KOÇ UNIVERSITY

GRADUATE SCHOOL OF SOCIAL SCIENCES & HUMANITIES

THEORY-OF-MIND IN SOCIAL CONTEXT: THE ROLE OF CULTURE, SOCIAL

SETTING AND TARGET CHARACTERISTICS

BY

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This thesis contains no material which has been accepted for any awards or other degree or diploma in any university or other institution. It is affirmed by the candidate that, to the best of her knowledge, the thesis contains no material previously published or written by another person, except where due reference is made in the text of the thesis.

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THESIS ABSTRACT

Theory-of-mind (ToM) describes the ability to understand mental states of others. According to the perspective of theory-theory, social context is critical for children's development and use of ToM ability as variety of experiences in social context provide children with rich input about diverse nature of others' mental states. In line with the perspective of theory-theory, the current dissertation with its three separate studies investigated the role of social context (e.g., broad cultural norms and family characteristics, general setting of the social interaction, and targets′ characteristics) in development and use of ToM in children and young adults. The first study examined the developmental acquisition of ToM steps in Turkish children and explored whether this acquisition could be linked with socio-demographic factors of children's families. The results showed that majority of Turkish children in the sample displayed collectivist ToM acquisition pattern with earlier understanding of Knowledge Access (KA) than Diverse Beliefs (DB). However, further analyses focusing only on achievement in individual items of KA and DB revealed that those children who evidenced DB but not KA understanding were living in more crowded households with higher number of adults than children who evidenced KA but not DB. The findings implied that children's development of ToM takes places in line with the general norms of the society and in the context of Turkey where individualist and collectivist values co-exist, family characteristics play a critical role in determining whether children's ToM acquisition sequence would fit to individualist vs. collectivist pattern. The second study focused on the importance of children′s ToM abilities in the context of peer play and tested test if acquisition of ToM transforms children's social interactions, particularly, their display of lower disruptive actions (e.g., opposition, rule breaking, yelling and aggressing) within play situation. This study also examined the role of emotion understanding and empathy as two critical socio-emotional skills associated with social behaviors of children. The findings demonstrated that not higher

ToM or emotion understanding but higher empathy predicted lower disruptive behaviors of preschoolers in peer context. Although accurate interpretation of others' minds in ongoing social interactions can give rise to smooth peer relationship, in the context of peer play, ToM emerged as a general socio-cognitive ability (a cold comprehension skill) and high performance in ToM did not necessarily pave the way of more coordinated peer play behaviors. These results were in line with the claims stating that ToM is a cold comprehension skill (as opposed to empathy—affective sharing of others' emotions) which can be used either to harm or please others depending on individuals' motivation. Finally, the third study examined whether cultural characteristics of the target and associated social perceptions (e.g., perceived similarity, prejudice and threat perception) could influence accuracy of young adults' ToM performance. The results displayed that Turkish young adults performed higher mindreading accuracy toward Turkish targets than Syrian and Norwegian targets. Moreover, analyses conducted within each target group revealed complex interactions between perceived similarity, realistic threat and prejudice, documenting that both target characteristics and perceptions about these targets impact understanding minds of outgroup members. Overall, in line with the theory-theory's contention, these three studies showed that although humans are endowed with the capacity to make sense of others' subjective minds, their social experiences are critical in guiding development and later utilization of this capacity in childhood and early adulthood years.

TEZ ÖZETİ

Zihin kuramı başkalarının zihin durumunu anlama becerisi olarak tanımlanır. Kuram-kuramı (theory-theory) olarak bilinen yaklaşıma göre, sosyal bağlam, başkalarının birbirinden farklı zihin durumlarına dair çocuklara zengin uyaranlar sağladığından zihin kuramının gelişimi ve sosyal ilişkiler içerisinde kullanımında büyük öneme sahiptir. Bu tezi oluşturan üç ayrı çalışma, kuram-kuramının yaklaşımına uygun olarak, zihin kuramının çocukluktaki gelişiminde ve genç yetişkinlikteki kullanımında sosyal bağlamın (kültürel normlar ve ailelerin özellikleri, sosyal etkileşimin oluştuğu ortam ve bu ortamdaki kişinin karakter özellikleri) rolünü incelemektedir. İlk çalışma, Türk çocukların zihin kuramı edinim sıralamasını ve bu edinimin sıralamasının ailelerin sosyo-demografik özellikleriyle ilişkisini araştırmıştır. Sonuçlarda, örneklemdeki Türk çocuklarının çoğunluğunun topluluçku zihin kuramı edinim sıralaması gösterdiği bulunmuştur; dolayısıyla, çocukların Bilgi Erişimi (BE)'ne dair zihin durumlarını Farklı İnanış (Fİ)'a dair zihin durumlarından daha önce öğrendikleri ortaya çıkmıştır. Buna ek olarak, çocukların yalnızca BE'ne ve Fİ'a dair zihin durumlarına yönelik performanslarına odaklanan analizlerde, kalabalık ailelerde daha fazla sayıda yetişkin ile yaşayan çocukların Fİ zihin durumlarını anlamakta daha az kalabalık ve yetişkin sayısı daha az olan ailelerdeki çocuklara göre daha başarılı oldukları ortaya çıkmıştır. Bu bulgular, çocukların zihin kuramı gelişiminin toplumun genel normları ile örtüşerek ilerlediğine işaret etmektedir. Aynı zamanda, Türkiye gibi bireyciliği ve topluluçkuluğu harmanlayan bir kültürel bağlamda, ailelerin sosyo-demografik özelliklerinin çocukların zihin kuramı edinim sıralamalarının yönünü belirlemede (topluluçku veya bireyci) önemli olduğu ortaya çıkmıştır. İkinci çalışma, çocukların akran oyunlarında zihin kuramı becerilerinin önemine odaklanmıştır ve zihin kuramının çocukların yıkıcı davranışlarının (oyun sırasında karşı çıkma, kuralları bozma, bağırma, saldırma) sıklığını azaltıp azaltmadığını incelemiştir. İkinci çalışma aynı zamanda duygu anlama ve empati gibi iki önemli sosyo-duygusal becerinin çocukların yıkıcı davranışları ile ilişkisine de odaklanmıştır. Sonuçlar, daha yüksek

zihin kuramı veya daha yüksek duygu anlama performansının değil, daha yüksek empati performansının çocukların akran oyunu sırasındaki yıkıcı davranışlarını azalttığını göstermiştir. Başkalarının zihin durumlarını doğru şekilde yorumlamanın uyumlu sosyal etkileşimin oluşma ihtimalini arttırdığı öne sürülmesine rağmen, bu sonuçlar zihin kuramının yalnızca genel bir sosyo-bilişsel beceri olduğunu ("soğuk" bir kavrama becerisi) ve zihin kuramında başarılı olmanın oyun sırasında düzenli, ahenkli ve koordineli davranışlar sergilemek ile ilişkili olmadığını ortaya çıkartmıştır. Bu bulgular, zihin kuramını hem ilişkilerdeki uyumu arttırmak hem de başkaları üzerinde güç kazanmak için kullanmanın mümkün olduğunu, burada belirleyici faktörün kişinin motivasyonu olduğunu belirten yaklaşımları desteklemektedir. Son olarak, üçüncü çalışma, sosyal iletişime girilen kişinin kültürel özelliklerinin ve bu özelliklere yönelik algıların (benzerlik algısı, önyargı ve tehdit) o kişinin zihin durumunu doğru olarak anlamayı etkileyip etkilemediğini incelemiştir. Sonuçlara göre, Türk genç yetişkin katılımcılar, Türklerin zihin durumunu Suriye ve Norveçlilerin zihin durumlarından daha doğru olarak anlamışlardır. Ayrıca, Suriyelilere ve Norveçlilere yönelik benzerlik algısı, önyargı ve tehdit ile etkileşime girerek Türk genç yetişkinlerin, Suriyelilerin ve Norveçlilerin zihin durumlarını anlama performanslarını etkilemiştir. Genel olarak, bu tezi oluşturan üç çalışma, insanların başkalarının zihin durumlarını anlamaya yönelik bir beceri ile doğmalarına rağmen sosyal bağlamın bu becerinin gelişimi ve sosyal ilişkilerde kullanımı için kritik önemde olduğunu göstermiştir.

