) and working memory (Fizke, Barthel, Peters, & Rakoczy, 2014) was related to false belief understanding during preschool period. In addition to concurrent links, previous literature showed longitudinal relationships as well (Carlson et al., 2004). Earlier skills of executive function (age 4.5) predicted later ToM abilities (age 5.5) (Hughes 1998; Jahromi, & Stifter, 2008), but early ToM did not significantly predict later EF during preschool period (Carlson et al., 2004; Hughes, 1998).

Interestingly, studies investigating the relation between ToM development and EF skills in deaf children did not provide straightforward links. During preschool period, late signer children were found to perform equally well of EF measures with native signers, but they still showed delays in false belief understanding (Woolfe et al., 2002). Same findings were obtained with older deaf children and adolescents who were between 7 and 16 years old (Meristo & Hjelmquist, 2009). Similarly, when oral-deaf, native signer, late signer and hearing children were compared in terms of EF performances, no differences were found between those groups (Jackson, 2001). Children with cochlear implants and hearing aids were not delayed compared to hearing peers in terms of EF performances (de Villiers & de Villiers, 2012). Even though Meristo and Hjelmquist (2009) revealed that EF skills (measured by digit span and go-no-go tasks) were related to ToM understanding in signer deaf children, non-significant results were obtained for oral-deaf children (de Villiers, 2005). The inconsistency of these findings concerning the interplay between EF and ToM indicated that social-conversational experiences and language should be taken into account along with EF skills to examine ToM development of deaf children.

2.2 Social Competence and Aggressive Behavior

Social competence and aggressive behavior are two commonly studied aspects of social development. Socially competent behavior is defined as “the ability to achieve personal goals in social interaction while simultaneously maintaining positive relationships with others over

time and across situations" (Rubin & Krasnor, 1992, p. 285). Previous literature pointed out that social competence and aggressive behavior were negatively linked to each other (Capage & Watson, 2001; Hoglund & Leadbeater, 2004).During the preschool period important changes occur in terms of social development. They get better at establishing relations with peers (Denham et al., 2003), parents and other people (Hoglund & Leadbeater, 2004).

Language is a significant factor in relation with social skills (Barker et al., 2009; Hart, Fujiki, Brinton, & Hart, 2004). For example, language abilities in preschool predicted socially competent behavior in early adolescence (Landry, Smith, & Swank, 2009). Especially, receptive language ability was found to be related with social competence (Gertner et al., 1994; Hart et al., 2004). Having good communicative skills enables children to establish and maintain positive relationships with peers (Gertner et al., 1994) and to be liked by their peers (Hart et al., 2004). Although many studies indicating the importance of communicative skills in terms of positive relationships with others, there are inconsistent findings. Some studies found positive links between relational aggression (e.g. verbally threatening others to get s/he wants or keeping a peer away from the group) and receptive language in preschoolers (Bonica, Arnold, Fisher, Zeljo, & Yershova, 2003), but others did not (Estrem, 2005). Instead, Estrem's study (2005) revealed that lower levels of receptive language was related with higher levels of both relational and physical aggression in early childhood. Despite the ambiguity, longitudinal evidence revealed that receptive language during preschool period (at age 4) predicted later externalizing problems (e.g. attacking others) in early adolescence (at age 12) (Petersen et al., 2013). However, social skills were not solely predicted by language ability, but they were also found to be related with self-regulatory skills (Charman, Carroll, & Sturge, 2001; Razza & Blair, 2009; Valiente, Swanson, & Lemery-Chalfant, 2012). Self-regulatory skills, conceptualized as executive functions, play an important role in how children pay attention to social stimuli, inhibit and control their actions (Carlson & Moses, 2001). High levels of self-regulation facilitated children's co-operative (Laible et al., 2014) and socially competent

behaviors (Fabes et al., 1999). Externalizing behaviors were negatively linked with inhibitory control abilities (Eisenberg et al., 2009; Riggs, Blair & Greenberg, 2004). Moreover, impulsivity was negatively linked with social adjustment in preschool (Valiente et al., 2012) and in adolescence (Olson, Schilling, & Bates, 1999).

It is important to note that, studies investigating language and self-regulation as predictors of behavioral problems suggested that language and self-regulation were not unrelated constructs. Early language skills seems necessary for later self-regulatory skills during preschool period (Petersen et al., 2015). In fact, the relation between high levels of aggression and verbal abilities were fully mediated by self-regulation (Hughes & Ensor, 2008). Therefore, links between language, self-regulation and social behavior should be examined altogether.

2.2.1 Social Competence, Aggressive Behavior and Theory of Mind

Establishing and maintaining positive relationships requires the ability to understand mental states and emotions of other people. ToM was positively linked with preschool aged children's ability to engage in positive peer interactions during (Astington & Jenkins, 1995; Jenkins & Astington, 2000) and teacher rated social competence in preschool (Capage & Watson, 2010; Watson, Nixon, Wilson, & Capage, 1999) and in preadolescence (Bosacki & Astington, 1999). Children with better ToM abilities were shown to be more popular and more liked by their peers during preschool period and early adolescence (Slaughter et al., 2015). Also, mental state understanding was longitudinally linked with socially competent behavior (Jenkins & Astington, 2000). For example, Razza and Blair's (2009) study revealed that false belief understanding in preschool predicted socially competent behavior in kindergarten. The relationship between social competence and ToM was studied in relation with variables like executive function (EF) (Charman et al., 2001; Razza & Blair, 2009) as strong links between mental state understanding and self-regulation are evident (Carlson & Moses, 2001). Significant concurrent links were found between ToM, EF and social competence (Charman et

al., 2001). Longitudinal investigations also revealed that, false belief understanding in preschool was found to be partially mediating the relationship between executive functions in preschool (i.e. inhibitory control) and social competence in kindergarten (Razza & Blair, 2009). However, the literature on how EF and ToM abilities predict social competence is not well-established yet (Hughes & Ensor, 2008): No significant association was found between ToM and social competence (Newton & Jenvey, 2011).

The literature on how ToM ability relates to aggressive behavior remains unclear. Being able to understand other's mental states does not necessarily serve as a precursor for only socially competent behavior. For example, children with poor ToM abilities might be physically aggressive towards peers (Capage & Watson, 2001; Olson, Lopez-Duran, Lunkenheimer, Chang, & Sameroff, 2011). On the other hand, no links were found between ToM and physical aggression, but for relational aggression among preschoolers (Renouf et al., 2010). In fact, it is argued that being good at understanding other's mental states might enable children to manipulate social interactions. The negative link between ToM and aggressive behavior is arguable for physical aggression (Sutton et al., 1999). The literature suggested links between ToM and EF (Razza & Blair, 2009) and individual correlations of them to aggressive behavior (Charman et al., 2001). Thus, investigation of predictors for aggressive behavior should focus on how ToM and EF explains aggressive behavior together. However, there are mixed findings. Link between ToM and aggressive behavior was found to be no longer significant after controlling for self-regulation (Olson et al., 2011) or become much weaker (Hughes & Ensor, 2008). On the other hand, Hughes and Ensor's study (2006) indicated it was other around: ToM was a stronger predictor when investigated together with executive functions. Therefore, it is important to investigate pathways between these variables altogether in order to better understand how they relate to each other as well as social development.

2.2.2 Social Competence and Aggressive Behavior in Deaf Children

Behavioral problems like externalizing problems are prevalent among preschool and school age deaf children (Brubaker & Sakowski, 2008; Eldik, et al., 2004; Mitchell & Quittner, 1996). These children were shown to display externalizing problems such as impulsivity and delinquent behavior (Eldik et al., 2004; Mitchell & Quittner, 1996; (Nowakowski et al., 2009) and less pro-social acts compared to normative samples (Wauters & Knoors, 2008). Similarly, deaf children of hearing parents displayed more anger in conflicting social situations compared to hearing peers (Rieffe & Terwogt 2006). Theunissen et al.'s study (2013) held with children using hearing aids and cochlear implants revealed that oral-deaf children also showed higher levels of proactive aggression and delinquent behavior. However, different social environments affected deaf children's social behavior differently: Deaf children attending mainstream schools (sharing same classrooms with hearing peers) were found to display less anti-social behavior than deaf children in special education settings (Wolters, Knoors, Cillessen &Verhoeven, 2011).

Investigation for predictors of behavioral problems of deaf children revealed that their social behaviors were related language abilities (Barker et al., 2009; Theunissen et al., 2014, Wiefferink, Rieffe, Ketelaar, & Frijns, 2012). For example, in deaf children with cochlear implants, externalizing behaviors were found to be negatively related with language abilities (Wiefferink et al., 2012). Also, poor attention skills were found to be related with behavioral problems such as externalizing behaviors of deaf children during both preschool period and adolescence (Mitchell & Quittner, 1996). Hearing status mismatch between the mother and the child was found to affect attention skills of deaf children. Deaf children born to hearing families were found to engage in fewer joint attention periods comparing to hearing counterparts and it was to be related with more disruptive behaviors of deaf children during preschool years (Tasker, Nowakowski, & Schmidt, 2010). Moreover, auditory stimulation had a supporting role on attention (Smith, et al., 1998). In fact, attention mediated the link between

language abilities and externalizing behaviors in severely and profoundly deaf preschool children (Barker et al., 2009).

Chapter 3

PRESENT STUDY

Literature review provided above focused on both sequential development of ToM and how language and self-regulation were linked to ToM, social competency and aggressive behavior in typically developing and hearing impaired children (Hughes & Leekam, 2004; Peterson & Siegal, 2002; Peterson et al., 2012; Peterson & Wellman, 2009; Schick et al., 2007; Wellman & Liu, 2004; Woolfe et al., 2002). This review shows that sequential development of ToM has been widely investigated in typically developing children in different cultures (Kuntoro, et al., 2013; Shahaeian et al., 2011; Wellman et al., 2011) including Turkey (Etel & Yagmurlu, 2014; Yagmurlu, Brink, & Wellman, 2015). However, studies on sequential development of ToM in deaf children are limited in number and include Western samples only (Peterson et al., 2005; Peterson & Wellman, 2009; Peterson et al., 2012; Wellman et al., 2011).

In Turkey congenital deafness is encountered 6 out of 1000 newborns (Genc et al., 2005). Of the 2 million deaf population, 30% of them suffer from this condition (Engelli İstatistikleri, 2002). There are only 48 elementary and 8 high schools special for deaf children, however; there is no standard for education language. Majority of schools cannot provide proper sign language and depend on spoken language. Otherwise, majority of the children using hearing devices attend mainstream schools, but they have difficulties in school adjustment (Akcamete & Ceber, 1999) and fall behind their hearing peers in academic abilities such as writing (Karasu & Girgin, 2007) and reading (Karasu, Girgin, & Uzuner 2012). According to TÜİK data (2010), 60% of the hearing impaired citizens who are above the age of 15, report that they face daily struggles such as using banks or public services and 73% of them are unemployed.

In this study, we aimed to examine sequential acquisition of ToM in deaf children. We did not focus solely on commonly examined aspects of ToM such as understanding desires, beliefs, and emotions, but also more rarely investigated ones: understanding social pretence,

irony and sarcasm. In line with earlier findings with Western deaf children (Peterson & Wellman, 2009), we predicted that social pretence would be easier than knowledge access. Given that our sample's age of using hearing devices was later than what is suggested for normal or close-to-normal development (Svirsky et al., 2004) and they were all born to hearing families, these children lacked language input in both spoken and signed modes for a long time in their first years of life. The literature suggests that in such cases, gesture use works as an adaptive communication method and develops in language-like ways (Goldin-Meadow, 2003, 2007; Morford, 1996). It was also shown that deaf children produced more gestures than their hearing peers; however, amount of gestures they produced was lower than the amount of speech produced by hearing children (Lederberg & Everheart, 1998).

Also, understanding sarcasm was predicted to be the most difficult mental state for deaf children, acquired later than all other aspects of ToM and it was predicted to be delayed for deaf children. Understanding sarcasm was shown to be an advanced level of mental state understanding for hearing children, acquired at around the age of 9 whereas deaf children were shown to master this skill later than their hearing peers (Peterson et al., 2012). In fact, full acquisition of sarcasm understanding might not occur for deaf children even in adulthood, except for the native signers (O'Reilly, Peterson, & Wellman, 2014).

Numerous studies have revealed that verbal (Milligan et al., 2007) and self-regulatory abilities (Charman et al., 2001; Chasiotis et al., 2006) are associated with ToM development, which is required for establishing and maintaining positive social interactions (Hughes & Leekam, 2004; Slaughter et al., in press). Findings on the relationship between ToM and social competence suggest both significant (Razza & Blair, 2009) and non-significant results (Newton & Jenvey, 2011). Moreover, aggressive behavior was found to be related with language development (Brownlie et al., 2004) self-regulatory abilities (Huyder & Nilsen, 2012; Riggs et al., 2004) ToM and socially competent behavior, (Capage & Watson, 2010. However, how

ToM, aggressive behavior and social competence are related to each other remains unclear (Sutton et al., 1999).

Our knowledge about ToM development of children using hearing devices remains limited as studies investigating predictors like age, type of exposure to language input (Peterson et al., 2005) and usage of hearing devices (Ketelaar et al., 2012; Remmel & Peters, 2009) revealed inconsistent findings. Deaf children were reported to show problems in self-regulatory abilities such as attention and impulsivity (Eldik et al., 2004) and display more aggressive and less socially competent behavior compared to hearing peers (Nowakowski et al., 2009; Wolters et al., 2011). Language ability was found to be negatively related to externalizing problems among children with hearing devices (Wiefferink et al., 2012). Moreover, attention abilities mediated the link between language and behavior problems (Barker et al., 2012). To our knowledge, there is only one study modeling the relationships between language, self-regulation and socially competent behavior in children with hearing devices that suggested language ability predicted higher levels of attention, and in turn less aggressive behavior (Barker et al., 2009). It is important to study aforementioned developmental areas together in hearing impaired children in order to broaden our limited knowledge about relationships between these variables based on the literature of typically developing children. We still have inadequate information of the links between verbal abilities, self-regulation, ToM, aggressive behavior and social competence among hearing impaired children using hearing devices. Therefore we aimed to investigate these developmental areas in children with hearing devices. In the light of these findings, we hypothesized that social competence would be positively linked with receptive language, ToM and self-regulation. We expected that aggressive behavior would be negatively linked with receptive language, self-regulation, ToM and social competence. We hypothesized that receptive language would be positively related to ToM and consecutively ToM would be positively related to social competence (single mediation). We also hypothesized that higher receptive language would predict higher self-regulation and in

turn, lower aggressive behavior (single mediation).To investigate these relationships, we conducted a path analysis (Tabachnick & Fidell, 2008). We established our hypothesis based on the literature of typically developing hearing children. Therefore, we entered receptive language as a primary predictor of social competence (Haret et al., 2004) and aggressive behavior (Riggs et al., 2004). Similarly, self-regulation was entered secondly in relation with social competence and aggressive behavior (Charman et al., 2001). ToM was entered in the second step as a mediator, with the prediction mediating the link between receptive language and social competence. We controlled age (Denham et al., 2003; Eldik et al., 2004; Peterson et al., 2005) and severity of hearing impairment (Sarant, Holt, Dowell, Rickards, & Blamey, 2009) as these variables were found to be related to developmental areas under investigation in this study.