DEDICATION

to my family…

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CHAPTER 1

GENERAL INTRODUCTION

Humankind demonstrates an immense ability to reign over its environment despite

having obvious physical disadvantages (e.g., less sharp senses and weaker movement

capacity) compared to other species. The cause of humans' advanced position over the other

species in the world is considered to be their adeptness in displaying cooperative and

coordinated behaviors in large groups (Tomasello et al., 2012). Helping group members,

sharing resources with them and doing division of labor to attain bigger goals enable humans

to have a powerful and enduring existence, and helped them create a sophisticated civilization

and culture (Tomasello & Moll, 2010). The skill which lies behind these joint and coordinated

actions and which contributes to humans' thrive through smooth interpersonal relationships

has been of great interest to scholars across philosophical discussions in general, and

psychological research, in particular. In a broad sense, Epley (2014) calls this skill as *the sixth*

sense of humans to accentuate its essential function in social life, while researchers in social

and developmental psychology refer to it as *mind-reading* or *theory-of-mind* (Wellman,

2014). It describes the ability to explain and predict others' behaviors based on their

unobservable subjective mental states (e.g., desires, beliefs and intentions). Reflecting

intuitive judgements of everyday behavior in *folk psychology* (Wellman, 2002), theory-of-

mind (ToM) demonstrates humans' propensity to assume that peoples' actions are guided by

and result from their subjective minds (D'Andrade, 1987; Wellman, 1990).

ToM is a crucial element for successful interpersonal relationships (Epley & Waytz,

2010). This is because quality of interpersonal relationships rests on acknowledging that

social interaction is taking place between individuals with diverse subjective mental states. As

such, creation of this intersubjective experience with a sense of mutual and coordinated

understanding depends on individuals' ability to grasp the content of their interlocutors'

minds (Zlatev, Racine, Sinha & Itkonen, 2008). According to Siegel (2010), higher ToM skills enable individuals to reach an awareness about their own mental states (e.g., aspirations, desires and beliefs) first and then pave the way for comprehension of others' diverse minds in social relations. Mentalization about self and other facilitates accurate and direct communication and thus, promote satisfying social relationships and well-being in life. This critical importance of mental state understanding necessitates in-depth analysis of the factors involved in its development and accurate deployment in social life.

ToM displays a protracted development and is investigated in two categories: implicit ToM and explicit ToM. Implicit ToM refers to children's ability to visually track belief-like states of others and pay attention to the consistencies between belief and behavior (Slaughter, 2015). Research shows that infants starting from the first year of life tend to form expectations that people act in line with their belief states (Baillargeon et al., 2010). For instance, when they observe that an adult uses a pen and accidentally drops it to the floor where there were multiple pens, 12-18 year-old infants point to the pen used by the adult rather than pointing to other pens, which shows a rudimentary understanding of intentionality underlying behavior (Liszkowski et al., 2006). Likewise, in a violation-of-expectation paradigm, when the place of an object has been changed without the awareness of a protoganist, infants look longer (and seemed surprise) when the protoganist searched for the object in its new rather than old location (Onishi & Baillargeon, 2005). These findings among many others (Onishi et al., 2007; Scott & Baillargeon, 2009; Song et al., 2008) raised the questions for whether mental state understanding might be present earlier than preschool period—a time considered to mark a change in children's socio-cognitive understanding. Although debate on this issue still continues, according to two-system account of Apperly and Butterfill (2009), infants' ability to track belief states displays an implicit ToM skill which emerges as an efficient but limited ability. That is, similar to cognition of numbers, infants

can attend to others' observable behaviors that involve only visible objects with few distinguishing features (e.g., color and shape). Visible aspects of objects such as their colors and shapes allow infants to relate them to the beliefs states of individuals; however, infants are still short of envisioning belief-behavior relationship in propositional format (e.g., if there is a belief state behavior follows it). Having insight about mental states as conceptual and propositional causes of behavior requires executive functions and language abilities, and develops around preschool period in the form of explicit ToM (Ruffman, 2014). Apperly and Samson (2009) argues that children's explicit and conscious reasoning about others' minds is reflected when they start verbalizing mental state terms as generic causes of behaviors without focusing on the objects or their features involved in these behaviors. This reasoning includes desires, beliefs, intentions as well as their interactions as motivators of people's behaviors in simple and complex situations. As such, initial belief-tracking states are considered to evolve into explicit reasoning about others' minds.

Although implicit ToM is shown as an important precursor for socio-cognitive skills of infants, this thesis focuses on growth and use of explicit ToM which develops during preschool years (Wellman, Cross, & Watson, 2001) and continue until late adolescence (Dumontheil, Apperly, & Blakemore, 2010). Research findings consistently point that children tend to display awareness of the diversity in mental states of others toward the end of 3 years of age as they start uttering mental state words (e.g., want and think), enjoy deceiving others and laugh at ironic state of the events that contradict with reality (Booth, Hall, Robison, & Kim, 1997; Shatz, Wellman, & Silber, 1983). Different theoretical explanations were put forward in order to account for this emergence and development of explicit ToM. These explanations were categorized under domain-general and domain-specific accounts.

Domain general accounts argued for the importance of major developmental skills as necessary for emergence of and improvement in ToM. At the forefront of these skills are

language and executive functions. It has been claimed that children's ToM improve as function of the increase in their vocabulary knowledge because language helps forming a connection between abstract mental states and the observable behaviors (Milligan, Astington & Dack, 2007). In other words, given that mental states exist only in the eye of the observer and inferred from the behaviors of the observed person, language functions as a medium through which these mental states become apparent (Ruffman, 2014). Besides language, executive functions, especially inhibitory control is emphasized as another domain-general skill facilitating ToM (Moses, 2001). Mental state understanding entails inhibition of self-perspective to understand the perspective of the other person. Indeed, meta-analytic work confirmed that children's mastery at controlling their predominant responses helps them accurately predict mental states of another person who might hold a belief that contrasts with the belief of the child or true state of the world (Devine & Hughes, 2014).

Although research in general supports domain-general accounts of ToM (McKinnon & Moscovitch, 2007), domain-specific accounts also provide significant insights into the early development and later use of ToM in social life. Theory-theory, simulation theory and modular view are among these domain-specific accounts. Theory-theory (Gopnik & Wellman, 1994) argues that children initially have a general construct—a framework for making sense of the behaviors of others around them. This framework, which can also be considered as Piagetian schema, provides a rudimentary mentalistic comprehension about causes of others' behaviors. Children are endowed with this initial understanding and gradually enhance it through their social experiences and interactions with the world (Wellman & Gelman, 1998). For example, two-year-olds have insight about peoples' diverse desires as motivators of their behavior and over time through their interactions with social environment (e.g., parental mental-state talk and parents' and siblings' elaborated explanations of cause-effect relations) they also incorporate differing belief states into their understandings of the world, which is

then followed by understanding distinction between apparent (displayed) and real emotions (Wellman & Liu, 2004). As such, this constructivist account argues for a gradual change in progression of ToM as the result of the dynamic interaction between initial readiness to learn about minds of others (e.g., existing constructs) and enriching social experiences. In contrast to this model, modular theory (Fodor, 1983; Leslie, 1987) argues that ToM development occurs through the innate encapsulated mental modules responsible for gauging mental states of others. These modules, which also make ToM a special skill for humans, reach a maturation level, come on-line and hence, give rise to explaining others' behaviors based on their mental states. Poor ToM performance in autism is claimed to be linked with the deficiency in ToM module (e.g., neurological problems in ToM-related parts of the brain representing ToM module) although modules about other cognitive functions (e.g., mathematical calculations) are intact (Baron-Cohen, 1995). Finally, simulation account (Goldman, 1992; Harris, 1991) posits that mental state understanding occurs through projecting the self into another person's situation and children learn to imaginatively experience the situation of others by engaging in pretend play activities. Increasingly complex social experiences that require children to simulate conditions of others facilitate growth in ToM performance. For instance, desire states (e.g., preferring broccoli over cookie for lunch) are easier to simulate than false-belief situations in which the true state contradicts with the belief of the person, which is why children explain behaviors of others based on their desires earlier than false-belief (Harris, 1991; Lillard, 2002).

Among these different theoretical accounts, theory-theory comes forward as placing a heavier emphasis on the role of social experiences and environmental context in enhancing mental state understanding skills (Wellman, 2002). While other theories mostly focus on the cognitive factors that contribute to emergence of ToM (mental modules, language, executive functions, simulation skills in pretense), theory-theory combines a cognitive approach with a

focus on social and environmental influences. It argues that children's initial cognitive

constructs are enhanced to a deeper and complex insight about minds of others within a broad

social atmosphere. This approach is consistent with the socio-cultural view of Vygotsky

(1978) who contends that social environment guides developmental processes through its

cultural tools (e.g., beliefs, values, and practices) so that individuals can learn to display

proper functioning according to the demands of their social context. Given that the major

motivator and function of ToM is to increase cooperation and communication between

individual members of a society (Epley & Waytz, 2010), its development and use in social life

should be closely linked with the aspects of the social context—a point which constituted the

core of the current thesis. As a broad term, social context describes overall environmental

setting in which social interactions take place. It includes the atmosphere of the social

interactions such as cultural values and belief systems of a given society, and also involves

the characteristics of the individuals who are interacting within that atmosphere (Lerner,

2001). In social context, social relationships occur against the background set by the cultural

values and belief systems of the society and are dynamically shaped by the interaction

between these values and the characteristics of the individuals who take part in these social

relationships.

Previous research showed that diverse aspects of the social context (e.g., ranging from

cultural values and environmental setting to the characteristics of the interaction partners) are

involved in development and use of mental state understanding. For instance, during

preschool years ToM development proceeds with a sequential trend in line with the cultural

values of the society (Shahaeian et al., 2011; Wellman et al., 2006), revealing that culture is

intrinsically linked with advancement of ToM. When its acquisition takes places toward end

of preschool with success in false belief understanding task, children apply their ToM skills in

peer context (Hughes & Devine, 2015; Paterson et al., 2016), which demonstrates that social

atmosphere of the peer settings such as ongoing interaction between play partners encourages the display of already acquired mindreading skills (Hughes & Cutting, 1999). Moreover, even beyond childhood, social context continues exhibiting its link with ToM such that individuals show differences in their ToM performance depending on whose mind they read. Specifically, they perform higher accuracy when reading minds of ingroup than outgroup targets (Adams et al., 2010; Perez-Zapata et al., 2016). Given this background, by focusing on the role of diverse aspects of social context such as broad social and cultural values (e.g., individualist vs. collectivist), general setting of the social interaction (e.g., peer play) and targets' characteristics (e.g., ingroup vs. outgroup identities), this thesis expanded on the previous research and investigated development and deployment of theory of mind in children and young adults.

Study I investigates developmental acquisition of ToM steps in Turkish children and examines whether this acquisition could be linked with socio-demographic factors. Since Turkish culture includes both individualist and collectivist elements (Hofstede, Hofstede, & Minkov, 2010), it is important to understand how this social atmosphere that combines modern Western (individualist) and traditional Eastern (collectivist) ideals relate to Turkish children's ToM acquisition patterns. Study II focused on the importance of children's ToM abilities in the context of peer play. Peer play constitutes a critical social context because it can motivate children to apply their ToM ability to sustain harmonious peer relations during intricacies of ongoing play situation (Hughes & Cutting, 1999). As such, it was argued that acquisition of ToM should transform children's peer relationships by allowing them to engage in more coordinated and less destructive actions during peer play (Paterson et al., 2016). While Study I examined the role of broad cultural values in developmental acquisition of ToM steps, Study II aimed to test if this acquisition translates to children's social interactions, particularly, their display of lower disruptive actions (e.g., opposition, rule breaking, yelling

and aggressing) in the context of peer play. Along with ToM, Study II also focused on emotion understanding and empathy as other socio-cognitive skills. Studies have consistently identified significant deficits in emotion knowledge and empathy but intact performance in ToM abilities of school-aged children with clinical diagnoses of behavioral problems (Anastassiou-Hadjicharalambous & Warden, 2008; Jones, Happé, Gilbert, Burnett & Viding, 2010). These findings led to the general conclusion that deficits in emotion processing (emotion knowledge and empathy) rather than deficits in mental state understanding (ToM) underlie high levels of aggressive and non-compliant tendencies in clinical samples of children. However, it is largely not known if these deficits in emotion knowledge and empathy as opposed to ToM are specific to the high levels of behavioral problems seen in clinical samples of school-aged children, or if they represent broad difficulties characteristic of disruptive behaviors in general, including the mild aggressive, oppositional and non-compliant behaviors of typically developing preschoolers. In order to shed light on whether the same pattern of relations observed in clinical samples of school-aged children would arise earlier in typical development, Study II examined the role of theory of mind, emotion knowledge and empathy in typically developing preschoolers' disruptive behaviors. Finally, Study III examined whether cultural characteristics of the target and associated social perceptions about the cultural background of the target (e.g., perceived similarity, prejudice and threat perception) influence accuracy of young adults' ToM performance. Although ToM as a capacity is considered to be developmentally mature in adulthood, performances differences in adults' accurate deployment of their ToM capactiy can occur depending on the social (cultural) characteristics of the target whose mental state is in question. Previous studies found that adults tend to understand mental states of their cultural ingroup members better than those of outgroup members (Adams et al., 2010; Perez-Zapata et al., 2006), and as such, it is argued that cultural similarity is the key factor which facilitates this advanced

performance toward ingroup members. Yet, besides similarity, individuals' evaluations and perceptions about the target's cultural group, too can have influence on ToM performance toward outgroups. The social cognition literature extensively demonstrates that the mere presence of a target is sufficient to instigate an automatic evaluation process that includes positive or negative affect (Castelli et al., 2004; Ito & Cacioppo, 2000). Thus, when a target individual is seen, relevant factual information about the target's group (e.g., its similarity or dissimilarity to the ingroup) is activated along with affective evaluations and reactions (e.g., prejudice and threat perception) toward the individual's group. Since memory is conceived of as a wide network of associations where different sets of knowledge about events reside in close connection (Niedenthal & Kitayama, 2013), affective evaluations of targets are also included in this network and arise automatically upon seeing the identity of a target. Therefore, due to their automatic recall in social encounters with outgroup targets, not only similarity, but also these affective evaluations (e.g., prejudice and threat perception) might influence the accuracy of mental state inferences. Therefore, Study III investigated the role of perceived similarity, prejudice, and threat perception in young adults' ToM performance toward two outgroups (Syrians and Norwegians), which vary in their similarity to Turkish ingroup.

CHAPTER 2

SEQUENCE OF TOM ACQUISITION IN TURKISH CHILDREN FROM DIVERSE SOCIAL BACKGROUNDS

Selcuk, B., Brink, K. A., Ekerim, M., & Wellman, H. (2018). Sequences of theory of mind acquisition in Turkish children from diverse social backgrounds. *Infant and Child Development.* https://doi.org/10.1002/icd.2098

Abstract

We examined the sequence of theory of mind (ToM) acquisition in 260 Turkish children (M_{age} = 53.36 months, SD = 10.37) and the demographic factors associated with it. Children came from five different cities in Turkey. Their ToM skills were measured using Wellman and Liu's (2004) ToM Scale, which probes various mental state understandings from diverse desires to hidden emotions. These Turkish children demonstrated the traditional, collectivist ToM acquisition pattern evident in Iran and China with earlier understanding of knowledge access (KA) than diverse beliefs (DB), not the western, individualist pattern evident in U.S., Australian and German children. Gender, SES and number of adults living in the home influenced the pace of children's ToM acquisitions. A post hoc analysis examined a minority of children that exhibited individualist ToM acquisition with earlier achievement of DB than KA. The results contribute to a fuller socio-cultural understanding of ToM development including examination of variations within a single heterogeneous developing country. They also further suggest the importance of exposure to different ideas and beliefs in large households for earlier understanding of varying belief states.