Chapter 4

METHOD

4.1 Participants

The data was collected from 70 Turkish deaf children (37 girls) using CIs (N = 45) and HAs (N = 25). Children's age ranged from 36 months to 146 months (M = 87.5 months, SD = 28.02) (see Figure 1). Children's degree of hearing loss ranged from severe to profound (see Table 1 for descriptive statistics). None of the children had a developmental disorder or any other disability apart from deafness. Number of children who had siblings living with them in the same household was 48. Of the 48 children, 27 of them had only hearing siblings; 12 of them had only deaf siblings and 9 of them had both hearing and deaf siblings. Given the wide age range in the sample, 60% of children were attending primary and elementary schools along with special education centers. Data collection were held in special education centers from three cities in Turkey (namely, İstanbul, Eskişehir and Kahramanmaraş), which provided education only in spoken language. But one of the schools additionally had sign language classes 90 minutes per week. All the parents were hearing parents and they used spoken language to communicate with their children. None of them was knowledgeable of sign language. Majority of the families were coming from low or middle socio-economic status (SES). Plurality of the mothers were primary school (43.5%) and high school graduates (18.8 %), and only 10% of the mothers were university graduates. Family profiles showed that majority of the mothers were unemployed (87%) and fathers were maintaining the family with an employment percentage of 94%. Fathers' education level was slightly higher with 30% primary school graduates and 35% high school graduates. Only one father had a postgraduate degree and 7% of the fathers had a university degree. Household income in 88% of the families was lower than 3000TL per month (approx. 1102$). The remaining families' (12%) income ranged from 3000 TL to more than 12000 TL.

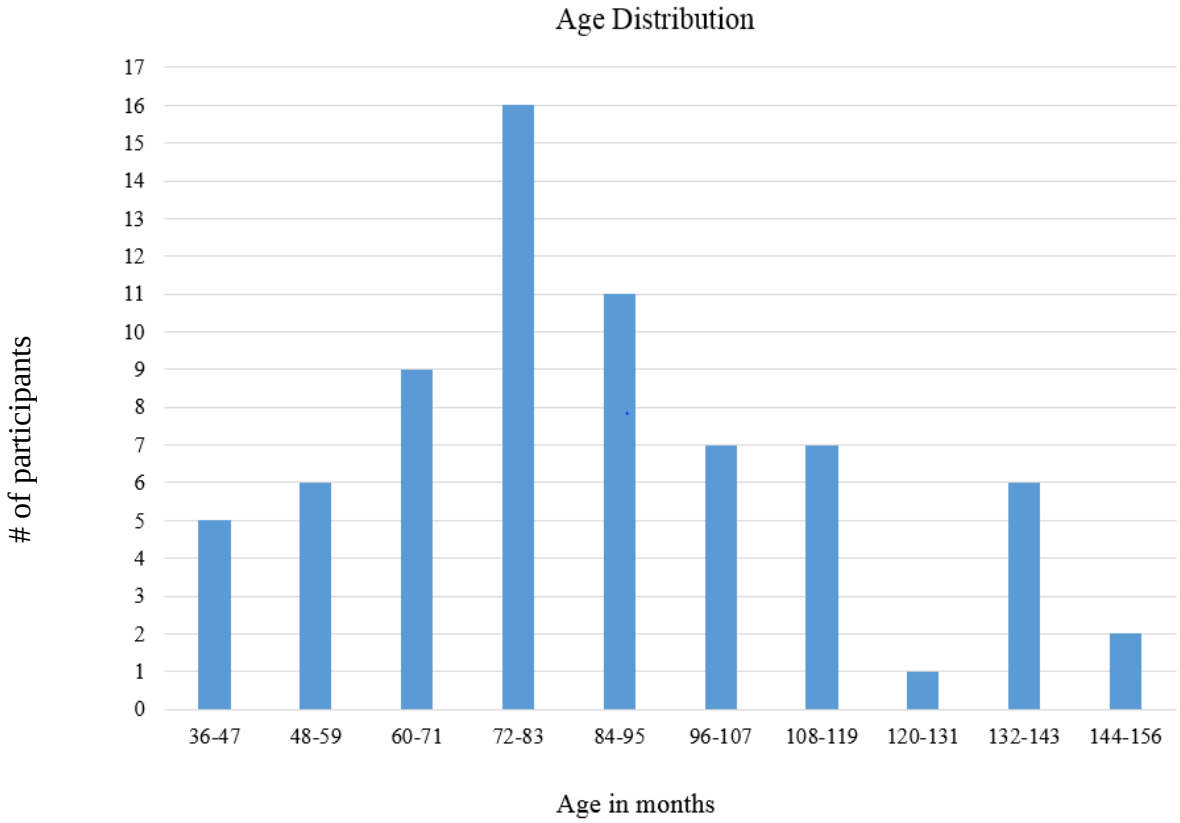

Figure 1. Age (in months) distribution of participants ($N = 70$)

Table 1
Descriptive Statistics (N =70)

	Total			
Variables	*M*	*SD*	Min	Max
Age (in months)	87.5	28.02	36	146
Receptive language (in months)	67.09	21.62	33	135
Age of device usage (in months)	36.6	22.28	6	133
Left ear degree of loss	83.57	17.57	32	115
Right ear degree of loss	84.59	18.15	28	115
Receptive language (in months)	67.09	21.6	33	135
Self-Regulation (1-7)	3.65	1.2	1.44	6.29
CBQ (n = 47)	3.22.	1.07	1	6
EATQ (n = 23)	4.55	.9	3	6
Theory of Mind	.00	.852	-2	2
Standard tasks (0-8)	2.9	1.74	0	7
Low-verbal tasks (0-3)	1.7	.9	0	3
CSUS (1-4)	2.89	.5	2	4
Social Competence (1-4)	22.9	4.45	13	32
PIPPS interaction subscale	23	4.8	10	32
SCBE social competence scale	22.9	5.03	9	32
Aggressive Behavior (1-4)	19.4	4.7	12	31
PIPPS disruption subscale	20.2	5.5	12	33
SCBE aggression subscale	18.6	4.75	10	31

4.2 Materials

4.2.1 Social Competence. We measured children's social competence in two different contexts, during peer play and general interactions, using two scales. Social competence during peer play was assessed with Play Interaction subscale (e.g., *"Helps settle peer conflicts"*) of the Penn Interactive Peer Play Scale (PIPPS) (Fantuzzo, Mendez, & Tighe, 1998). The Turkish version of the scale was formed by Ozturk (2011). We measured socially competent behavior during general interactions with Social Competence subscale (e.g., *"working well in groups"*) of the Social Competence and Behavior Evaluation Scale (SCBE) (LaFreniere & Dumas, 1996) (See Appendix A). The scale was translated into Turkish by Corapci, Aksan, Arslan-Yalcin, and Yagmurlu (2010). The two scales were used by Etel & Yagmurlu (2014) to measure social competence in preschool children and were found be valid and reliable (PIPPS $\alpha = .78$; SCBE $\alpha = .82$). The PIPPS Play Interaction Subscale had 8 items ($\alpha = .81$) and SCBE Social Competence Subscale had 8 items as well ($\alpha = .81$). Both scales were rated on a 4-point Likert scale (1 = "never" and 4 = "always"). The correlation between the subscales was significant and positive: ($r = .64$, $p < .001$); the two subscale scores were averaged to compute a total social competence score.

4.2.2 Aggressive Behavior. Similar to social competence, we measured aggressive behavior of deaf children during peer play and general interactions. We used the Play Disruption subscale (e.g., *"Verbally offend others"*) of PIPPS (Fantuzzo et al., 1998) to measure aggressive behavior during peer play. Aggressive behavior during general interactions was measured by Aggression Subscale (e.g., *"easily frustrated"*) of SCBE (LaFreniere & Dumas, 1996) (See Appendix A). The PIPPS Play Disruption subscale had 12 items ($\alpha = .85$) and Aggression subscale of SCBE had 10 items ($\alpha = .83$). Both scales were significantly and positively correlated ($r = .66$, $p < .01$); we formed a total aggressive behavior score by averaging the two scales.

4.2.3 Self-Regulation. Our self-regulation measure tapped two aspects of self-regulation: attentional regulation and behavioral regulation. We used the Attention Focusing (4 items; e.g., *"Sometimes becomes absorbed in a picture book and looks at it for a long time")* and Impulsivity (5 items; e.g., *"Usually rushes into an activity without thinking about it"*) subscales of the Turkish version (Batum & Yagmurlu, 2007) of the Child Behavior Questionnaire (CBQ; Rothbart, Ahadi, & Hershey, 1994) to measure self-regulation of children younger than 96 months of age (N = 47; M_{age} = 71.26, SD = 15.34). All the nine items had factor loadings over .32, the KMO value was .77 (Bartlett's test of Sphericity x^2 (153) = 335.57, $p < .001$). To measure self-regulation of children who were 96 months old or older (N = 23; M_{age} = 120.70 SD = 15.95), we used items in Attention (3 items; e.g., *"Is good at keeping track of several different things that are happening around him/her"*) and Impulsivity (4 items; e.g., "*Sometimes interrupts others when they are speaking"*) subscales of the Early Adolescent Temperament Questionnaire (EATQ; Capaldi & Rothbart, 1992) (See Appendix A). The seven items had factor loadings over .32, the KMO value was .57 (Bartlett's test of Sphericity x^2 (105) = 160.82, $p < .001$).

All of the items were rated on a 7-point Likert scale (1 = 'extremely untrue', 7 = 'extremely true'), and the scale scores were computed by averaging the items for each age group (α = .85 for CBQ, α = .66 for EATQ).

4.2.4 Theory of Mind. To measure ToM abilities, we used both verbal and low-verbal ToM tasks, and mother reports.

Verbal ToM tasks included eight tasks. Six of them were the tasks included in the ToM scale of Wellman and Liu (2004): Diverse desires (DD), diverse beliefs (DB), knowledge access (KA), contents false belief (CFB), explicit false belief (EFB) and hidden emotion (HE) (see Appendix A for description of each task). Translations of the tasks were made by Kahraman (2012) and the tasks were used with a Turkish sample in previous studies (Etel & Yagmurlu, 2014).We also used the sarcasm and irony task (SARC) (see Appendix A for the

detailed description of the task) and social pretence task (SP) (see Appendix A for the detailed description for the task)which were developed in the same structure with Wellman and Liu's (2004) tasks and used with typically developing and deaf children (Peterson & Wellman, 2009; Peterson et al., 2012, O'Reilly et al., 2014). In the SARC task, a scenario for a picnic day is presented to the child with pictures of a girl and a boy showing them from the back of their heads. The experimenter tells that the picnic is the boy's idea and adds that he said it would be a lovely sunny day. Then, a picnic depiction of dark clouds, rain and wet foods is shown to the child. The experimenter tells that the girl said "It's a lovely day for a picnic." After the story is finished, the experimenter asks a prior question: "Is it true, what the girl said?" and a test question: "Why did the girl say 'it's a lovely day for a picnic'?'' A control question for checking comprehension is asked: ''was the girl happy about the rain?''. To pass this task, children are supposed pass the control question in the first place. Also, children need to answer the "why" question correctly. For this answer to be correct, children should mention sarcasm in some way, such as "joking, doesn't mean it, she tricked him etc." or should talk about the meaning of the words like "lovely day" and the real meaning behind this phrase. The child gets a score of 1 if s/he replies to the question correctly.

In the SP task, a red toy car and a baby doll is used. Firstly, the experimenter and the child play with the toy car together. The experimenter states they are pretending to paint the red car blue. After pretending for a while, the experimenter ends the game by saying: "Now we finished pretending. Now X (referring to the baby doll) will come here. S/he didn't see us when we were pretending. What will s/he say when I ask him/her the color of the car?"(Test question). Getting the answer from the child the experimenter asks a memory control question: "When we were playing, what color did we pretend to paint this car?" To pass the task, the child needs to answer te test question as "red" and the control question as "blue" and gets a score of 1 if correct. The SARC and SP tasks were translated into Turkish by the author. For all verbal ToM tasks, children should give correct answers to both the control question (as

aforementioned) and the target question to get a score of 1. Altogether, children could get minimum 0 points and maximum 8 points from the ToM tasks altogether (See Figure 2 for performance percentages).

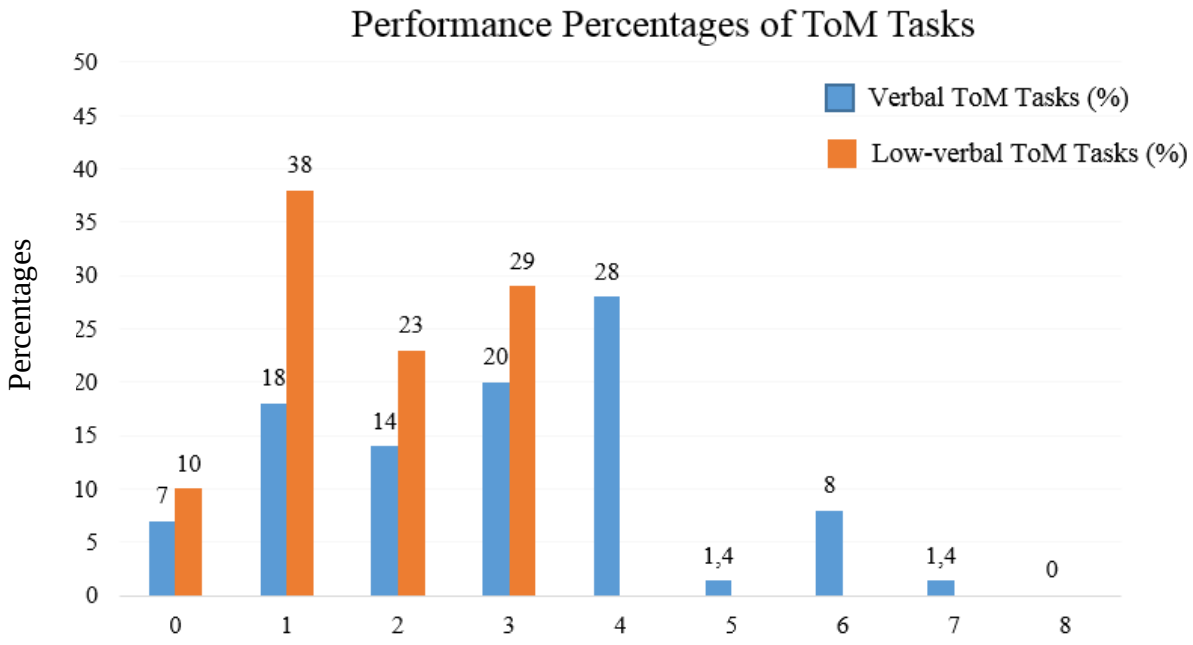

Figure 2. Performance percentages of verbal and low-verbal ToM tasks distributed by each score ($N = 70$)

In addition, we administered low-verbal tasks by using picture stories and thought bubble depictions in order to minimize the verbal and cognitive load during task administration. Before beginning, a practice phase was introduced to all children to make sure they understood the procedure. In this practice phase, children are first shown two cards with pictures to make them get used to the procedure. The first card has a picture of a boy and a dog standing near the boy on it. The experimenter shows the picture to the child and says: “Look, a boy and a dog.” In the second card, there is a drawing of a boy thinking about a dog. The dog is drawn inside of a thought bubble located above the boy’s head. The experimenter shows the picture to the child and says: ”Look, the boy is thinking about the dog.” and ends the practice phase.

We adapted de Villiers and de Villiers's (2012) unexpected contents task to make it more suitable for Turkish deaf children to measure false belief understanding. The original task story was about changing the content of the play dough box with worms. However, as we thought Turkish deaf children might not be familiar with play-dough boxes and worms, we changed the play dough box to candy box and the worms to pencils, and kept the structure of the story the same. We used four different thought bubble pictures in original forms as depicted in Woolfe et al.'s (2002) study (two false belief, two true belief tasks) (Woolfe et al., 2002) (For detailed descriptions low-verbal ToM tasks, see Appendix B). To pass low-verbal ToM tasks, children needed to answer control and target questions correctly and get a score of 1. Children could get a minimum score of 0 and a maximum score of 3 (see Figure 2 for performance percentages)

We also used the Children's Social Understanding Scale (CSUS) (Tahiroglu et al., 2014) to measure children's ToM ability, which is a recently developed reliable and valid mother report of mental state understanding (See Appendix A). This scale has 42 items rated on a 4-point Likert scale (1 = never, 4 = always) and 6 subscales, namely, belief (e.g. talks about what people think or believe), knowledge (e.g. talks about what people know or don't know), perception (e.g. thinks you can still see an object even if you are looking at the opposite direction), desire (e.g. talks about what people like or want), intention (e.g. understands when s/he is being teased or made fun of) and emotion (e.g. tries to understand the emotions of other people) subscales. The Turkish adaptation of the scale was made by Etel and Yagmurlu (2014).

In the present study, verbal ToM tasks and low-verbal ToM tasks were significantly and positively correlated with each other ($r = .26$, $p < .01$), and CSUS was significantly correlated with verbal ($r = .41$, $p < .01$) and low-verbal ($r = .32$, $p < .01$) ToM tasks. To form a total ToM score, z scores of ToM tasks and mother reports (CSUS) were obtained. Then, mean of z-scores were taken to derive a total ToM score.

4.2.5 Receptive language. Children's receptive language was measured using the Receptive Language subscale of Turkish Expressive and Receptive Language Test (TIFALDI-

AD; Berument & Guven, 2010). TIFALDI is the Turkish equivalent of the Peabody Picture Vocabulary test (PPVT). PPVT has been used to measure language ability of Western deaf children (Peterson, 2004; Schick et al., 2007; Peterson & Siegal, 1999). TIFALDI language test was reported as a valid and a reliable test (Berument & Guven, 2010; Etel & Yağmurlu, 2014) and used in a nationally representative sample (Baydar et al., 2009). The test starts with the items corresponding to the child's age. The children are supposed to show the picture of the word asked by the experimenter on the test page among four different pictures. For the bottom score, the child needs to have 8 right answers in a row at the beginning. If the child gives the wrong answer, the experimenter goes backwards 8 items from the wrong item. This continues until the child gives 8 correct answers in a row to find the bottom score. After finding the bottom score, the test continues from the last item unanswered. To end the test, the child needs to make 8 mistakes in the last 10 items asked. A numeric raw score is calculated by adding up all correct answer points. By finding the age that corresponds to the numeric raw score based on normative data provided by TIFALDI (Berument & Guven, 2010) verbal age scores of the children were obtained as an indicator of receptive language ability.

4.3 Procedure

Data collection was held after obtaining approval of the Committee on Human Research at Koc University. Informed consent forms were taken from mothers and the directors of the special education centers. Each task administration session took place only after getting the assent of the participant children. Participants were recruited from four special education centers located in Turkey The questionnaires were distributed to mothers with the help of teachers in special education centers and collected back in two weeks.

All of the questionnaires were completed by the mothers themselves, but clarification was provided by the experimenter if needed. Illiterate mothers were detected with the help of the teachers, and questions were read to them by the researcher in the centers. Individual assessments were held by the same experimenter in a quiet room. Before the tasks were

administered, a practice session was held to familiarize the children with thought bubbles. We followed the same procedure administered in Woolfe et al.'s (2002) study. Two card depictions were used: one with a boy and a dog, and the other with a boy thinking of a dog shown in a thought bubble. We made sure that each child could understand what thought bubbles were, and then the testing session started.

First, the language test was administered, which was followed by the low-verbal ToM tasks. First, the unexpected contents task (de Villiers & de Villiers, 2012) was given. Then, four thought bubble pictures were administered in a counterbalanced order (for a similar procedure, see Woolfe et al., 2002). After a break of five minutes, the verbal ToM tasks were given. Prior studies have shown no effects of task order (Wellman et al., 2006). All children received the DD, DB, KA tasks first in the given order and SARC at the end, but CFB, EFB, HE and SP were administered in a counterbalanced order (for a similar procedure, see Peterson et al., 2012). Each session including all task administrations lasted approximately 50 minutes in total.

Chapter 5

RESULTS

5.1 Analysis Plan

In the first part of data analysis, we conducted scaling analysis to examine the sequential acquisition of ToM. Scaling analysis were performed in three steps. First, eight verbal ToM tasks (DD, DB, KA, CFB, EFB, HE, SP, SARC) were investigated to detect children's performance levels on each task. Then, pairwise comparisons between the tasks were held by McNemar's chi-square tests to find out whether the tasks differed significantly from each other in terms of difficulty levels. In the following step, a Guttman (1950) scaling analysis was conducted in order to test the scalability of the tasks. Guttman scaling analysis allows us to test the scalability fit of an established pattern that consists of items from easy to difficult, decided by the index of reproducibility (Green, 1956). Same procedures of analysis were followed by earlier studies with deaf (Peterson & Wellman, 2009) and institution-reared children (Etel & Yagmurlu, 2014).

In the second part of data analysis, group differences were examined by conducting ANOVAs. Then, correlational analysis (zero order and partial correlations) was conducted to examine the relations between the study variables. To test the hypothesized model that includes proposed relations among the variables, we conducted Path analysis by using MPlus 6.12 (Muthén & Muthén, 1998-2012). We entered age and severity of hearing impairment as controls to our model. RMSEA value closer to .06 with 90% confidence intervals within 0 - .10 (Hu & Bentler, 1999), ratio of df value and χ^2 from 2 to 5 and CFI values over .90 are regarded as acceptable for a good fit (Bollen, 1989).

Receptive language (TIFALDI, Berument & Guven, 2010) scores revealed that children were delayed in receptive language ($M_{\text{verbalage}}$ = 67.09, *SD* = 21.62) compared to their chronological age. This delay was detected by finding the corresponding verbal age to their

receptive language scores using the normative data provided by TIFALDI, then examining the difference between chronological age and verbal age of the children.

5.2 Scalogram Analysis

Previous findings revealed no effect of order in terms of administration of the verbal ToM tasks (Wellman, Fang, Liu, Zhu, & Liu, 2006). The format for presentation of verbal ToM tasks aimed to help reduce the effects of lack of focus and motivation for deaf children, similar to former studies with deaf children (Peterson & Wellman, 2009).

5.2.1 Pairwise Comparisons. Percentages of children passing each task by correctly answering control and target questions were as following: DD 77%, DB 61%, KA 48%, SP 45%, EFB 31%, CFB 27% and HE 4%. None of the children were able to pass the SARC task. This task was omitted from further analysis, since it yielded no numerical points suitable for pairwise task comparisons.

Examination of difficulty levels based on performance rates was held with McNemar's chi-square tests. According to these tests, number of children who passed DB but not KA (39%) was not significantly different from number of children who passed KA but not DB (29%). Difficulty levels of SP and KA tasks were very close to each other: Passing KA but not SP (44%) was not different from passing SP but not KA (40%). Number of children who passed SP but not EFB (50%) did not differ from the number of children who passed EFB but not SP (15%). There was no significant difference between the pairs of passing EFB but not CFB (59%) and passing CFB but not EFB (20%). This examination regarding difficulty levels of tasks revealed that KA, CFB and EFB were not significantly different from each other. In order to be able to conduct scaling analysis, all tasks must conceptually tap different understandings determined by differences in the difficulty levels. Therefore, KA and EFB were omitted from scaling analysis. Previous studies applied similar procedures due to similar theoretical reasons (Etel & Yagmurlu, 2014; Wellman & Liu, 2004). All remaining tasks were

significantly different from each other ($p < .05$), and an order of DD> DB> SP> CFB> HE was revealed (from easier to more difficult tasks).

5.2.2 Scaling Analysis. Scalability of significant tasks was calculated using scaling analysis. This analysis provides a method for investigating patterns in scales where an order of difficulty is hypothesized. In other words, it indicates that to pass a more difficult item, one should be able to pass the easier items as well (Guttman, 1950). For this data set, coefficients of reproducibility values (Rep > .90) were high (Green, 1956). For the 5-item scale (DD> DB> SP> CFB> HE) the index of consistency was .75, which provided a stricter threshold for scalability. This value is regarded to be significant when over .50 and it indicated a relatively high value in this case. Of the 70 children, 70% of them showed patterns that fit the DD> DB> SP> CFB> HE pattern (see Table 2).

Table 2

Pass (+) and Fail (-) Patterns that Fit to Guttman Scale (N= 70)

Patterns					
DD	DB	SP	CFB	HE	# of children
-	-	-	-	-	8
+	-	-	-	-	9
+	+	-	-	-	8
+	+	+	-	-	14
+	+	+	+	-	8
+	+	+	+	+	2
				*Other Patterns	21

**Note: "Other patterns" refers to the number children who showed none of the scale patterns.*

5. 3 Group Differences

ANOVA results yielded no significant sex differences in terms of receptive language, self-regulation, ToM, social competence, and aggressive behavior.

Children using cochlear implants (CI) did not differ from children using hearing aids (HA) in terms of age, but severity of hearing loss was significantly higher for CI users compared to HA users (F (1, 58) = 32.22, $p < .001$, $\eta^2 = .37$). When both age and hearing loss were accounted for, CI users and HA users did not differ significantly from each other in terms of receptive language (F (1, 58) = .10, *ns*), ToM (F (1, 58) = .00, *ns*), self-regulation (F (1, 58) = .37, *ns*), aggression (F (1, 58) = .58, *ns*) and social competence F (1, 58) = .05, *ns*).

5.4 Correlations among Variables

Pearson correlations revealed that age was significantly associated with all the study variables. Receptive language, self-regulation, ToM, and social competence increased with age, and aggressive behavior decreased with age. Age of device use was positively and significantly correlated with receptive language, self-regulation and ToM, but not with social competence and aggressive behavior. It was negatively and significantly correlated with severity of hearing impairment. Severity of hearing impairment was significantly and negatively related with receptive language and ToM, but not with self-regulation, social competence and aggressive behavior. When child's age was controlled, age of device use was negatively and significantly with severity of hearing impairment only. Severity of hearing impairment was negatively and significantly related to receptive language and ToM, but not with self-regulation, social competence and aggressive behavior (see Table 3).

Zero order correlations between outcome variables revealed that social competence was significantly and positively related with receptive language and ToM. Aggressive behavior was negatively and significantly related to receptive language and self-regulation. Receptive language, ToM and self-regulation were positively and significantly associated with each other.

Partial correlations (controlling for age) revealed that all relations remained significant except the relation between ToM and self-regulation.

5. 5 Path Analysis

To examine the relationships between self-regulation, verbal ability, ToM, aggressive behavior and social competence, we conducted Path Analysis using Mplus 6.12 (Muthén & Muthén, 1998–2012). There was no significant relationship between ToM and aggressive behavior shown by the preliminary correlation analysis. As we did not predict an association between those variables, we did not include a path between them in the hypothesized model. (Tabachnick, & Fidell, 2008).Child's age and severity of hearing impairment were taken as control variables in the model.

The model suggested that self-regulation would mediate the relationship between receptive language and aggression, and ToM would mediate the relationship between self-regulation and social competence. The model showed a good fit to the data: χ^2 (8, N = 70) =

Table 3

Zero Order Correlations and Partial Correlations Controlling for Age (N = 70)

Variables	1	2	3	4	5	6	7	8
1.Age	-							
2. Age of device usage	.52***	-	-.28*	.16	.12	.22	-.06	-.07
3. Severity of hearing loss	-.11	-.30*	-	-.47***	-.08	-.39**	-.01	-.21
4. Receptive language	.49***	.38**	-.46**	-	.21	.43***	.38***	-.25**
5. Self-regulation	.46***	.33**	-.12	.39**	-	.23*	-.03	-.39***
6.Theory of Mind	.31**	.34**	-.41**	.51***	.34**	-	.37**	-.10
7.Social Competence	.32**	.12	-.12	.47***	.12	.43***	-	-.13
8.Aggressive behavior	-.26*	-.19	.23	-.34**	-.46***	-.17	-.20	-

Note: Below the diagonal line, zero order correlations are presented. Above the diagonal line partial correlations are presented.
**p < .05 level, **p < .01 level, ***p < .001 level.*

9.34, *ns*, *CFI* = .98 *TLI* =. 96, *RMSEA* = .05 (90% CI = .00-.17), *SRMR* = .04 (see Figure 3). The results showed that, when child's age and severity of the hearing impairment were controlled, social competence was not predicted by ToM, but ToM was predicted by receptive language. Aggressive behavior was predicted by self-regulation and self-regulation was predicted by receptive language.

5.5.1 Indirect Paths. Detection of indirect paths was held by drawing 1000 samples to obtain the bias-corrected bootstrap standard errors and confidence intervals for the estimates. The results revealed three significant indirect paths: that path from age to aggression was mediated by self-regulation (95% CIs -.28; -.03). The link between age and ToM was mediated by receptive language (95% CIs .12; .42). Also, the path from severity of hearing impairment to ToM was mediated by receptive language (95% CIs -.31;-.01).