Keywords: collectivist, culture, individualist, preschool, theory of mind, Turkey

Introduction

Theory of mind (ToM) --understanding persons in terms of their internal mental states such as beliefs and desires--reveals both apparent universals and differences in development across cultures and communities. Universally, children acquire explicit false belief (FB) understanding in the years from 3 to 6 (Callaghan et al., 2005; Wellman, Cross, & Watson, 2001). However, across cultures, there are differences in adult theories of mind (Lillard, 1998; Lurhmann, 2001) and differences in the childhood timing and achievement of differing theory-of-mind concepts (Mayer & Träuble, 2013; Vinden, 1996). A key aim for current research is to better understand the nature of, and influences on, these similarities and differences in order to detail more clearly how ToM exemplifies "universalism without uniformity" (Shweder & Sullivan, 1993, p. 507).

Turkey recommends itself as a locale for investigating these questions. Prior research reveals intriguing differences in children's specific ToM trajectories in western, individualist countries (such as, U.S., Australia, Germany) compared to non-western "Asian", collectivist countries (such as, China, Iran) such that children in individualist western cultures appear to learn diversity in subjective beliefs earlier compared to their peers in collectivist eastern cultures (Shahaeian et al., 2011; Wellman et al., 2006). Turkey straddles this divide both geographically and as a society that blends individualist western and collectivist middle eastern traditions (Göregenli, 1995). Further, social class differences often relate to differences in more or less individualist versus collectivist-traditional values, as much as simple differences in nationality (Durgel, van de Vijver, Yagmurlu, 2013; Mayer, et al., 2012; Okur & Corapci, 2016). This is also true in Turkey. In the present research, we assess ToM acquisition in a large number of Turkish children whose families span a large range of social class circumstances.

Theory of Mind

ToM has a multifaceted nature (Samson & Apperly, 2010); it includes an interconnected network of basic mental states such as desires, beliefs, knowledge, and feelings, whose acquisitions are fundamental to help children to understand and interact within the social world. Although the ability to understand mental states of others continues to advance into late childhood, adolescence and beyond (e.g., Bianco, Lecce, & Banerjee, 2016; Devine & Hughes, 2013), there is remarkable growth in its development between 3 and 6 years of age worldwide (e.g., Wellman, et al., 2001).

Universalism without uniformity. Early cultural studies of ToM development focused on universality as revealed by false-belief tasks (see, e.g. Callaghan et al., 2005, Vinden, 1996, and meta-analyses by Wellman et al., 2001). Still, more recent studies have pointed to much greater and more nuanced variability by including other mental state concepts in their measurements in addition to false-belief (e.g., Kristen et al., 2006; Peterson, Wellman, Liu, 2005). In particular, research using Wellman and Liu's (2004) ToM scale to track ToM has revealed two alternative sequences of ToM developments. As outlined in Table 1, the scale measures various ToM understandings including assessment of diverse desires (DD), diverse beliefs (DB), knowledge access (KA), false belief (FB), and hidden emotion (HE) which are all equal in their reliance on cognitive skills (e.g., executive functions) but differ in underlying mental state concept. In other words, insight about others' minds are measured with qualitatively different mental state concepts which all tap on the same cognitive mechanisms despite representing various mental frameworks. These mental state concepts in the scale proceed in stepwise fashion. Consistently, children in western, "individualist" societies such as U.S., Australia, and Germany evidence a DD>DB>KA>FB>HE sequence of development (e.g., Kristen et al., 2006; Peterson et al., 2005; Wellman & Lui 2004; Wellman, Fang & Peterson, 2011). However, children in eastern, "collectivist" societies such as China and Iran evidence an alternative DD>KA>DB>FB> HE

sequence (e.g., Wellman et al., 2006; Wellman et al. 2011; Shahaeian, et al, 2011) where children understand that people who see something know about it (knowledge access) before they understand diversity in beliefs. Slaughter and Perez-Zapata (2014) provide a brief review of this research by summarizing similarities and differences across cultures in children's acquisition of various mental state concepts. How can we better explain these similarities and differences? One crucial step to elucidate children's understanding of people's minds in different cultures (suggested by Gauvain, 1998; Vinden & Astington, 2000) is to understand the characteristics of that culture in depth.

Cultural Contexts

When children develop an earlier understanding about diversity in beliefs in some sociocultural contexts but develop an earlier understanding about having access to knowledge in others, this might be due to the functionality of these specific mind-reading skills in those contexts. Children actively learn ideas and values in the context of socialization practices by parents, family, and communities. From the point of view of contextualism, it is no surprise then that timing in the acquisition of different understandings might be different (Coll, Akerman, & Cicchetti, 2000; Greenfield & Suzuki, 1998). Turkish society provides substantial cultural variation at the level of the country, family, and social class with which to view ToM acquisition.

    Turkish Culture.

National context: Turkey is a country where both European individualist and Asian collectivist elements coexist (Göregenli, 1995). In recent broad surveys, Turkey is ranked halfway between individualist and collectivist cultures: 37th out of 93 countries, on the dimension of individualism (Hofstede, Hofstede & Minkov, 2010). An older, 49-country comparison found that Turkey scored high on conservatism, hierarchy, and harmony (collectivist ideals) and relatively lower on the autonomy, egalitarianism, and mastery (individualist ideals) (Schwartz, 1999). However, Turkey has been transitioning from a

predominantly collectivist society to one that simultaneously observes both collectivist and individualist values.

Relatedly, Turkey has transformed from a rural and agricultural society to an urban and non-agricultural, industrial society (Norris & Inglehart, 2009; Rasuly-Paleczek, 1996). According to the Turkish Statistical Institute (TUIK, 2014), fueled by higher education and employment opportunities in big cities, as of 2012, 72% of the Turkish population now resides in urban centers. Although the first generation of migrants in cities largely kept their traditional collectivist values, their children started embracing urban culture with its westernized ideals engendering coexistence of multiple views within households and extended family contexts (Sunar, 2002). Coexistence of individualist and collectivist values also mixes with social class and this is true in Turkey. Families from higher SES tend to embrace individualist socialization values, whereas those from lower SES usually conform to traditional collectivist values in socialization practices (Göregenli, 1995; Sen, Yavuz-Müren, & Yagmurlu, 2014). This demonstrated presence of both individualist and collectivist ideals within a single society presents a critical environment to view cultural variability with respect to ToM development.

Familial contexts: Not only do national contexts impact social experiences but so do variations in family interactions and experiences. Variations in familial contexts and experiences such as number of siblings and number of adults in the home often co-vary with traditional versus western culture and with SES (Cutting & Dunn, 1999; Ruffman, Perner, Naito, Parkin & Clements, 1998, Yagmurlu, Berument, & Celimli, 2005). Because children's understanding of the mind is formed through their social interactions, understanding might also be linked with these variations in social and familial contexts. In fact many studies, beginning with Perner, Ruffman and Leekam (1994) have shown that a greater number of siblings is related to better understanding of beliefs (Jenkins & Astington, 1996; Peterson,

2000). Lewis, Freeman, Kyriakidou, Maridaki-Kassotaki, and Berridge (1996), however, noted the importance of the child's overall social network, such as daily interactions with adults and peers. Their study with Greeks in Crete and Cyprus, where many people lived in extended families, indicated that the most powerful predictor of ToM development was the number of adults the children interacted with on a daily basis. Lewis and colleagues argued that research must move beyond sibling or nuclear family influence to consider extended family and social contexts, especially for collectivist societies. Again, Turkey provides a good venue for addressing this need.