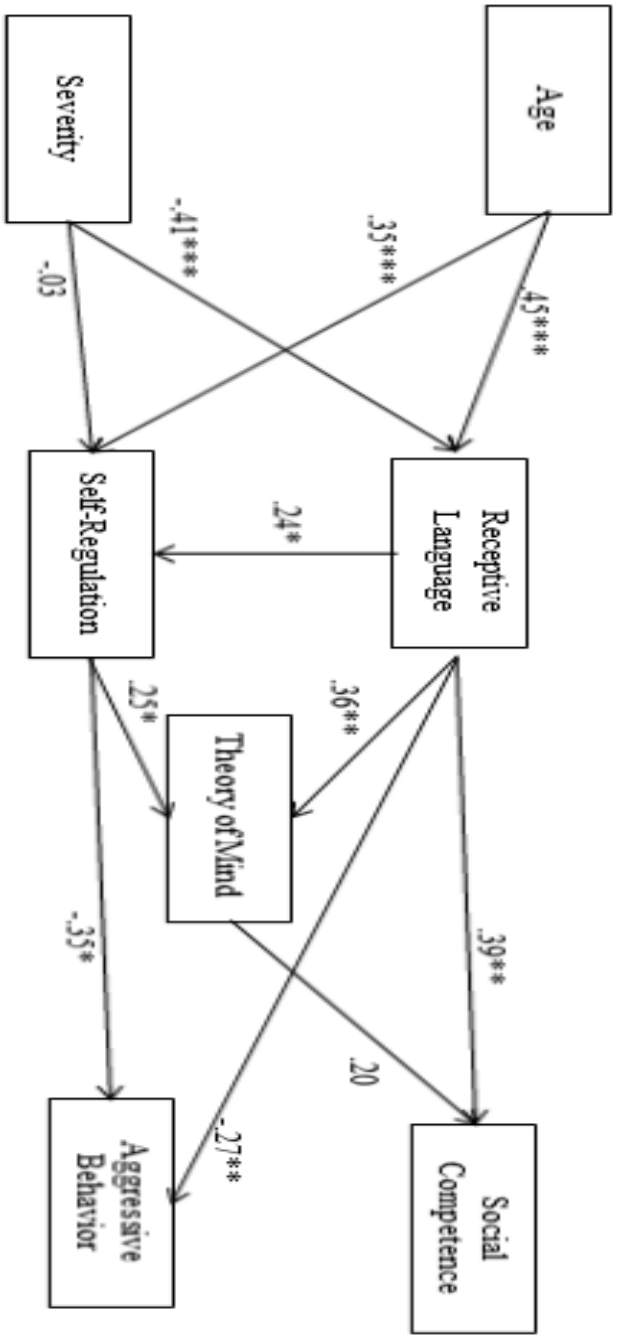

Figure 3. Estimates in predicting social competence and aggressive behavior. (N = 70)
***$p < .001$, **$p < .01$, *$p < .05$.

Chapter 6

DISCUSSION

6.1 Sequential Development of ToM

McNemar's chi-square tests revealed that the contents false belief task (CFB) was not significantly different from the explicit false belief task (EFB). This result echoed earlier findings of typically developing children (Wellman & Liu, 2004, Wellman et al., 2011), as well as institution-reared children (Etel & Yagmurlu, 2014). Therefore, we applied the procedure suggested by Wellman and Liu's (2004) Guttman scaling analysis findings.

Examination of the performance levels of each task yielded the following order: DD 77%, DB 61%, KA 48%, SP 45%, EFB 31%, CFB 27% and HE 4%. This pattern indicated that diverse desires was the easiest mental state and hidden emotion was the most difficult mental state to understand for our sample. Interestingly, this pattern is in line with the pattern of hearing children in Peterson and Wellman's (2009) study. On the contrary, deaf children in their sample revealed a pattern where understanding social pretence was easier than understanding knowledge access. Even though we revealed that understanding knowledge access was easier than understanding social pretence in our sample, we did not find a six-step ToM scale. The knowledge access task did not differ significantly from both diverse belief (DB) and social pretence (SP) tasks; thus, had to be omitted from Guttman scaling analysis. As a result, we found the five step pattern of DD> DB> SP> FB> HE significantly scalable. This finding differed from Peterson and Wellman's (2009) six-step scale that revealed itself as DD>DB>SP>KA>FB>HE. The position of SP can be explained by variances among deaf children in their own right. The finding is in line with the notion that pretending might be a compensatory method for communication and engaging in social interactions (Harris, 2005). Pretence, by nature, mimics differentiating imagination from facts which resembles the mechanism of false belief understanding. This might facilitate the development of the ability to understand mental states such as false belief, especially in the case of lack of rich linguistic

input. An additional point of view to this explanation can be approached through the mother-child interaction. The children in our sample were implanted relatively late (Svirsky et al., 2004) and lacked a rich conversational environment. Ability to socially pretend might depend on engaging in interactions for communication through gesture use and iconic pretending. Hearing mothers of deaf children were found to use more non-verbal gestures with their deaf child for communicative acts compared to those with hearing children (Goldin-Meadow & Saltzman, 2000) and remain engaged in pretend play more frequently (Brown & Remine, 2004).

Sarcasm understanding was examined in order to investigate the development of more complex mental understandings. Even though we made sure that every child could follow the instructions for the sarcasm (SARC) task, none of the children were able to pass this task in our study. Peterson et al.'s (2012) study revealed a significantly scalable pattern of DD>DB>KA>FB>HE>SARC for both deaf and typically developing children with sarcasm as the most difficult mental state, but very few children could pass the task regardless of being a native or a late signer (O'Reilly et al., 2014). Whether sarcasm understanding is predicted by less complex first order skills of ToM is yet unknown, it was shown that meta-cognitive language ability had a predictive role for irony understanding (Filippova, & Astington, 2008; Massaro, Valle, & Marchetti, 2014). Mothers of children with hearing devices were shown to produce less amount of mental state vocabulary compared to mothers with normal hearing children (Morgan et al., 2014). Given that children in our sample's age of device use is late (Svirsky et al., 2004) and none of them could communicate through sign language, they might lack initial stages for exposure to meta-cognitive vocabulary as delayed language input lead to poor understanding of sarcasm among deaf children (O'Reilly et al., 2014).

6.2 Social Competence and Aggressive Behavior

Path analysis results revealed that social competence and aggressive behavior were directly predicted by receptive language, in line with the previous literature of both typically

developing children (Petersen et al., 2013) and children with cochlear implants (Barker et al., 2009). The direct paths between receptive language and social competence and aggressive behavior suggested the predictive value of receptive language abilities on socially adaptive behaviors (Gertner et al., 1994; Hart et al., 2004). The negative link between aggressive behavior and receptive language in our model indicated that better receptive language skills are related with less aggressive behavior. Former literature also showed that externalizing behaviors of deaf children were negatively correlated with language skills (Wiefferink et al., 2012). In addition, our results revealed that social competence was not significantly predicted by ToM, on the contrary to our expectations. Even though some studies revealed both concurrent and longitudinal significant links between ToM and social competence (Charman et al., 2001; Razza & Blair, 2009), others fail to do so (Newton & Jenvey, 2011). Given this controversy, the non-significant link between ToM and social compentece can be explained by examining concurrent relations between receptive language, ToM and social competence altogether. Our model suggested the importance of language abilities for oral-deaf children to maintain adaptive social skills. Moreover, it might also suggest that socially competent behaviors of these children does not solely depend on ToM skills.

Secondly, in line with previous literature, this study showed that ToM was positively predicted by both receptive language (Harris, 2005) and self-regulation (Carslon & Moses, 2001). The link between language skills and ToM was shown by studies with both typically developing (Astington & Baird, 2005) and deaf children (Barker et al., 2009). ToM and language are largely entwined in terms of representational skills gained through social interaction (Astington & Baird, 2005; Nelson, 2005). In the model, this link was mediated by self-regulatory abilities. We took attention and impulsivity as our self-regulation measures, we can explain this link that children with hearing devices might be benefiting from communication and this might lead to better attentional and inhibitory skills. These findings are line with literature of deaf children. For example, attention was found to be fostered by audition

(Smith et al., 1998). The significant positive links between receptive language, self-regulation and ToM indicated that emergence (Sterck & Begeer, 2010) and development of ToM might be facilitated by the interplay between language and self-regulation for children with hearing devices.

Correlation anaylsis revealed that aggressive behavior were not related to ToM, echoing former literature (Sutton et al., 1999), but pathways between language, self-regulation and aggressive behavior was found to be significant. In typically developing children, language development was previously found to be negatively related to aggressive behavior (Bonica et al, 2003; Werner, Cassidy & Juliano, 2006) and behavior problems (e.g. externalizing problems) (Petersen et al., 2013). Former literature on typically developing children suggested inconsistent findings in terms of language and types of aggressive behavior such as physical (Petersen et al., 2013) and relational (Bonica et al., 2003). Our findings contributed to ealier literature on deaf children that revealed the predictory role of receptive language on physical aggression (Barker et al., 2009; Theunissen et al., 2014, Wiefferink et al., 2012). In the current study, measures for aggression mainly tapped physical aggression (e.g. hitting, kicking and biting peers) as well as behaviors such as "starting fights during play time with peers, gets aggressive when punished, takes toys by force when playing with peers etc." Therefore, pathway between receptive language and aggressive behavior indicates that physically aggressive behaviors are directly affected by language abilities, similar to the findings of Barker et al. (2009). This is an understandable aspect for oral-deaf children because communicative failures lead to externalizing problems among them.

Moreover, the negative link between self-regulation and aggressive behavior in the model suggested that being able to control attention and impulsivity might help deaf children to control their aggressive responses, echoing previous findings (Eldik et al., 2004; Mitchell & Quittner, 1996).

6.3 General Discussion

Investigation of socio-cognitive development of children with hearing devices is important in terms of exploring distinct developmental features and intervention purposes, as well as considering similarities to hearing children's development (Barker et al., 2009; Vallotton & Ayoub, 2011). Main finding of the present study emphasized the great predictive role of language abilities on socially competent behavior. This finding was supported by further examination. We compared our sample with typically developing and institutionalized children in terms of social competence controlling for age based on previous studies held by Child and Family Studies laboratory in Koç University. Children with hearing aids showed significantly lower levels of social competence compared to hearing sample, similar to previous findings (Wauters & Knoors, 2007). Our social competence measure included abilities that required certain level of receptive language ability (e.g. soothing peers in need, settling conflicts or helping peers during play time etc…). Children using hearing devices with better language abilities are more socially accepted by their peers and encounter less peer rejection (Bat-Chava, Martin & Imperatore, 2013; Wolters et al., 2011). However, not only verbal but also non-verbal communication may be crucial for those children. Necessity of non-verbal communication for social relationships has been revealed for children with autism (Yagmurlu, Korkmaz, & Yavuz, 2012). Even though we did not focus on non-verbal communication directly, findings regarding SP might indicate the role of non-verbal communication. Considering that all the children in our sample were oral-deaf, communication through gestures may help them foster language as well (Rowe, Ozcaliskan & Goldin-Meadow, 2008). Fostering language may also help to have better self-regulation (Petersen et al., 2013) and less display of aggression which in turn might help these children to face less peer rejection in mainstream educational settings. It is important to note that along with language, self-regulatory abilities (e.g. attention) might have distinct and direct effects on reduction of aggressive behaviors of deaf children (Mitchell & Quittner, 1996).

The present study had one limitation. Data for the age of onset of the hearing impairment was considered as not reliable as mothers could not provide proper and complete information as majority of them were coming from low-middle SES. Nevertheless, this study has much strength in couple of ways. It contributes the literature as it investigates socio-cognitive development of Turkish deaf children with hearing devices in detail. It helped extend the literature for sequential development of ToM and shed light on the underlying mechanisms for socio-cognitive development of children with hearing impairment in their own right. Also, the findings of the study gave directions for future studies in terms of investigating native and late signer Turkish children, behavioral outcomes of non-verbal communication and examining these developmental areas longitudinally.

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Appendix A

Anne Anket Kitapçığı

Anketi doldurduğunuz tarih: Gün____ Ay_____ Yıl_____

Çalışmaya Katılan Çocuk ile İlgili Sorular:

1. Çocuğun adı ve soyadı: _____

2. Çocuğun doğum tarihi: Gün____ Ay_____ Yıl_____

3. Çocuğun cinsiyeti (lütfen işaretleyiniz): Erkek ☐ Kız ☐

4. Çocuk dışarıda okula/okul öncesi kuruma devam ediyor mu? Evet ☐ Hayır ☐
4.a) Evet ise; Okul Öncesi ☐ Okul ☐

5. Çocuğun ilk kez okula veya okul öncesi kuruma başladığı tarih: Ay_____ Yıl_____

6. Çocukta tanısı konulmuş herhangi bir gelişimsel sorun var mı? (örnek: otizm, Down sendromu-mongolizm, dikkat eksikliği, öğrenme güçlüğü, hiperaktivite)

_____

7. Bu çalışmada yer alan çocuğunuz **dışında** evde sizinle birlikte yaşayan başka bir çocuğunuz/çocuklarınız var mı?

☐ Hayır
☐ Evet, (Lütfen aşağıdaki tabloyu doldurunuz)

Çocuğunuzun Adı	Cinsiyeti	Doğum Yılı	İşitme engeli var mı?	Varsa derecesi (db)

Çocuğun Sağlığı ve Gelişimi ile İlgili Sorular:

8. Çocuğunuzun geçirdiği önemli bir kaza, ameliyat veya ciddi bir hastalık var mı?

Lütfen belirtiniz:

_____9.

Çocuğunuzun bilinen önemli bir kronik (devamlı) sağlık sorunu (örnek: kalça çıkığı, astım, kalp, şeker, romatoid artrit, depresyon, serebral palsi) ve/veya sürekli kullanması gereken ilaçlar var mı?

Lütfen belirtiniz:

10. Aşağıda yer alan durumlar kronik (devamlı) ve ileri derecede çocuğunuzda varsa lütfen yanına işaret koyunuz:

Kekeleme problemi (Şimdi veya geçmişte)	
Konuşma gecikmesi (şimdi veya geçmişte)	
Altını ıslatma (sürekli olarak çiş-kaka tutamama)	
Nörolojik sorun (epilepsi vb.)	
Bağışıklık sistemi hastalığı	
Ciddi engel (görme, işitme, ortopedik vb engel.)	

11. Çocuğunuzun son 6 aydır sürekli olarak kullandığı bir cihaz veya alet var mı? (örnek: gözlük, atel, koltuk değneği vb.)

Lütfen belirtiniz:_____
_____

12. Çocuğunuzun evde bakıcısı var mı? Evet☐ Hayır☐

12.a. Evet ise; haftada kaç saatini onunla geçiriyor? _____

13. Evde konuşulan dil nedir? _____

13.a. Bakıcının çocuğunuzla konuştuğu dil nedir? _____

14. Çocuğunuzun evde sürekli beraber yaşadığı tüm yetişkinleri (anne, baba, nine, dede, teyze, amca vb.) lütfen sıralayınız:

	Çocukla olan akrabalık ilişkisi	Yaş	İşitme engeli var mı?	Varsa, işitme kaybı derecesi
1				
2				
3				
4				
5				

Bir sonraki sayfadan devam ediniz…

15. a) Çocuğunuzla, bir haftada ortalama kaç saatiniz **konuşma içeren** birebir etkinliklerle geçer? Birlikte ödev yapma, sevdiği bir oyunu oynama, çocuğunuzla sohbet etme birlikte zaman geçirdiğiniz faaliyetlere örnek olabilir. Bunun dışında çocuğunuzla konuşarak beraber yaptığınız başka şeyler de olabilir; lütfen onları da düşünerek cevap veriniz.

Hafta içi ____ saat Hafta sonu_____ saat

b) Evde başka yetişkinler varsa (örneğin, baba, dede, nine, abla, ağabey gibi) bu yetişkinler bir haftada ortalama kaç saatini çocuğunuzla konuşma içeren birebir etkinliklerle geçirir?