The Current Research

In sum, a variety of factors that could influence ToM developments should be considered in tandem: cultural context at the level of the country, social class, and the family. Data from Turkey could do so, given a large and varied enough sample, because of its substantial within-country variation at each of these levels. That was our aim in the present research: we used ToM Scale data revealing sequences as well as levels of development to report findings from a large number of Turkish children whose families spanned a large range of social class circumstances. Only one prior study (Etel & Yagmurlu, 2015) studied Turkish children using a ToM Scale and it found the individualist acquisition pattern. However, this was a small-sample study of institutionalized children and, as argued by its authors, frequent and long-term interaction of these children with their peers in the institutional context might have led them to encounter various ideas and beliefs, which in turn triggered acquisition of DB earlier than KA. Instead, we examined a large sample of typically developing children recruited from five different and dispersed urban locations within Turkey spanning its European and Asian parts.

Method

Participants

Two-hundred and sixty children (125 girls) aged 34 to 80 months (M_{age} = 53.36 months, SD = 10.37) participated. They were chosen from preschools in five different Turkish cities: Istanbul, Bursa, Balıkesir, Tekirdağ and Muğla. These cities span geographical locales, are industrialized cities with higher Socio-economic Development Index scores and higher employment and education opportunities compared to other cities in Turkey (Albayrak, Karamustafa, Savaş, & Baki, 2015) and so are magnets for urban migration. They provide a rich basis to recruit children from families of varying SES levels and household compositions (e.g., family size) that might potentially influence ToM acquisition. The preschools that children were chosen from were similar in quality (majority being public preschools) and with enrollments from families of a wide range of socio-economic backgrounds. In that sense children in our sample can be considered as representing the full range of preschoolers in Turkey as much as possible.

The families were diverse demographically. For mothers, 9% were illiterate with no school experience, 11% had primary school education, 17% were high school graduates and 31% had a university degree. Father education was somewhat higher: 1% of fathers were illiterate, 12% had primary school education, 24% were high school graduates and 35% had university degrees. Comparable numbers of families were from low, middle and high income groups: household income of 32% of families was less than 2000 Turkish Lira, (TL; ~695 US$), 38% of families were earning between 2000 TL and 7000 TL (~2430 US$), and 29% of them had monthly income of more than 7000 TL.

One hundred and thirteen children in our sample (50%) had siblings, ranging from 0 to 3, with the modal number (42%) one. Older individuals at home (parents, relatives and siblings older than the focal child) who live permanently with the family varied more widely, from 1 to 9: 52% of children lived with 2 older individuals, 26% with 3, and 22% lived with 4 or more. Only 2% of children lived with a single individual (parent) at home.

Measures

      Demographic. Demographic information was obtained from mothers about parent education, monthly household income, siblings and other adults permanently living with the family (see Table 1). Education level of mothers and fathers was measured on 10-point Likert type scale, with '0' indicating illiteracy and '10' indicating graduate degree. Monthly household income was rated on 7-point scale ranging from 'below 630 TL' (~218 US$) to 'above 12000 TL' (~4166 US$). A composite SES measure averaged standardized scores for education of mothers and fathers and monthly household income.

Table 1

Demographic characteristics of children and their families (N = 260)

Variable	M	SD	Min	Max
Age of the child (in months)	53.36	10.37	34	80
Number of older siblings	.41	.62	0	3
Number of younger siblings	.14	.36	0	2
Number of adults	2.45	0.99	1	7
Mother education	6.64	2.90	1	10
Father education	6.62	2.74	1	10
Monthly household income	4.46	1.67	1	7
SES (*z* score)	.00	.81	-2.07	1.46

      Theory of Mind. We measured ToM via Wellman and Liu's scale (2004), translated into Turkish, consisting of five items testing mental state understanding: diverse desires (DD), diverse belief (DB), knowledge access (KA), false belief (FB) and hidden emotion (HE). Each item requires inference about subjective internal states, however, of varying nature and complexity. Table 2 outlines the scale's items.

All items had target questions and control questions that probe children's understanding of the task-skits. Children passed an item (0 = incorrect, 1 = correct) if they correctly answered the target and control question. Scoring adhered to the detailed procedures described in Peterson, Wellman, and Liu (2005) yielding scores of 0-5.

Table 2: *The Theory-of-Mind Scale Items*

Task	Brief Description
1. Diverse Desires (DD)	Child judges that two persons (the child vs. the doll) have different desires about the same object: e.g., one likes carrot the other does not.
2. Diverse Beliefs (DB)	Child judges that two persons have different beliefs about the same object, *when the child does not know which belief is true or false:* e.g. one thinks a ball is in the bushes and the other thinks it is in the garage.
3. Knowledge-Access (KA)	Child judges another person's ignorance about the contents of a container when child knows what is in the container: e.g., child knows the box hides a toy dog, but child judges another person (who has never seen inside) does not know what's there.
4. False Belief (FB)	Child judges another person's false belief about what is in a distinctive container when child knows what is in the container: e.g. child knows a crayon box, has pencils inside, but judge someone else who has never seen inside thinks it has crayons.
5. Hidden Emotion (HE)	Child judges that a person can feel one emotion but display a different emotion: e.g. character feels sad but can look happy on his face.

Procedure

Data collection was approved by a university Institutional Review Board. Written consent of the parents and the directors of childcare centers/kindergartens, and verbal assent of the children were obtained. Demographic information was provided by mothers. Individual ToM testsing for each child occurred in a separate and quiet room.

Results

ToM Scores

Table 3 shows both zero order correlations between demographic variables and total ToM scale score, and partial correlations controlling for age. As in prior research (e.g., Wellman, Fang, & Peterson, 2011; Wellman & Liu 2004), children's ToM scale scores increased with age, which supports the measurement validity of our translated scale.

A wide range of ages aids in assessing the validity of a ToM Scale, but then age needs to be taken into account. That was especially important in these data because age also correlated with other variables including number of siblings and SES. Before controlling for age, only number of younger siblings was significantly correlated with ToM score. With age controlled, ToM score did not significantly correlate with number of younger ($r = .12$, *ns*) or older siblings ($r = -.08$, *ns*) or SES ($r = .08$, *ns*), but was negatively associated with number of adults at home ($r=-.18$, $p=.008$), as shown in Table 3.

There was no overall age difference between girls ($M = 53.81$, $SD = 10.13$) and boys ($M = 52.94$, $SD = 10.61$), $t(258)=.67$, $p = .50$. However, there were gender differences in ToM scores, $t(258) = 2.48$, $p = .014$, with girls ($M = 2.86$, $SD = 1.15$) outperforming boys ($M = 2.50$, $SD = 1.15$).

Table 3

Zero order correlations and partial correlations after age is controlled (N = 260)

Variables	2	3	4	5	6
1. Age	.47***	.10	.21**	.12	-.33***
2. ToM score	-	-.01	.20**	-.10	-.09
3. Number of older siblings	-.06	-	-.19**	.12	-.12
4. Number of younger siblings	.12	-.22**	-	.18**	-.05
5. Number of adults	-.18**	.11	.16*	-	-.19**
6. SES	.08	-.10	.02	-.16*	-

Note: Zero-order correlations are presented above the diagonal, and partial correlations are presented below the diagonal.

*p < .05. ** p < .01. ***p < .001.

Table 4

Hierarchical regression analysis predicting ToM score from age, gender and number of adults (N = 223)

	Step 1			Step 2			Step3		
	B	*SE*	*β*	*B*	*SE*	*B*	*B*	*SE*	*β*
DV: ToM scale score									
Age	.05	.01	.48***	.05	.01	.47***	.05	.01	.49***
Gender				-.25	.13	-.11	-.24	.13	-.11
Number of adults							-.18	.07	-.15**
R^2		.23			.24			.27	
F for change in R^2		66.37***			3.36			7.06**	

Note. ***$p < .001$. **$p < .01$. *$p < .05$. Gender: girls were coded as 0; boys were coded as 1.

Predictors of ToM Score. To better examine the contribution of these variables to ToM in this cultural context, we carried out hierarchical regression analyses that allow estimation of the unique contribution of each variable to the progression of ToM scores. Because age, gender and number of adults at home were associated with ToM scale scores, they were entered into a three-step regression analysis to investigate their independent contributions to the ToM outcome as outlined in Table 4.

When age was introduced, as expected, the regression significantly predicted ToM scale performance ($R^2 = .23$, $F(1, 222) = 66.37$, $p < .001$). Gender, introduced second, did not predict ToM score when age was controlled ($R^2 = .24$, $F_{change}(1, 221) = 3.36$, $p = .07$). In the third step, number of adults at home further predicted ToM scores of children (total variance accounted for, $R^2 = .27$, $F_{change}(1, 220) = 7.06$, $p = .008$). As in the partial correlations, this relation was negative: fewer adults at home predicted higher ToM scale scores, see Table 4.

Table 5

Percentages of children passing each item in ToM scale (N = 260). Item Measurement Summary and Fit Statistics for the Five-Item Rasch Model.

ToM scale items	N	(%)	Measurement	Error	Infit	Outfit
Diverse Desire (DD)	214	82.3	0.72	0.20	-1.0	1.3
Knowledge Access (KA)	204	78.5	1.10	0.19	0.1	0.3
Diverse Belief (DB)	165	63.5	2.28	0.16	0.4	0.9
False Belief (FB)	63	24.2	5	0.19	-0.6	-0.1
Hidden Emotion (HE)	49	18.8	5.53	0.21	0.1	0.7

Note: N and % show the count and percentages of children passing each item in the ToM scale ($N = 260$). The five items are ordered from least difficult (highest percent correct and lowest measurement score) to most difficult. Measurement scores are presented in arbitrary units derived from the Rasch analysis and indicate item difficulty. As explained in the text, these scores were rescaled so that False Belief (arbitrarily considered as the anchor task of the five tasks) had an item difficulty measure score of 5.0 on the linear scale. Error is the standard

error for that difficulty measure. Infit and outfit are the standardized fit statistics for that item as explained in the text.

Acquisition Order

As shown in Table 5, we found that the Turkish data closely resemble the pattern found in prior work with Chinese and Iranian children: DD>KA>DB>FB>HE, rather than that found in children from western, individualist countries: DD>DB>KA>FB>HE. A Guttman scalogram analysis of these data (according to the procedures specified in Green, 1956) yielded a Coefficient of Reproducibility of .915. 1.00 would be perfect scalability, but values above .90 are considered significant.

Guttman scaling is deterministic (only patterns fitting the exact step functions for increasing difficulty are scale-appropriate) and its coefficients are inflated in several circumstances. Item-response theory (Bock, 1997) approaches allow more quantitative analyses including of less strict scale progressions. The most straightforward item-response-theory model, the Rasch measurement model, is a one-parameter logistic model for dichotomous data (Rasch, 1960; Wright & Masters, 1982), which is often regarded as a probabilistic model for Guttman scaling (Andrich, 1985; Wilson, 1989). Table 5 outlines our Rasch analysis of these data.

Order of item difficulty was identical in the Rasch model as in the Guttman scalogram, the Rasch model additionally provides a metric of relative distances between items. For simplicity, the item difficulties in Table 5 were re-scaled with False Belief 's (arbitrarily considered the anchor task of the five tasks) difficulty measure receiving a 5.0 on the linear scale. The five items are appropriately spread (all successive items differ by more than .50 units) and the largest spreads (in score units) are for KA>DB and DB>FB.

Table 5 also shows Rasch model fit statistics that evaluate the extent to which a person with a given ability level will likely respond positively to less difficult items and negatively to

more difficult items. Infit is more sensitive to unexpected responses near an item's measurement level; outfit is more sensitive to unexpected responses far from that item's level. Standardized infit and outfit statistics for individual items have an expected value of 0. Positive values greater than 2.0 indicate greater unpredictable variation than expected for a consistent one-parameter scale. Negative values suggest the scale is more deterministic than expected because Rasch models are probabilistic, thus negative values indicate the data approximate a more deterministic Guttman scale (Bond & Fox, 2001). None of the values for these data approach 2.0; three of the 10 are negative.

Variability in acquisition order. As clear in Table 5, children in our sample found KA questions easier than DB questions (KA>DB), and indeed significantly more children passed the KA item compared to the DB item, $\chi2$ $(1, N = 260) = 13.25, p = .0003$). This overall "collectivist" pattern of ToM acquisition was confirmed in the Rasch analysis which additionally indicated that the spread from KA to DB was sizable.

Nonetheless, as outlined in the introduction, children in Turkey as a group could potentially include those representing both collectivist and individualist influences and understandings. We explored this possibility in several further analyses that were necessarily exploratory because we did not administer to parents an instrument to directly assess their collectivist or individualist values and practices.

First, we tallied the number of children who fit the majority, "collectivist" pattern perfectly, according to a Guttman scalogram; 161 of 260 (62%) fit this pattern. This contrasts with other studies where 75-85% of US, Australian and German children often fit the "individualist" pattern perfectly (Kristen et al. 2006; Peterson et al. 2005; Wellman & Liu 2004). It contrasts as well with several studies where about 75% of Iranian (Shahaeian et al., 2011) and Chinese (Wellman et al., 2011; although see e.g., Wellman et al., 2006 where 62% of Beijing preschoolers fit the collectivist scale perfectly). After removing those 161 children,

then 21 children (8% of the total sample) fit the "individualist" profile perfectly. This was the second most frequent pattern because of the still remaining children at most 15 (6%) fit any other of the remaining 25 possible patterns perfectly.

To follow-up further, we focused on children and items (KA and DB) that distinguish the "collectivist" and "individualist" patterns directly. Whereas 74 children evidenced a KA>DB pattern, 35 evidenced DB>KA (with the remaining children either failing both or passing both tasks). Using this two-item criteria alone --passing KA and not DB or vice versa- -74 (68%) showed the "collectivist" pattern (KA but not DB) but a substantial minority 35 (32%) showed the individualist pattern. Thus, these data further suggest heterogeneity whereby Turkish children as a group may represent a mix of collectivist and individualist reasoning about people.

These two sub-groups were also sizable enough for some additional analyses. When compared in terms of demographic characteristics, the two groups did not differ in gender, χ^2 $(1, N = 109) = 0.102, p = .75$, but did differ in age. Children showing the KA>DB ToM acquisition pattern were on average older ($M = 53.43, SD = 9.30$) than those showing DB>KA ($M = 46.40, SD = 10.43$), $F (1, 107) = 12.56, p = .00006, \eta^2 = .11$. When controlling for age, the KA>DB group had fewer ($M = 2.45$) adults at home, $F (1, 88) = 4.28, p = .04, \eta^2 = .05$, than DB>KA group ($M = 2.77$). However, there was no difference in number of older siblings, $F (1, 82) = 1.83, p = .18$ or number of younger siblings, $F (1, 82) = 0.21, p = .64$ between the groups. Lastly, SES of families did not differ in these two groups, $F (1, 88) = 0.85, p = .36$, when controlling for age.