Hafta içi ____ saat Hafta sonu_____ saat

c) Lütfen çocuğunuzla konuşma içeren birebir etkinliklerle geçirdiğiniz saatler içerisinde ne gibi etkinlikler yaptığınızı anlatınız. (Örneğin, "birlikte geçirdiğimiz zamanlarda mutlaka birlikte yürüyüş yapar sohbet ederiz, evde konuşarak oyun oynarız, konuşarak yemek yeriz" gibi.)

_____

_____

_____

16. a) Çocuğunuzla, bir haftada ortalama kaç saatiniz **konuşma içermeyen** birebir etkinliklerle geçer? Birlikte film izlemek, birlikte uyumak, seyahat etmek birlikte zaman geçirdiğiniz faaliyetlere örnek olabilir. Bunun dışında çocuğunuzla konuşmadan beraber yaptığınız başka şeyler de olabilir; lütfen onları da düşünerek cevap veriniz.

Hafta içi ____ saat Hafta sonu_____saat

b) Lütfen çocuğunuzla **konuşma içermeyen** birebir etkinliklerle geçirdiğiniz saatler içerisinde ne gibi etkinlikler yaptığınızı anlatınız. (Örneğin, "birlikte geçirdiğimiz zamanlarda film izleriz," gibi.)

_____

_____

_____

İşitme engeli ve işaret dili ile ilgili bilgiler

1. Çocuğunuzun işitme engel durumu: Doğuştan ☐ Sonradan ☐

Doğuştan ise;

1.1.a) İlk teşhis konulan işitme kaybının derecesi:

Sol kulak:___db Sağ kulak:____db

1.1.b) Lütfen çocuğunuzun işitme kaybı/engeli seyri ile ilgili bilgileri kısaca anlatınız: (İşitme kaybında artma veya azalma oldu mu, doğumdan bu yana işitme engeli ile ilgili ne gibi süreçler geçirdi- ameliyat, cihaz vb) gibi:
_____

Sonradan ise;

1.2.a) İşitme kaybı yaşandığında teşhis konulan işitme kaybı derecesi:

Sol kulak.____db Sağ kulak:_____db

1.2.b) İşitme kaybının nedeni:_____

1.2.c) İşitme kaybına teşhis konulan tarih: ____/____/_____(gün/ay/yıl)

ve yaş: _____

1.2.d) Lütfen çocuğunuzun işitme kaybı/engeli seyri ile ilgili bilgileri kısaca anlatınız: (İşitme kaybında artma veya azalma oldu mu, işitme kaybının başlamasından bu yana işitme engeli ile ilgili ne gibi süreçler geçirdi- ameliyat, cihaz vb) gibi:
_____

_____

Diğer ☐: Lütfen belirtiniz :

_____

2. Çocuğunuz işitme engeli ile ilgili özel bir eğitim kurumuna gidiyor mu? Evet ☐ Hayır ☐

2.a) Evet ise, devam ettiği özel eğitim kurumunun adı:_____

2.b) Bu kuruma başladığı tarih: ____/____/_____(gün/ay/yıl)

2.c) Lütfen çocuğunuzun aldığı diğer eğitimleri de sıralayınız:
(örneğin, konuşma terapisi, ayrıca özel öğretmen vb):_____

_____

3. İşitme engeli ile ilgili herhangi bir cihaz kullanıyor mu? Evet ☐ Hayır ☐

3.a) Evet ise; Koklear implant ☐ İşitme cihazı ☐ Diğer ☐

b) Hangi tarihten itibaren kullanmaya başladı? (İşitme cihazı ise kullanıma başlanan tarih, koklear implant ise ameliyat tarini yazınız) ____/____/_____ (gün / ay / yıl)

4. Çocuğunuz Türk İşaret Dili biliyor mu? Evet ☐ Hayır ☐

Evet ise;

4.a) Ne zaman öğrenmeye başladı? Yaklaşık olarak tarih:___/____/_____ Yaş:_____

b) Nasıl öğrendi/ öğreniyor?

□ Anne-babasından

□ Kardeşinden

□ Diğer akrabalardan

□ Okulda

□ Arkadaşlarından

□ Diğer kaynaklardan (lütfen belirtin):.....

c) Lütfen çocuğunuzun işaret ve konuşma dili becerilerini değerlendiriniz.

	Hiç	**Biraz**	**Orta**	**İyi**	**Çok iyi**
1.Türk İşaret Dili'ni anlama seviyesi:					
2.Türk İşaret Dili'ni kullanma seviyesi					
3.Türk İşaret Dili kelime bilgisi seviyesi					

	Hiç	**Biraz**	**Orta**	**İyi**	**Çok iyi**
4.Türkçe anlama seviyesi					
5.Türkçe kullanma/ konuşma seviyesi					
6.Türkçe kelime bilgisi seviyesi					

5. Çocuğunuz günlük hayatta hangi dil veya dilleri kullanıyor?

Türk İşaret Dili ☐ Türkçe ☐ Hem Türk İşaret dili hem Türkçe☐

Diğer (Lütfen belirtin):.....

Anne ile ilgili bilgiler

1. Annenin doğum tarihi: Gün_____ Ay_____ Yıl_____

2. Annenin eğitimi

Okuma yazma bilmiyor	0	Liseden terk	5
İlkokuldan terk veya okuma-yazma biliyor	1	Lise mezunu	6
İlkokul mezunu	2	Yüksek okul mezunu (2 yıllık)	7
Ortaokuldan terk	3	Üniversiteden terk	8
Ortaokul mezunu	4	Üniversite mezunu (4 yıllık)	9
Uzmanlık derecesi var (yüksek lisans, doktora veya tıpta uzmanlık gibi)			10

3. Anne şu anda çalışıyor mu? (uygun olan seçeneğin altındaki rakamı daire içine alınız)

Evet (Tam zamanlı, haftada 40 saat)	Evet (Yarı-zamanlı, haftada 20-25 saat)	Hayır (Çalışmıyor)
1	2	3

4. Annenin şu anki medeni hali (uygun olan seçeneğin altındaki rakamı daire içine alınız)

Evli	Boşanmış veya dul
1	2

5. Sizin işitme engeliniz var mı? Evet ☐ Hayır ☐

5.a) Evet ise derecesi: Sol kulak:____db Sağ Kulak:____db

b) İşitme engeli durumunuz: Doğuştan ☐ Sonradan ☐

Diğer ☐ Lütfen belirtiniz:_____

6. İşaret dili biliyor musunuz? Evet ☐ Hayır ☐

Evet ise, a) Türk İşaret dili seviyenizi belirtiniz:

Az	Orta	İyi	Çok iyi	Anadil

b) Ne kadar sıklıkla çocuğunuzla anlaşmak için Türk İşaret Dili kullanırsınız?

Hiçbir zaman	Nadiren	Bazen	Sık Sık	Her zaman

Baba ile ilgili bilgiler

7. Babanın doğum tarihi: Gün_____ Ay_____ Yıl_____

8. Babanın eğitimi

Okuma yazma bilmiyor	0	Liseden terk	5
İlkokuldan terk veya okuma-yazma biliyor	1	Lise mezunu	6
İlkokul mezunu	2	Yüksek okul mezunu (2 yıllık)	7
Ortaokuldan terk	3	Üniversiteden terk	8
Ortaokul mezunu	4	Üniversite mezunu (4 yıllık)	9
Uzmanlık derecesi var (yüksek lisans, doktora veya tıpta uzmanlık gibi)			10

9. Baba şu anda çalışıyor mu? (uygun olan seçeneğin altındaki rakamı daire içine alınız)

Evet (Tam zamanlı, haftada 40 saat)	Evet (Yarı-zamanlı, haftada 20-25 saat)	Hayır (Çalışmıyor)
1	2	3

10. Babanın şu anki medeni hali (uygun olan seçeneğin altındaki rakamı daire içine alınız)

Evli	Boşanmış veya dul
1	2

11. Sizin işitme engeli var mı? Evet ☐ Hayır ☐

11.a) Evet ise derecesi:

Sol kulak:_____db Sağ Kulak:_____db

b) İşitme engeli durumu: Doğuştan ☐ Sonradan ☐

Diğer ☐ Lütfen belirtiniz:_____

12. **<u>Hane halkının</u>** toplam geliri (evde sürekli yaşayan tüm bireylerin toplam kazancı):

Ayda 800 TL'nin altında	1
Ayda 800 – 1500TL	2
Ayda 1501 –3000 TL	3
Ayda 3001 – 5000 TL	4
Ayda 5001 – 8000 TL	5
Ayda 8001 – 12000 TL	6
Ayda 12000 TL'nin üzerinde	7

Sosyal Beceri Ölçeği

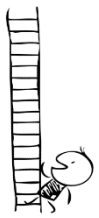
Bölüm A

Aşağıda, çocukların **serbest oyun zamanında yaşıtlarına** gösterdikleri bazı davranışlar yer almaktadır. Lütfen her bir ifadeyi dikkatlice okuyunuz ve söz konusu davranışı **(bu çalışmada yer alan)** çocuğunuzun son **6 ay içerisinde** ne sıklıkla yaptığını işaretleyiniz. Soruları cevaplarken çocuğunuzun söz konusu davranışı **"oyun zamanında"** ne kadar yaptığını düşününüz. Eğer çocuk anlatılan davranışı **hiçbir zaman** yapmıyorsa 1'i; **bazen** yapıyorsa 2'yi; **sık sık** yapıyorsa 3'ü; **her zaman** yapıyorsa 4'ü işaretleyiniz.

	Hiçbir zaman	**Bazen**	**Sık sık**	**Her zaman**
1. Diğer çocuklara oyun sırasında yardımcı olur.	1	2	3	4
2. Oyun zamanında kavga veya tartışma başlatır.	1	2	3	4
3. Oyun zamanında diğerleri tarafından dışlanır.	1	2	3	4
4. Oyunda sırasını beklemeyi reddeder.	1	2	3	4
5. Oyun oynayan çocukların çevresinde dolanır, aralarına girmeye tereddüt eder.	1	2	3	4
6. Oyuncaklarını paylaşır.	1	2	3	4
7. Oyun zamanında içe kapanır.	1	2	3	4
8. Oyun zamanında amaçsızca çevrede dolanır.	1	2	3	4
9. Diğer çocukların oyunla ilgili fikirlerini reddeder.	1	2	3	4
10. Oyun zamanında diğer çocuklar tarafından görmezden gelinir/yok sayılır.	1	2	3	4
11. Oyun sırasında gereksiz yere gevezelik eder, konuşur.	1	2	3	4
12. Oyun sırasında arkadaşları arasında çıkan anlaşmazlıkları yatıştırmaya çalışır.	1	2	3	4
13. Oyun zamanında başkalarının eşyalarına zarar verir.	1	2	3	4
14. Oyun sırasında başkalarıyla farklı görüşte olduğunu kavga etmeden ifade eder.	1	2	3	4
15. Oyuna çağrıldığında katılmayı reddeder.	1	2	3	4

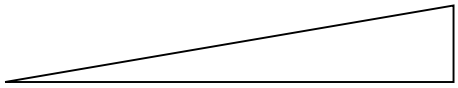
	Hiçbir zaman	**Bazen**	**Sık sık**	**Her zaman**
16. Oyuna girebilmek için başkasının yardımına ihtiyaç duyar.	1	2	3	4
17. Oyun sırasında başkalarına sözlü olarak sataşır.	1	2	3	4
18. Oyun sırasında ağlar, mızmızlanır, huysuzluk eder.	1	2	3	4
19. Diğerlerini oyuna katılmaları için çağırır, onları teşvik eder.	1	2	3	4
20. Oyun sırasında başkalarının elindekileri (eşya ya da oyuncak) zorla alır.	1	2	3	4
21. Oyun sırasında birilerinin canı yandığında veya üzüldüklerinde onları teselli eder.	1	2	3	4
22. Oyun kurallarını anlayıp takip etmede zorlanır.	1	2	3	4
23. Herhangi bir oyuna başlayabilmek için bir yetişkinin yönlendirmesine ihtiyaç duyar.	1	2	3	4
24. Başkalarının oyununu bozar.	1	2	3	4
25. Oyun zamanında mutsuz görünür.	1	2	3	4
26. Oyun zamanında saldırgandır.	1	2	3	4
27. Oyun sırasında olumlu duygular gösterir (örn: güler, kahkaha atar).	1	2	3	4
28. Oyun kurma konusunda yaratıcıdır.	1	2	3	4
29. Oyunu ve arkadaşlarını yönetmek ister.	1	2	3	4
30. Arkadaşlarıyla oynarken bir etkinlikten başka bir etkinliğe geçmesi gerektiğinde uyumsuz davranıp düzeni bozar.	1	2	3	4

Lütfen bir sonraki sayfadan devam ediniz…



Bölüm B

Aşağıda, çocukların **genel olarak** gösterdikleri bazı **duygu ve davranışlar** yer almaktadır. Lütfen her bir ifadeyi dikkatlice okuyunuz ve söz konusu duyguyu veya davranışı **(bu çalışmada yer alan)** çocuğunuzun **son 6 ay içerisinde** **"genel olarak"** ne sıklıkla yaptığını işaretleyiniz. Eğer çocuğunuz anlatılan davranışı **hiçbir zaman** yapmıyorsa 1'i; **bazen** yapıyorsa 2'yi; **sık sık** yapıyorsa 3'ü; **her zaman** yapıyorsa 4'ü işaretleyiniz.



	Hiçbir zaman	**Bazen**	**Sık sık**	**Her zaman**
31. Yüz ifadesinden duygularını anlamak zordur.	1	2	3	4
32. Zorda olan bir çocuğu teselli eder ya da ona yardımcı olur.	1	2	3	4
33. Kolaylıkla hayal kırıklığına uğrayıp sinirlenir.	1	2	3	4
34. Faaliyeti kesintiye uğradığında kızar. (örneğin; yemek zamanı elindeki oyunu vb. bırakması gerektiğinde kızgınlık gösterir.)	1	2	3	4
35. Huysuzdur, çabuk kızıp öfkelenir.	1	2	3	4
36. Gündelik işlerde yardım eder (örneğin; sofra kurulurken, ev toplanırken yardımcı olur.)	1	2	3	4
37. Çekingen ve ürkektir; yeni ortamlardan ve durumlardan kaçınır (örneğin; yeni biriyle tanıştığında, yeni bir oyun öğrenilirken vb.).	1	2	3	4
38. Genel olarak üzgün, mutsuz ya da depresiftir.	1	2	3	4
39. Yaşıtları arasında çekingendir ya da yaşıtlarıyla olmaktan huzursuz görünür.	1	2	3	4
40. En ufak bir şeyde bağırır ya da çığlık atar.	1	2	3	4
41. Hareketsizdir, oynayan çocukları uzaktan seyreder.	1	2	3	4
42. Anlaşmazlıklara çözüm yolları arar.	1	2	3	4
43. Yaşıtlarından ayrı, kendi başına kalır.	1	2	3	4
44. Diğer çocukların görüşlerine önem verir.	1	2	3	4

	Hiçbir zaman	**Bazen**	**Sık sık**	**Her zaman**
45. Diğer çocuklara vurur, onları ısırır ya da tekmeler.	1	2	3	4
46. Yaşıtlarıyla yaptığı faaliyetlerde veya oyunlarda onlarla iş birliği yapar.	1	2	3	4
47. Diğer çocuklarla anlaşmazlık yaşar.	1	2	3	4
48. Genel olarak halsiz ve yorgun görünür.	1	2	3	4
49. Oyuncaklara iyi bakar, oyuncakların kıymetini bilir.	1	2	3	4
50. Yaşıtlarıyla faaliyetlere katılmayı reddeder ya da faaliyet sırasında konuşmaz.	1	2	3	4
51. Kendinden küçük çocuklara karşı dikkatlidir.	1	2	3	4
52. Yaşıtları arasında fark edilmez, siliktir.	1	2	3	4
53. Diğer çocukları istemedikleri şeyleri yapmaya zorlar.	1	2	3	4
54.Annesine kızdığı zaman ona vurur ya da çevresindeki eşyalara zarar verir.	1	2	3	4
55. Genel olarak endişeli görünür.	1	2	3	4
56. Makul açıklamalar yapıldığında, söyleneni kabul eder.	1	2	3	4
57. Annesinin söylediklerine karşı çıkar.	1	2	3	4
58. Cezalandırıldığında (örneğin; herhangi bir şeyden yoksun bırakıldığında) başkaldırır, karşı koyar.	1	2	3	4

Lütfen bir sonraki sayfadan devam ediniz….

Çocuklarda Sosyal Anlayış Ölçeği (ÇSAÖ

Yönergeler: Lütfen başlamadan önce dikkatlice okuyunuz.

Bu ankette çocukların günlük düşünce ve davranışlarını anlatan bazı ifadeler göreceksiniz. Sizden, bu araştırmada yer alan çocuğunuzun bu düşünce ve davranışları ne sıklıkta gösterdiğini belirtmenizi isteyeceğiz.

Ankette yer alan soruların doğru ya da yanlış cevapları yoktur. Çocuklar, bu ifadelerde sözü geçen beceri ve davranışlar bakımından birbirlerinden farklılık gösterebilmektedirler. Bizim amacımız bu farklılıkları daha iyi anlamaktır.

Soruları cevaplarken içten ve dürüst olmanız değerlendirmenin doğru yapılabilmesi için çok önemlidir. Bu sebeple tüm soruları eksiksiz cevaplandırdığınızdan lütfen emin olunuz.

Ankette yer alan her bir ifadeyi dikkatlice okuyunuz ve söz konusu davranışı çocuğunuzun ne sıklıkla yaptığını işaretleyiniz.

Bu ankette göreceğiniz bazı maddeler sözel içerikli, yani konuşmaya dayalı maddeler olabilir. Lütfen bu soruları cevaplarken çocuğunuzun hem konuşma dilini, hem de kullanıyorsa Türk İşaret dili kullanımını bir bütün olarak ifade etme becerilerini düşünerek cevaplayınız.

Eğer soruda yer alan ifadenin işitme engelli çocuklar için geçerli bir ifade olmadığını düşünüyorsanız o ifadeyi "Uygun Değil" (UD) olarak işaretleyebilirsiniz. Örneğin, çocuğunuzun bir davranışı yapabileceğini düşünüyorsanız ama hiç gözlemlemediyseniz "hiçbir zaman" seçeneğini seçebilirsiniz, fakat o davranışın işitme engelli çocuklar için geçerli olmadığını düşünüyorsanız "uygun değil" seçeneğini seçiniz.

Lütfen tüm sorular için bir rakamı ya da (UD) şıkkını işaretleyiniz.
Teşekkür ederiz.

Hiçbir zaman	Bazen	Sık sık	Her zaman	Uygun Değil
1	2	3	4	UD

Çocuğum…	**Hiçbir zaman**	**Bazen**	**Sık sık**	**Her zaman**	**Uygun Değil**
1. İnsanların istediği veya sevdiği şeylerin farklılıkları hakkında konuşur. Örneğin: “Sen çay seversin, ama ben meyve suyu severim.” der.	1	2	3	4	UD
2. Diğer insanların duygularını anlamaya çalışır. Örneğin: Neden ağladığınızı öğrenmek ister.	1	2	3	4	UD
3. Belirsizlik anlatan kelimeler kullanır. Örneğin: “Belki oyuncağım odamdadır.”, “Ayakkabılarım dışarıda olabilir.” der.	1	2	3	4	UD
4. Birinin ona sataştığını veya onunla dalga geçtiğini fark eder.	1	2	3	4	UD
5. Kendisinin gördüğü bir nesneyi, ters yöne bakıyor olsanız bile sizin de görebildiğinizi düşünür.	1	2	3	4	UD
6. Başkalarını oyuna getirmekte iyidir. Örneğin: Eli aslında boşken, elinde bir şey saklıyormuş gibi yapar.	1	2	3	4	UD
7. Uzman kişilerin diğer insanlara göre kendi alanlarında daha bilgili olduklarının farkındadır. Örneğin: Doktorların hastalıkları tedavi etmede diğer insanlardan daha bilgili olduklarını anlar.	1	2	3	4	UD
8. İnsanların nasıl hissettiği hakkında konuşur. Örneğin: ”Ben mutluyum.”, “Yasemin kızgın.” gibi cümleler kullanır.	1	2	3	4	UD
9. İnsanların istediği veya sevdiği şeyler hakkında konuşur. Örneğin: “Ayça kurabiye sever.”, “Uğur eve gitmek istiyor.” der.	1	2	3	4	UD
10. İsteklerin her zaman gerçekleşmediğinin farkındadır.	1	2	3	4	UD
11. Bir şeyleri nereden öğrendiğini size anlatabilir. Örneğin: “Bana Aydın söyledi.”, “Televizyondan öğrendim.” gibi cümleler kullanır.	1	2	3	4	UD
12. Ciddi misiniz, yoksa yalnızca şaka mı yapıyorsunuz, anlamakta zorluk çeker.	1	2	3	4	UD
13. Biri bir şey istiyorsa, o kişinin büyük ihtimalle istediğini almak için uğraşacağını bilir.	1	2	3	4	UD

Çocuğum…	**Hiçbir zaman**	**Bazen**	**Sık sık**	**Her zaman**	**Uygun Değil**
14. Saklambaç oyununda iyidir. Örneğin: İyi saklanır; saklanınca yerini belli edebilecek sesler çıkarmaz, onu bulmak zor olur.	1	2	3	4	UD
15. İnsanların gördüğü veya duyduğu şeyler hakkında konuşur. Örneğin: "Orada bir köpek görüyorum.", "Babam telefonun çaldığını duydu." der.	1	2	3	4	UD
16. İnsanların düşündüğü veya inandığı şeyler hakkında konuşur. Örneğin: "Kardeşimin bana o oyuncağı vermeyeceğini düşünüyorum.", "Senin doğru söylediğine inanmıyorum." gibi cümleler kullanır.	1	2	3	4	UD
17. Kendi düşünceleri ile başkalarının düşünceleri arasındaki farklar hakkında konuşur. Örneğin: "Sen bunun terlik olduğunu düşünüyorsun ama bence bu bir ayakkabı." der.	1	2	3	4	UD
18. Kendi düşüncelerinin zamanla nasıl değiştiği hakkında konuşur. Örneğin: "Eskiden bu çizgi filmin korkunç olduğunu düşünürdüm ama şimdi komik olduğunu düşünüyorum." der.	1	2	3	4	UD
19. İnsanların yanlış düşünceleri hakkında konuşur. Örneğin: "Annem geliyor sanmıştım ama aslında gelen babammış." der.	1	2	3	4	UD
20. Eğer kötü bir şey yaparsa başkalarının sinirlenebileceğini bilir.	1	2	3	4	UD
21. Birini bilerek incitmenin, onu yanlışlıkla incitmekten daha kötü olduğunu anlar.	1	2	3	4	UD
22. İnsanların niyetleri hakkında konuşur. Örneğin: "Bunu bilerek yaptı.", "Onu dökmek istememiştim.", "Deniz kediyi yakalamaya çalışıyor." gibi cümleler kullanır.	1	2	3	4	UD
23. Bir şeyi istemekle, o şeye ihtiyacı olmanın farklı olduğunu bilir.	1	2	3	4	UD
24. İstemediği bir hediye alınca, onu veren kişinin duygularını incitmemek için hediyeyi sevmiş gibi yapar.	1	2	3	4	UD
Çocuğum…	**Hiçbir zaman**	**Bazen**	**Sık sık**	**Her zaman**	**Uygun Değil**

25. Telefonla konuşurken karşıdaki kişi onu gerçekten görebiliyormuş gibi davranır. Örneğin: Telefonla konuşurken karşısındakinin onun kıyafetini görebildiğini düşünür.	1	2	3	4	UD
26. Bir şeyi isteyerek ya da yanlışlıkla yapmak arasındaki farkı anlar. Örneğin: Birinin oyuncağı kasıtlı olarak alması ile yanlışlıkla alması arasındaki farkı bilir.	1	2	3	4	UD
27. Farklı insanların aynı şey hakkında farklı duyguları olabileceğini anlar. Örneğin: "Aras köpek sever ama Defne köpekten korkar." der.	1	2	3	4	UD
28. Öğretmek ve öğrenmek hakkında konuşur. Örneğin: "Babam bana bu oyunu öğretti"; "Anaokulunda bu şarkıyı öğrendim." der.	1	2	3	4	UD
29. İnsanların aynı davranışı farklı sebeplerle yapabileceğini anlar. Örneğin: Top, oyun oynama amacıyla da atılabilir, birinin canını yakmak amacıyla da atılabilir.	1	2	3	4	UD
30. Başkalarının isteklerini dikkate alır. Örneğin: Oyun oynarken sırasını bekler, oyuncakları paylaşır, hangi oyunu oynayacakları hakkında diğer çocuklarla uzlaşır.	1	2	3	4	UD
31. Diğer insanları, düşüncelerinin yanlış olduğu konusunda ikna etmeye çalışır. Örneğin: "Hayır, öyle değil…" gibi cümleler kurar.	1	2	3	4	UD
32. Bir şeyin nasıl göründüğü ve aslında ne olduğu arasındaki fark hakkında konuşur. Örneğin: "Bu bir şekere benziyor ama aslında bir boncuk." der.	1	2	3	4	UD
33. Çelişen duygular hakkında konuşur. Örneğin: "Tatile gideceğim için mutluyum ama arkadaşlarımdan ayrılacağım için üzgünüm." der.	1	2	3	4	UD
34. İnsanların dikkatini bir şeye çekmekte iyidir. Örneğin: İnsanların bir şeye bakmasını sağlamak için o şeye işaret eder.	1	2	3	4	UD
Çocuğum…	**Hiçbir zaman**	**Bazen**	**Sık sık**	**Her zaman**	**Uygun Değil**

35 . Yalan söylediğinde, yalanının anlaşılması kolay olur. Örneğin: Elleri hala kirli olduğu halde "Ellerimi yıkadım." der.	1	2	3	4	UD
36. Amaçlanan şey ve ortaya çıkan sonuç arasındaki fark hakkında konuşur. Örneğin: "Babam kapıyı açmayı denedi ama kapı kilitliydi, açamadı." der.	1	2	3	4	UD
37. Kendinden küçük çocuklara bir şeyleri açıklamakta iyidir.	1	2	3	4	UD
38. Yalan söylemenin diğer insanları yanıltabileceğini anlar.	1	2	3	4	UD
39. Kendi gözleri kapalı olduğunda, başkalarının onu göremeyeceğini düşünür.	1	2	3	4	UD
40. İnsanların ne istediği ile gerçekte ne elde ettiği arasındaki fark hakkında konuşur. Örneğin: "Rüya hediye olarak bir köpek yavrusu istemişti ama bir kedi yavrusu aldı." der.	1	2	3	4	UD
41. Ses tonunuzdan ya da yüz ifadenizden nasıl hissettiğinizi anlamakta zorlanır. Örneğin: Kızgın yüz ifadesi ile üzgün yüz ifadesi arasındaki farkı söylemekte güçlük çeker.	1	2	3	4	UD
42. İnsanların neyi bildiği veya neyi bilmediği hakkında konuşur. Örneğin: "O çocuğun ismini biliyorum."; "Babam oyuncağın yerini bilmiyor." gibi cümleler kullanır.	1	2	3	4	UD

Bir sonraki sayfadan devam ediniz…

ÇOCUK DAVRANIŞLARI ANKETİ

Son **6 ayı** göz önünde bulundurarak, çocuğunuzun aşağıda tarif edilen bazı durumlar karşısında nasıl davrandığını en iyi gösteren sayıyı yuvarlak içine alarak belirtiniz. Ankette yer alan soruların doğru ya da yanlış cevapları yoktur. Çocuklar, bu ifadelerdeki davranışlar bakımından birbirlerinden farklılık gösterebilmektedir. Bizim amacımız bu farklılıkları daha iyi anlamaktır.