The age differences complicate these comparisons; moreover, as shown in Table 3, when age is controlled, SES and number of adults at home are negatively correlated. To estimate the independent contributions of age and number of adults at home to ToM acquisition order, we used logistic regression (the DV reflecting either KA>DB or DB>KA

response). Since gender, number of older and younger siblings and SES were not significantly different in the two groups, they were not further analyzed in this regression. The logistic regression model was significant, meaning that the set of predictors entered reliably distinguished a KA>DB acquisition pattern from a DB>KA pattern, $\chi2$ (2, $N = 91$) = 15.62, p =.0004 and explained 23% of the variance in ToM acquisition order as indicated by Nagelkerke R^2. The Wald criterion demonstrated that age was negatively related with DB>KA acquisition order, p =.046. But more focally, with age controlled in this analysis, the number of adults at home was significantly, positively related with DB>KA acquisition order as its fit with the Wald criterion was, $p < .05$. The number of adults at home increased the odds of being in DB > KA group 1.59 times, for each additional adult at home, Exp (B) = 1.59, 95% $CI = [1.00, 2.54]$.

Discussion

Acquisition of ToM, including various abilities from understanding desires, belief and hidden emotions, should be assessed within the broad cultural framework in which it develops (Lillard, 1998). That framework can prioritize or facilitate some ToM aspects before others depending on the functional value of those aspects in that cultural context (Callaghan et al., 2005; Oh & Lewis, 2008). Indeed, when assessment of ToM moved from the use of false-belief tests to include progressions of various mental state understandings (such as diverse beliefs, knowledge access and hidden emotions), the role of culture emerged more clearly because sequential progressions of ToM acquisition differed in different cultural contexts (Shahaeinan et al., 2011; Wellman et al., 2006), even when the timing of ToM progress was essentially similar.

Our study provides further support for cultural diversity in sequential acquisition of ToM. Moreover, our findings are more nuanced than others in this area, because we consider "culture" not only as indexed by a rough overall national categorization, but also in terms of family constellations and SES. And we sampled children from five widely spread and

different Turkish cities. We showed that, overall, Turkish children learn ToM in ways similar to children in other collectivist cultures such as China (Wellman et al., 2011) and Iran (Shahaeian, et al., 2014) by achieving KA earlier than DB. Equally possibly, these Turkish data probably also reflect SES as a potent "cultural" factor.

As characteristic of a collectivist orientation, Turkish children's sequence of ToM acquisition reflected the possible higher importance placed on shared knowledge and mutual understanding of facts as documented in prior research on Turkish parental beliefs (Sen et al., 2014). As stated in our introduction, research also reveals that parental emphasis on obedience over self-direction in socializing children is related to economic conditions where adults are required to conform to authority figures. In either case, what someone knows and does not know becomes important since access to knowledge about shared norms or lack thereof would determine the level of conformity to the group. In contrast, expression of diverse beliefs is not encouraged and even deemed detrimental to harmonious group relations (Markus & Kitayama, 1991). Thus, sequential development of ToM arguably mirrors the relative importance and function of knowledge access over diverse beliefs in collectivist societies and in families with lower social class (although for an exception see Kuntoro et al., 2013). This may partly explain the pattern of ToM performance in our Turkish children with their early achievement of KA before DB.

Clearly, then, one possible explanation for our data characterizing the progression of ToM insights in Turkish children concerns probable patterns of family practices, values and discourse. In particular, these family practices, values and discourse emphasize consensual knowledge acquisition in collectivist and lower social class contexts, as the basis of learning social rules and achieving conformity. The collectivist-individualist distinction is the same general argument advanced for related results from China and Iran (Shaheian et al., 2014; Wellman et al., 2011; Slaughter & Perez-Zapata, 2014). No studies, including our own,

however, have yet studied parent-child discourse in the home or parental socialization values directly.

Accepting this general picture of Turkish ToM acquisition, we also conducted exploratory analyses of the children's ToM scale response differences which could possibly manifest varying parenting values and practices as well as the position of Turkey as a blend of individualist or collectivist values (Göregenli, 1995). These data suggest that, although collectivist cultural beliefs about people and knowledge arguably dominate, both individualist and collectivist response patterns may coexist in urban Turkish children. That children's beliefs can represent a heterogeneous mix of various reasoning styles, within national groups (or even within individual children), has become more prevalent in the literature (see e.g., Legare, Evans, Rosesengren & Harris, 2012). Our findings provide initial evidence for such a claim for ToM reasoning, albeit via admittedly exploratory analyses.

The only other study that we know of that also explored the heterogeneity of response patterns in a single sample is that of Kuntoro et al. (2013). Similar to our approach, Kuntoro et al. identified 27 urban Indonesian children (out of a total sample of 101) that evidenced either KA but not DB or DB but not KA responses. For these Indonesian children 26 of 27 children showed the individualist pattern, providing no evidence for heterogeneity of differing cultural patterns in their sample. Of course, that study yielded a considerably smaller sample (only 27 contributing to their heterogeneity analysis) and a much more homogeneous within-country sample (taken from one single city in a large multi-island society).

Relatedly, our exploratory results mean that, in contrast to other studies (where one single pattern or another, was apparent for more than 75% of the children), we could examine predictors of these differing sequences of ToM acquisition. Indeed, we found that number of others at home, and more specifically the number of adults, help predict shifts in ToM acquisition characteristic of either collectivist or individualist patterns. Specifically, children

living in larger families composed of extended family members demonstrated understanding of DB earlier than KA. Arguably, this could be related to exposure to multiple ideas and viewpoints in larger households. The positive link between family size and ToM has been evidenced before (Jenkins & Astington, 1996; McAlister & Peterson, 2013; Ruffman et al., 1998), although the major focus of that prior research was the number of older and younger siblings in households rather than presence of relatives and grandparents (Hughes & Ensor, 2005). Our results were most similar, therefore, to those of Lewis et al. (1996) who argued that extended family influences increase children's opportunity to encounter various beliefs and ideas. But in contrast to those results, we focused more informatively on differing progressions of ToM understanding, rather than false belief timing alone. At the very least, our data argue that total number of adults in the home is an important factor to consider and especially in more traditional societies where multiple adults (parents, aunts, uncles, grandparents) often live together. The presence of these adults can change the developmental progression of sequential ToM acquisition especially if this acquisition takes places in a cultural atmosphere that hosts both collectivist and individualist values.

Furthermore, because Turkey is in the midst of societal transformations, large differences in beliefs and preferences can be seen among individuals of different ages living under the same roof, with young generations having more liberal and secular ideals and older generations having more conservative values. A generation gap can be a common feature of every society regardless of individualist or collectivist orientation (Realo, Allik, & Vadi, 1997), but in Turkish households these differences in ideas are openly expressed and sometimes create conflictual relations (Yavuz & Özmete, 2012). In prior research (essentially using FB alone), conflict in family relations have been found to foster ToM understanding, arguably because they make the presence of multiple different views visible (Dunn, et al., 1991; Dunn & Slomkowski, 1992; Foote & Holmes-Lonergan, 2003). Therefore, children's

observations of and interactions with family members, who differ from one another in their beliefs and behaviors, may lead to achievement of DB earlier than KA. Living with multiple adults at home might have scaffolded children's insight about diverse beliefs and created a learning atmosphere which further reinforced experiences gained in preschool. Given that children showing early understanding of DB were younger than those showing early understanding of KA, family interactions might have played a further beneficial role and bolstered visibility of diverse opinions accentuated in preschool education. This sort of reasoning may well explain our findings that living in a large household could accelerate mental-state understanding in the younger age of children showing an individualist acquisition pattern (DB>KA) compared to showing a collectivist acquisition pattern (KA>DB). Furthermore, in their study with Turkish children living in child-rearing institutions, Etel and Yagmurlu (2015) found earlier understanding of DB than KA, and argued that children's peer interactions in the context of limited sources supported their reasoning about diverse beliefs. Peer play in an impoverished environment might have increased children's insight into mentalistic causes drive behavior. Thus, both their findings and ours provide evidence for the role of social interactions in triggering early understadning of diversity in belief states.