	Tamamen yanlış	***Oldukça yanlış***	***Biraz yanlış***	***Ne doğru Ne yanlış***	***Biraz doğru***	***Oldukça doğru***	***Tamamen doğru***
1. Oyuncak toplama gibi işler bitene kadar onunla uğraşmaya devam eder.	**1**	**2**	**3**	**4**	**5**	**6**	**7**
2. Dokunduğu nesnelerin pürüzlü ya da pürüzsüz olduğunun hemen farkına varır.	**1**	**2**	**3**	**4**	**5**	**6**	**7**
3. Genellikle bir faaliyete aceleyle, düşünmeden girişir.	**1**	**2**	**3**	**4**	**5**	**6**	**7**
4.Ağrı hissetmek canını çok sıkar.	**1**	**2**	**3**	**4**	**5**	**6**	**7**
5. Annesi veya babası yeni bir kıyafet giydiğinde veya dış görünüşünde bir değişiklik olduğunda bunun farkına varır.	**1**	**2**	**3**	**4**	**5**	**6**	**7**
6. Oyununu bitirmeden çağırıldığında kızar.	**1**	**2**	**3**	**4**	**5**	**6**	**7**
7. Bir şeye konsantre olmuşken dikkatini çekmek zordur.	**1**	**2**	**3**	**4**	**5**	**6**	**7**
8. Ne istediğine çabucak karar verir ve yapmaya koyulur.	**1**	**2**	**3**	**4**	**5**	**6**	**7**
9. Bir faaliyete aklını vermekte zorlanır.	**1**	**2**	**3**	**4**	**5**	**6**	**7**
11. Bir şey yapmaya karar vermeden önce genellikle durup düşünür.	**1**	**2**	**3**	**4**	**5**	**6**	**7**
12. Oldukça alçak seslerin bile farkına varır.	**1**	**2**	**3**	**4**	**5**	**6**	**7**
13. Başka bir şey yapması söylendiğinde yapmakta olduğu işi bırakmakta çok zorlanır.	**1**	**2**	**3**	**4**	**5**	**6**	**7**

	Tamamen yanlış	***Oldukça yanlış***	***Biraz yanlış***	***Ne doğru Ne yanlış***	***Biraz doğru***	***Oldukça doğru***	***Tamamen doğru***
14. Etrafta ilgisini dağıtan sesler olduğunda bir faaliyete konsantre olmakta zorlanır.	**1**	**2**	**3**	**4**	**5**	**6**	**7**
15. Bazen resimli bir kitaba gömülür ve uzun süre bakar/okur.	**1**	**2**	**3**	**4**	**5**	**6**	**7**
16. Dışarı çıkmaya hevesliyken, bazen heyecan ve telaşla üstüne uygun kıyafetleri (ör.palto) giymeden fırlar.	**1**	**2**	**3**	**4**	**5**	**6**	**7**
17. Yemeğe gelirken oyununu kolayca bırakır.	**1**	**2**	**3**	**4**	**5**	**6**	**7**
18. Uyuması gerektiği söylendiğinde öfkelenir.	**1**	**2**	**3**	**4**	**5**	**6**	**7**
19. Durup düşünmeden aklına ilk geleni söyleme eğilimi vardır.	**1**	**2**	**3**	**4**	**5**	**6**	**7**
20. Canını acıtabileceği yerlerde temkinli davranır.	**1**	**2**	**3**	**4**	**5**	**6**	**7**
21. Onunla konuştuğumda bazen beni duymuyor gibi görünür.	**1**	**2**	**3**	**4**	**5**	**6**	**7**
22. Hiç bir işi tamamlamadan birinden diğerine geçer.	**1**	**2**	**3**	**4**	**5**	**6**	**7**
23. Anne ve babasının yüz ifadelerini hızlıca fark eder.	**1**	**2**	**3**	**4**	**5**	**6**	**7**
24. Küçük bir kesik veya çürük keyfini oldukça kaçırır.	**1**	**2**	**3**	**4**	**5**	**6**	**7**
25. Parçaların üst üste konmasını veya eklenmesini gerektiren uğraşılara (lego gibi) kendini verir ve uzun süre çalışır.	**1**	**2**	**3**	**4**	**5**	**6**	**7**
26. İstediği bir şeyi (ör. oyuncak) hemen elde etmek ister.	**1**	**2**	**3**	**4**	**5**	**6**	**7**
27. Hikaye dinlerken ilgisi kolayca dağılır.	**1**	**2**	**3**	**4**	**5**	**6**	**7**

	Tamamen yanlış	***Oldukça yanlış***	***Biraz yanlış***	***Ne doğru Ne yanlış***	***Biraz doğru***	***Oldukça doğru***	***Tamamen doğru***
28. Nesnelerdeki ufak lekeleri, kirleri bile fark eder.	**1**	**2**	**3**	**4**	**5**	**6**	**7**
29. Bir faaliyetten diğerine kolaylıkla geçer.	**1**	**2**	**3**	**4**	**5**	**6**	**7**
30.Çok parlak ışık veya renklerden rahatsız olur.	**1**	**2**	**3**	**4**	**5**	**6**	**7**
31. İstediğini alamadığında sinirini kontrol edemez, öfke nöbeti geçirir.	**1**	**2**	**3**	**4**	**5**	**6**	**7**
32. İstendiğinde, yapmakta olduğu işi kolaylıkla bırakabilir.	**1**	**2**	**3**	**4**	**5**	**6**	**7**
33. Yemek,sigara veya parfüm gibi kokuları genellikle fark eder.	**1**	**2**	**3**	**4**	**5**	**6**	**7**
34. İlginç bir oyuncakla oynarken çevresiyle ilgilenmez.	**1**	**2**	**3**	**4**	**5**	**6**	**7**
35. . Oynamak istediği şeyi bulamadığında öfkelenir	**1**	**2**	**3**	**4**	**5**	**6**	**7**
36.Yünlü giysiler, kıyafetlerdeki etiketler gibi pürüzlü/sert maddelerin cildine değmesinden rahatsızlık duyar.	**1**	**2**	**3**	**4**	**5**	**6**	**7**
37. Hareketlerini kontrol etmesi gereken oyunlarda (deve-cüce vb) iyidir.	**1**	**2**	**3**	**4**	**5**	**6**	**7**
38. Talimatları takip etmekte zorlanır.	**1**	**2**	**3**	**4**	**5**	**6**	**7**
39. Yeni bir faaliyete başlamadan önce beklemesi söylendiğinde bekleyebilir.	**1**	**2**	**3**	**4**	**5**	**6**	**7**
40.Azıcık canı yansa bile ağlamaklı olur.	**1**	**2**	**3**	**4**	**5**	**6**	**7**
41. Bir şey için sırada beklemekte zorlanır.	**1**	**2**	**3**	**4**	**5**	**6**	**7**
42. Yerinde kıpırdamadan oturması söylendiğinde, bunu yapmakta güçlük çeker (ör: sinemada, sınıfta).	**1**	**2**	**3**	**4**	**5**	**6**	**7**

	Tamamen yanlış	***Oldukça yanlış***	***Biraz yanlış***	***Ne doğru Ne yanlış***	***Biraz doğru***	***Oldukça doğru***	***Tamamen doğru***
43. Tehlikeli olduğu söylenen yerlere yavaş ve temkinli yaklaşır.	**1**	**2**	**3**	**4**	**5**	**6**	**7**
44. Dikkatli olması gereken yerlerde (ör: karşıdan karşıya geçerken) temkinli değildir.	**1**	**2**	**3**	**4**	**5**	**6**	**7**
45. "Hayır" dendiğinde yapmakta olduğu şeyi kolayca bırakabilir.	**1**	**2**	**3**	**4**	**5**	**6**	**7**
46. Çok yüksek ve cızırtılı seslerden rahatsız olur.	**1**	**2**	**3**	**4**	**5**	**6**	**7**
47. Bir şeyi yapmaması gerektiği söylendiğinde, genellikle içinden gelen dürtüye karşı koyabilir.	**1**	**2**	**3**	**4**	**5**	**6**	**7**
48. Oturma odasındaki yeni eşyaları ve değişiklikleri hemen fark eder.	**1**	**2**	**3**	**4**	**5**	**6**	**7**
49. Yeni bir faaliyeti deneyen en son çocuklardan biridir.	**1**	**2**	**3**	**4**	**5**	**6**	**7**
50. . Yapmak istediği bir şey engellendiğinde bayağı hayal kırıklığına uğrar.	**1**	**2**	**3**	**4**	**5**	**6**	**7**
51. Söylendiğinde sesini alçaltabilir.	**1**	**2**	**3**	**4**	**5**	**6**	**7**
52. Başkaları konuşurken bazen sözlerini keser.	**1**	**2**	**3**	**4**	**5**	**6**	**7**

Anketimiz bitmiştir, teşekkür ederiz ☺

Appendix B

Zihin Kuramı Gelişimsel Ölçeği (Sözel Beceri)

Farklı istek (Diverse Desires)

Materyaller: Küçük bir erkek oyuncak bebek. Yarısında bir havuç, diğer yarısında bir kurabiye resmi bulunan 22x28 cm boyutlarında kâğıt.

Önce araştırmacı oyuncağı ve resimleri gösterir ve çocuğa tanıtır: "Bu Ali (oyuncak bebeği kâğıdın üzerine, iki resmin ortasına yerleştirin). Ali'nin karnı acıkmış ve canı bir şeyler yemek istiyor. Burada iki farklı yiyecek var: bir havuç (işaret et) ve bir kurabiye (işaret et)."

Sonra çocuğa *kendi isteği* sorulur: "Sen en çok hangi yiyeceği **seviyorsun**? En çok havucu mu, yoksa kurabiyeyi mi seversin?" Eğer çocuk "Havuç" derse, "Peki, bu iyi bir seçim. **Ama**… Ali aslında kurabiyeleri **sever** (işaret etme). Havucu sevmez. **O**nun **en çok sevdiği** yiyecek kurabiyedir." denir. Eğer çocuk "Kurabiye" derse, "Peki, bu iyi bir seçim. **Ama**… Ali aslında havucu **sever** (işaret etme). Kurabiyeyi sevmez. Onun **en çok sevdiği** şey havuçtur." denir.

Sonra *hedef soru*ya geçilir: "Evet şimdi yemek yeme zamanı. Ali **yalnızca bir** yiyeceği seçebilir, **sadece birini**. Ali (Ali'yi işaret et) hangi yiyeceği **seçecek**? … Havucu mu, kurabiyeyi mi?" *Puanlama:* Çocuk *hedef soru*ya, *kendi isteği sorusu*na verdiği cevabın tersi biçimde cevap verirse doğru cevap vermiş olur.

Farklı İnanış (Diverse Beliefs)

Materyaller: Küçük bir kız oyuncak bebek. Yarısında çalılık ve diğer yarısında bir garaj resmi bulunan 22x28 cm boyutlarında kâğıt.

Önce araştırmacı oyuncağı ve resimleri gösterir ve çocuğa tanıtır: " Şimdi başka bir oyuna geçiyoruz. Bu Ayşe (oyuncak bebeği kâğıdın üzerine, iki resmin ortasına yerleştirin). Ayşe kedisini bulmak istiyor. Kedisi çalılıkların içinde (işaret et) saklanıyor olabilir ya da garajın içinde (işaret et) saklanıyor olabilir." Sonra çocuğa *kendi inanış*ı sorulur: "Sence kedi nerede? Çalılıkların içinde mi (işaret et) yoksa… garajın içinde mi (işaret et)?"

Eğer çocuk “Çalılıklar” derse, “Evet bu iyi bir fikir. **Ama**… Ayşe kedisinin garajın içinde (işaret etme) olduğunu **düşünüyor**. Kedinin garajın içinde olduğunu düşünüyor.” denir. Eğer çocuk “Garaj” derse, “Evet bu iyi bir fikir. **Ama**… Ayşe kedisinin çalılıkların içinde (işaret etme) olduğunu **düşünüyor**. Kedinin çalılıkların içinde olduğunu **düşünüyor**.” diye cevap verilir. Sonra *hedef soru*ya geçilir: “Peki… Ayşe (Ayşe’yi işaret et) kedisini nerede **arar**? Çalılıkların içinde mi yoksa garajın içinde mi?” *Puanlama*: Bu bölümdeki sorunun cevabının doğru olarak puanlanması için çocuğun *hedef soru*yu *kendi inanış sorusu*na verdiği yanıtın tersi biçimde cevaplaması gerekmektedir.

Bilgi Erişimi (Knowledge Access)

Materyaller: Kolayca tanımlanamayan (yani dış görünüşünden ne kutusu olduğu anlaşılmayan, örnek: çikolata, bardak) kare şeklinde küçük bir kutu. Kutuya sığacak büyüklükte oyuncak bir köpek. Küçük bir kız oyuncak bebek.

Araştırmacı önceki oyunun materyallerini kaldırır ve yeni materyalleri çıkartır: “Burada bir kutu var (kutunun üzerine parmağını koy).”Araştırmacı çocuğa sorar: “Sence kutunun içinde ne var (kutuyu işaret et)?” Çocuk cevap verse de vermese de araştırmacı meraklı ve heyecanlı bir şekilde: “Haydi bir bakalım… Aaa içinde **bir köpek** varmış!” der. Araştırmacı köpeği göstermek için kutunun kapağını açar ve çocuğun köpeği gördüğünden emin olduktan sonra kutuyu kapatır. Çocuğun kutunun içinde ne olduğunu öğrenip öğrenmediği anlamak için *kontrol* sorusu sorulur: “Peki… Söyle bakalım, ne vardı kutunun içinde?” Eğer çocuk burada hata yaparsa, soruyu doğru yanıtlayana kadar içerisinde bulunanlar tekrar gösterilir.

Araştırmacı eline bebeği alır: “Ve işte Zeynep. Zeynep bu kutunun içindekini **daha önce hiç görmedi**.” Sonra *hedef soru*ya geçilir. Araştırmacı “Peki… Zeynep kutuda ne olduğunu **biliyor mu**?” diye sorar. Çocuğun cevabından sonra *hafıza sorusu* sorulur. Araştırmacı “Zeynep bu kutunun içini **gördü mü**?” diye sorar. *Puanlama*: Bu bölümdeki sorunun cevabının doğru olarak puanlanması için çocuğun *hedef soru*yu ve *hafıza sorusu*nu “hayır” olarak yanıtlaması gerekmektedir.

İçerik Yanlış İnanış (Contents False Belief)

Materyaller: Ön yüzünde görünür biçimde boya kalemleri resimleri olan standart bir boya kalemi kutusu. Kutunun içinden çıkacak bir yara bandı. Küçük bir erkek oyuncak bebek. Araştırmacı diğer materyalleri kaldırırken yeni materyalleri çıkarır: " Şimdi ben sana başka bir şey göstereceğim. Burada bir kalem kutusu var." Araştırmacı boya kalemi kutusunu çocuğun önüne koyar: " Sence bu kalem kutusunun içinde ne var?" Bu soruya çocuğun "kalem" demesi için gerekirse yönlendirmede bulunulur. Örneğin birinci yönlendirmede araştırmacı "İçinde kalem olabilecek gibi mi görünüyor?" der. Çocuk yine de "kalem" demezse, ikinci yönlendirme yapılır, "Bu ne çeşit bir kutu? İçinde ne olmalı?" denir. Üçüncü yönlendirmede ise araştırmacı "Burada kalemler mi olmalı yoksa kitaplar mı?" diye sorar.

Çocuktan "kalem" cevabını aldıktan sonra araştırmacı heyecanla: "Hadi bakalım… Aaa içinde **bir yara bandı** varmış!" Araştırmacı boya kalemi kutusunun içindeki yara bandını dışarı çıkarır ve çocuğun yara bandını gördüğünden emin olduktan sonra yara bandını tekrar boya kalemi kutusunun içine koyar ve kapağını kapatır. Çocuğun boya kalemi kutusunun içinde yara bandı olduğunu öğrenip öğrenmediği kontrol edilir: "Peki… Ne vardı kutunun içinde?" (*kontrol sorusu*) Eğer çocuk burada hata yaparsa, soruyu doğru yanıtlayana kadar kutunun içindeki yara bandı tekrar gösterilir. Araştırmacı eline bebeği alır: "İşte Ahmet geldi (Ahmet'i gösterir). Ahmet bu boya kalemi kutusunun içini **daha önce hiç görmedi.**"

Sonra *hedef soru*ya geçilir. Araştırmacı "Peki… Ahmet kutunun içinde ne olduğunu **düşünür**? Boya kalemi mi yoksa bir yara bandı mı?" diye sorar. Çocuk yanıtlamazsa soru tekrarlanır. Çocuğun cevabından sonra *hafıza sorusu*na geçilir. Araştırmacı "Ahmet bu kutunun içini **gördü mü**?" diye sorar. *Puanlama:* Bu bölümdeki sorunun cevabının doğru olarak puanlanması için çocuğun *hedef soruyu* "boya kalemi" olarak ve *hafıza sorusu*nu (görme hakkında olan son soru) "hayır" olarak yanıtlaması gerekmektedir.

Belirgin Yanlış İnanış (Explicit False Belief)

Materyaller: Erkek oyuncak bebek. Bir yarısında dolap diğer yarısında sırt çantası resmi bulunan 22x28cm boyutlarında kâğıt.

Araştırmacı önceki oyunun materyallerini kaldırır ve yeni materyalleri çıkartır: "Bak bu Murat. Murat eldivenlerini arıyor. Murat'ın eldivenleri ya sırt çantasında (işaret et) ya da dolapta (işaret et) olabilir. **Aslında** Murat'ın eldivenleri sırt çantasında**.** Ama Murat eldivenlerin **dolapta** (işaret et) olduğunu **düşünüyor**."Araştırmacı çocuğa hedef soruyu sorar: "Peki… Murat eldivenlerini nerede **arar**? Sırt çantasında mı yoksa dolapta mı?" Sonra gerçeklik sorusu sorulur: "Murat'ın eldivenleri **gerçekte** nerede? Sırt çantasında mı dolapta mı?" *Puanlama:* Çocuk *hedef soru*yu, "dolap" ve *gerçeklik sorusu*nu "sırt çantası" olarak yanıtlarsa doğru cevap vermiş olur.

Saklı Duygu Testi (Hidden Emotion)

Oyuna hazırlık amacıyla araştırmacı duygu ölçeğini çıkarır ve çocuğun önüne koyar: "Şimdi sana bir çocuk hakkında hikâye anlatacağım. Bu hikâyede, çocuk mutlu hissediyor olabilir (duygu ölçeği üzerinde işaret eder). Üzgün hissediyor olabilir (duygu ölçeği üzerinde işaret eder). Ya da ne mutlu ne üzgün hissediyor olabilir (duygu ölçeği üzerinde işaret eder)." Araştırmacı çocuğun yüzlerin hangi duyguları anlattığını öğrenip öğrenmediğini kontrol eder. Araştırmacı her ifadeyi teker teker sorar: "Şimdi bana gösterebilir misin? Bu yüzlerden hangisi mutlu? hangisi üzgün? Hangisi ne mutlu ne üzgün?" Eğer çocuk hata yaparsa ön hazırlık baştan yapılır. Araştırmacı: "Aferin sana… Tamam şimdi hikayeye geçelim. Hikâyeyi anlattıktan sonra, sana çocuğun **içinde gerçekten nasıl hissettiğini** (kendi kalbine dokunarak) **ve** yüz olarak **nasıl göründüğünü** (kendi yanağına dokunarak) soracağım. Çocuk içinde başka bir şey hissediyor ama yüzünde bunu farklı gösteriyor olabilir. Senin bana çocuğun içinde nasıl hissettiğini ve yüzünde nasıl göründüğünü söylemeni istiyorum".

Araştırmacı hikâyeyi anlatmaya başlar: "Bu hikâye Mehmet hakkında (resmi göster). Mehmet'in arkadaşları birlikte oynuyor ve şakalaşıyorlardı. Büyük çocuklardan biri olan Gül,

Mehmet hakkında kötü bir şaka yaptı ve herkes buna güldü. Mehmet dışında herkes bu şakanın çok komik olduğunu düşündü. Ama Mehmet şaka hakkında nasıl hissettiğini diğer çocukların görmesini istemedi, çünkü ona bebek derlerdi. Yani, Mehmet nasıl hissettiğini saklamaya çalıştı." Sonra çocuğa 2 hafıza sorusu sorulur: "Gül, Mehmet hakkında kötü bir şaka yaptığında diğer çocuklar ne yaptı?" "Hikâyede, diğer çocuklar Mehmet'in ne hissettiğini bilselerdi ne yaparlardı?" Üç duygu resmini göstererek: "Peki, herkes güldüğünde, Mehmet gerçekte nasıl hissetti? Mutlu mu, üzgün mü, yoksa ne mutlu ne üzgün mü?" Neden?

"Herkes güldüğünde, Mehmet nasıl görünmeye çalıştı? Mutlu mu, üzgün mü, yoksa ne mutlu ne üzgün mü?" Neden? Çocuğun başarılı olması için hedef duygu sorusuna, hedef görünüş sorusundan daha olumsuz bir cevap vermesi gereklidir.

Alaycılık ve ironi (Sarcasm)

Test materyalleri:

Arkası dönük olarak çizilmiş bir kız ve erkek çocuk resmi-sadece baş kısmı-, bir piknik örtüsünün üstünde ıslanmış bir pasta, diğer piknik yiyecekleri ve yağmur damlaları çizimleri. Uygulayıcı öncelikle çocuğa bir hikaye okuyacağını söyler ve hikayeyi herhangi bir tonlama veya vurgu olmadan düz bir biçimde okur. Hikaye şöyledir: "Kız çocuk ve erkek çocuk birlikte pikniğe giderler. Pikniğe gitmek erkek çocuğun fikridir. Erkek çocuk: "Bugün çok güzel, güneşli bir gün olacak." der. Ama yiyecekleri çıkardıklarında, büyük fırtına bulutları gelir. Yağmur yağar ve bütün yiyecekler ıslanır. Daha sonra kız çocuk: "Piknik için çok güzel bir gün." der. Hikayeden sonra uygulayıcı bir ön soru sorar:"Kızın dediği doğru mu?" Ve ardından test sorusunu sorar: "Neden kız çocuk "piknik için çok güzel bir gün." dedi?"Ardından da anlama becerisi için bir kontrol sorusu sorar: "Kız çocuk yağmur yağdığı için mutlu muydu?" Test sorusu olan "neden" sorusu puanlanmaktadır. Bu sorunun doğru kabul edilmesi için çocuk, cevabında ya açık bir şekilde alaycılıktan bahsetmelidir (mesela, "şaka yapıyor" veya "öyle demek istemiyor." gibi) veya "çok güzel bir gün" ifadesinin gerçek anlamı ile hikayedeki kahramanın amaçladığı anlam arasındaki farklılığı ortaya çıkaracak şekilde cevaplamalıdır.

Sosyal Taklit (Social Pretence)

Bu test bir adet kırmızı oyuncak araba ve oyuncak bebek içermektedir. İlk önce uygulayıcı ve çocuk kırmızı arabayı maviye boyarmış gibi yaparlar. Uygulayıcı ile çocuk oyunu bir süre oynadıktan sonra oyunu bitirirler ve uygulayıcı: "şimdi oyunumuzu bitirdik." der ve devam eder "Birazdan X (oyuncak bebeğin adı) gelecek (oyuncak bebek yerine dışarıdan bir kişinin – öğretmen, akran vb bir kişi söylenebilir). Bizi oynarken görmedi. Ona bu arabayı göstereceğim. Bu araba hangi renk diye sorduğumda ne diyecek?". Ardından da bir hafıza kontrolu sorusu sorar: "Daha önce oynarken, bu arabayı hangi renge boyarmış gibi yapıyorduk?". Çocuğun testi geçebilmesi için test sorusunu "kırmızı" hafıza sorusunu "mavi" olarak cevaplaması gerekmektedir ve testi geçen çocuk 1 puan alır.

Appendix C

Zihin Kuramı Testleri (Düşük Sözel Beceri Zorluğu) (Low-verbal Tasks)

Pratik Fazı

Pratik fazında katılımcı çocuklara iki resimli kart gösterilir. İlk kartta bir çocuk ve yanında duran bir köpek resmi vardır. Uygulayıcı kartı şocuğa gösterir ve "Bak, bir çocuk ve yanında bir köpek." der. İkinci kartta ise köpeği düşünen bir çocuk resmedilmiştir. Köpek, çocuğun kafasının üzerine doğru bir düşünce balonunun içine çizilmiştir. Uygulayıcı kartı çocuğa gösterir ve "Bak, çocuk bir köpeği düşünüyor." der. Son aşamada çocuğa hangi resimde çocuğun köpeği düşündüğünü sorar ve çocuk doğru cevabı verdiğinde test kısmına geçer.

Beklenmedik İçerik (Unexpected Contents Task)

Materyaller: Resimli kartlar. İlk resimde sarı saçlı bir çocuk şeker kutusundan şeker yemektedir. Arkasında şövalede yarım kalmış bir resim bulunmaktadır. Uygulayıcı kartı çocuğa gösterir ve "Ne yaptığına bak." der. İkinci resim kartında sarı saçlı çocuğun arkası dönüktür ve şövaledeki resmi tamamlamaktadır. Şeker kutusu masanın üstündedir. Uygulayıcı şekerleri ve şeker kutusunu göstererek "bunlar nedir" diye sorar. Ardından çocuk ne cevap verirse versin "şeker" diye açıklama yapar. Üçüncü kartta ise kahverengi saçlı bir çocuk elinde kalemler tutmaktadır. Aynı şekilde uygulayıcı "bunlar nedir?" diye sorar ve "kalemler" diye açıklama yapar. Dördüncü resimde iki çocuk birden resmedilmiştir. Sarı saçlı çocuğun arkası dönüktür ve kahverengi saçlı çocuğun orada olduğunun farkında olmadan resmi boyamaktadır. Kahverengi saçlı çocuk ise masada oturmuş şeker kutusundaki şekerleri boşaltmaktadır. Uygulayıcı çocuğa "Bak, ne yapıyor." der. Bir sonraki resimde ise kahverengi saçlı çocuk şeker kutusunun içine kalemleri koyar ve sarı saçlı çocuk bunu görmez. Uygulayıcı çocuğa yine "Bak, ne yapıyor." der. Son resimde ise sarı saçlı çocuk kafasının üzerinde boş bir düşünce balonu ile çizilmiştir ve kartın kenarında şeker ve kalem resimleri vardır. Uygulayıcı çocuğa hedef soruyu sorar: "Buraya ne gelecek? Bu çocuk ne düşünüyor?" Çocuğun 1 puan alabilmesi için "şeker" cevabını vermesi gerekir.

Düşünce Balonu Testleri (Thought Bubble Tasks)

Balıkçı çocuk:

Bu testte bir tepenin kenarında balık tutan bir çocuk resmedilmiştir. Oltanın ucu yosunların arasında kalmıştır ve gözükmemektedir. Yosunlar ayrı bir karta çizilmiştir ve resmin üzerinde kapak olarak kullanılmaktadır. Uygulayıcı çocuğa çocuğun bir balık tuttuğunu düşündüğünü söyler ve yosun kartını kaldırır. Bu durumda iki farklı senaryo vardır; kartın altında birinci senaryoda (yanlış inanış) oltanın ucunda bir bot vardır. İkinci senaryoda (gerçek inanış) oltanın ucunda bir balık vardır. Son adımda da uygulayıcı çocuğa soru kartını gösterir. Soru kartında balık tutan çocuk, kafasının üstünde bir düşünce balonu ve 4 farklı resim vardır: bir kutu, bir balık, bir çiçek ve bir bot. Sonra da düşünce balonunu göstererek sorar: "Buraya ne gelecek? Çocuk oltanın ucunda ne olduğunu düşünüyordu?" ve çocuğun resimlerden birini göstermesini veya sözel olarak söylemesini bekler. Sonra da gerçeklik sorusunu sorar: "Oltanın ucunda gerçekte ne vardı?" Eğer çocuk iki soruya da doğru cevap verirse 1 puan alır, veremezse 0 alır.

Uzun Çocuk:

Bu testte yeşil bir park, parkın kenarını kaplayan bir çit, bir kız çocuk ve bir erkek çocuk resmedilmiştir. Çitin bir kısmı ayrı bir karta çizilmiştir ve ayrılabilir özelliktedir. Bu parka erkek çocuğun bir gövdesinden aşağısını kapatmaktadır. İlk adımda uygulayıcı, çocuğa bu resmi gösterir ve "Bu kız orada uzun bir çocuk olduğunu düşünüyor." der. İkinci adımda diğeresme geçer ve ayrılan parçayı çıkarır. Ortaya çıkan resimde çocuk büyük bir kutunun üzerinde ayakta durmaktadır. Uygulayıcı yanlış inanış senaryosunda "Bak kısa bir çocuk." der. Gerçek inanış senaryosunda ise çitin arkasında uzun boylu bir çocuk vardır ve uygulayıcı "Bak, uzun bir çocuk." der. Son adımda uygulayıcı, kızın kafasının üstünde bir düşünce balonu olan ve kartın kenarında kısa bir çocuk, uzun bir çocuk, futbol topu ve oyuncak araba resimlerini olan bir kart gösterir. Düşünce balonunu göstererek "Buraya ne gelecek? Kız< çitin arkasında ne olduğunu düşünüyordu?" diye sorar. Çocuğun işaret etmesini veya söylemesini bekler.

Sonra da gerçeklik sorusunu sorar: “Gerçekte orada ne vardı?”. Çocuk iki soruyu da doğru cevaplarsa 1 puan alır.

Dolap

Bu testte bir erkek çocuk, bir mutfak dolabı ve bardaklar mutfak arka planı üzerine resmedilmiştir. Dolabın kapağı ayrılabilir bir kart üzerine resmedilmiştir. İlk resimli kapta dolabın kapağına uzanan çocuk vardır. Uygulayıcı resmi göstererek, “Çocuk dolapta bir bardak olduğunu düşünüyor.” der. Sonra ayırlabilir kapağı kaldırır. Yanlış inanış senaryosunda dolabın içinde bir fare vardır ve uygulayıcı “Bak, bir fare.” der. Gerçek inanış senaryosunda ise bir bardak vardır ve uygulayıcı “Bak, bir bardak.” der. Son adımda uygulayıcı erkek çocuğun kafasının üzerinde boş bir düşünce balonu olan ve bir bardak, oyuncak uçak, bir fare ve bir kelebek olan resimli bir kart gösterir. Düşünce balonunu göstererek “Buraya ne gelecek? Çocuk dolapta ne olduğunu düşünüyordu?” diye sorar ve çcouğun işaret ile göstermesini veya söylemesini bekler. Sonra da gerçeklik sorusunu sorar: “Dolapa gerçekte ne vardı?” Çocuk iki soruya da doğru cevap verebilirse 1 puan alır.

Denizdeki Balıklar:

Bu testte, tepenin kenarından denize bakan bir erkek çocuk, denizde bir balık ve büyükçe bir deniz bitkisi resmedilmiştir. Büyük deniz bitkisi ayrılabilir bir kart üzerine çizilmiştir ve suyun bir bölümünü görüşe kapatmaktadır. İlk adımda uygulayıcı “Bu çocuk denizde bir balık gördüğünü düşünüyor.” der. İkinci adımda eğer yanlış inanış senaryosu ise bitkinin ardında bir deniz kızı vardır ve “Bak, bir deniz kızı.” der. Gerçek inanış senaryosunda ise balık vardır ve “Bak bir balık.” der. Son adımda uygulayıcı üzerinde erkek çocuk ve kafasının üzerinde boş bir düşünce balonu olan ve bir balık, bir kaykay, bir deniz kızı ve bir keman resmi olan bir kart gösterir. Sonra düşnce balonunu göstererek sorar: “Buraya ne gelecek? Çocuk suyun içinde ne olduğunu düşünüyordu?”. Ardından çocuğun işaret etmesini veya söylemesini bekler. Sonra da “Suyun içinde gerçekte ne vardı?” diye sorar. Çocuk eğer iki soruya da doğru cevap verirse 1 puan alır.