It is also important to highlight that while number of adults at home related to shifts in ToM acquisition order--probably by making the presence of multiple views more apparent and facilitating insights about diverse beliefs--it was linked with lower total ToM scores. This result might reflect the overall quality of relations and emotional climate within households. Although multiple viewpoints can become visible in multi-generational, crowded households, by hypothesis expressing them openly can create stress, tension and negative affect and so increase emotional tension and conflict. Conflictual emotional relations might negatively influence the general mental state understanding skills of children. In support of this hypothesis, studies consistently show that children exhibit lower social (Evans et al., 2005)

and cognitive performance (Petrill, Pike, Price, & Plomin, 2004) in families where expression

of negative emotions and conflicts are commonly seen. Mental state understanding might

similarly be subject to the negative impact of such a family atmosphere.

Despite the strengths of our study, such as its large diverse sample and its

consideration of culture as based on SES and family constellation, our research is not without

its limitations. As noted earlier, we did not directly measure families' endorsement of

individualist versus collectivist values nor the associated parenting practices which could

mediate different ToM acquisition patterns within the same cultural atmosphere. These are

both important projects for future research in order to better grasp the relation between culture

and progression of ToM.

Moreover, our study did not include a measure of children's verbal skills. Children's

verbal abilities have often been found to be linked with their ToM performance (Dunn et al.,

1991; Taumoepeau & Ruffman, 2006). Those with higher language skills tend to better

understand the subjective mental states of others perhaps because words, especially mental

state terms, highlight the connection between abstract mental states and observable behavior,

thereby facilitating children's insight about others' minds. Indeed, multiple aspects of

children's language skills impact their theory-of-mind performance (as reviewed in the meta-

analysis of Milligan, Astington, & Dack 2007, with regard to false belief performance).

Future studies investigating the relation between theory of mind sequences and cultural

differences would do well to include measures of children's language skills. Differences in

verbal skills might also help explain the girls' higher performance that we observed in their

total ToM scores in the current study.

In sum, a handful of previous studies examining cultural influences on ToM

understanding argued that cultural norms associated with individualism and collectivism

(independence vs conformity) can determine parents' socialization, interaction and

conversation styles with their children and thus give rise to specific mental state acquisition sequences. Our data extend these prior results by adding a different cultural context--Turkey-- to this small prior dataset; by examining in one study a large sample (264 children) from five different cities rather than smaller samples collected in one locale, and by including examination of crucial socio-cultural factors such as SES and family configuration beyond country of residence alone. Moreover, our analyses suggested that in cultures within countries like Turkey, where elements of individualism and collectivism are blended, children can come to different orders of acquisition in accord with recent arguments that cultural development often represents a coexistence of different reasoning styles. Our findings thus extend current understandings and set the stage for more informative future research.

CHAPTER 3

THE ROLE OF THEORY OF MIND, EMOTION KNOWLEDGE AND EMPATHY IN PRESCHOOLERS' DISRUPTIVE BEHAVIOR

Abstract

Research examining disruptive behaviors in clinical groups of preschool and school-aged children has consistently revealed significant difficulties in their emotion knowledge and empathy but intact performance in their theory-of-mind (ToM). However, it is largely not known if these difficulties in emotion knowledge and empathy as opposed to ToM are specific to extreme forms of disruption in clinical groups or rather represent broad deficiencies related to disruptive behaviors in general, including the milder levels exhibited by typically developing children. Milder disruptive behaviors (e.g., whining, arguing, rule-breaking and fighting) in peer contexts might relate to normative variations in socio-cognitive and emotional skills like ToM, emotion knowledge and empathy. To illuminate whether the same pattern of relations observed in clinical samples would arise in typical development, this study aims to examine the role of ToM, emotion knowledge and empathy in typically developing preschoolers' disruptive behaviors. We used individual tasks to measure 116 typically developing Turkish preschoolers' ToM, emotion knowledge (understanding anger and sadness) and empathy for pain, and received mothers' reports about children's levels of disruptive behavior in peer contexts. Path analysis showed that among these skills, it was only empathy which predicted disruptive behaviors significantly (β= -.25, p <.05). Understanding sadness predicted higher empathy (β= .18, p <.05) and higher empathy predicted lower disruptive behaviors, but the mediation of empathy in the link between understanding sadness and disruptive behavior was not significant (β= -.05, p >.05, 90% CI= -.106, .001). Overall, our results indicate that empathizing with others' emotions is more important than understanding their mental states and emotions for lower disruptive behaviors.

Keywords: disruptive behaviors, empathy, theory of mind, emotion knowledge.

Introduction

Disruptive behaviors refer to actions that threaten and disturb harmonious social relationships through displays of anger, aggression, and opposition, such as hitting, yelling, whining, arguing and rule-breaking (Campbell, 1995). These behaviors might range from milder forms as seen in daily turbulent behaviors to severe levels as diagnosed in clinical groups (e.g., oppositional defiant disorder and conduct problems). While moderate disruptive behaviors restricted to preschool ages can function as ways to assert autonomy in peer and family contexts and gradually decline due to advances in language and self-regulation skills (Cote, Vaillancourt, Barker, Nagin & Tremblay, 2007), stability in frequency of these behaviors is linked with future diagnoses of oppositional defiant disorder and conduct disorder (Wakschlag, Tolan, & Leventhal, 2010). In their study, Campbell et al. (2006) showed that moderate aggression restricted to preschool years do not appear to disturb social and emotional functioning later in school years and adolescence; however, both high- and low-levels of aggression that show continuity from preschool to later ages were associated with poor social adjustment, such as risk-taking and externalizing problems in the future. This finding shows that not the level of disruption but its continuation over time is linked with negative social adjustment. Therefore, delineating the early socio-cognitive and emotional difficulties (e.g., ToM, emotion knowledge and empathy) that may contribute to stability in preschoolers' disruptive behaviors can be of importance for prevention of future negative outcomes.

In school-aged children with conduct problems, studies have consistently identified significant deficits in emotion knowledge and empathy but intact performance in theory-of-mind (Anastassiou-Hadjicharalambous & Warden, 2008; Jones, Happé, Gilbert, Burnett & Viding, 2010). The same patterns of performance in these skills were also found in a handful of studies that sampled preschool children with oppositional defiant problems (Dinolfo &

Malti, 2013; O'Kearney et al., 2017) which is the precursor of conduct problems in school ages (Wakschlag et al., 2010). These findings have given rise to the idea that deficits in emotion processing (emotion knowledge and empathy) rather than deficits in mental state understanding (theory of mind) underlie high levels of aggressive and non-compliant tendencies in clinical samples of children. However, it is largely not known if these deficits in emotion knowledge and empathy as opposed to theory of mind are specific to the high levels of disruptive behaviors seen in clinical samples of preschool and school-aged children, or if they represent broad difficulties characteristic of disruptive behaviors in general, including the mild aggressive, oppositional and non-compliant behaviors of typically developing preschoolers. Given that preschoolers in community samples display ongoing progression in theory of mind, emotion knowledge and empathy (Eisenberg, Spinrad, & Sadovsky, 2006), normative variations in performance of each of these three skills could be associated with their mild aggressive, rule-breaking and oppositional behaviors (Devine & Hughes, 2013).

Although earlier works have emphasized the role of these skills in the lower levels of disruptive behaviors of preschoolers in community samples (Eisenberg, Eggum, & Di Giunta, 2010), they did not specifically focus on theory of mind, emotion knowledge and empathy within a single study, and hence did not delineate which skill is the most critical. While findings on clinical samples of school-aged children (along with a few findings on preschoolers with oppositional defiant problems, see de la Osa & Granero, 2016; Dino & Malti, 2013; O'Kearney et al., 2017) demonstrate the unique importance of each of these skills for disruptive actions (Frick, Ray, Thornton, & Kahn, 2014), these findings do not suffice in giving us a comprehensive understanding of the socio-cognitive and emotional skills associated with early disruptive behaviors in preschoolers. Firstly, the causes (antecedents) of disruption for typical vs. clinical samples may not be the same. From the perspective of developmental psychopathology, a thorough grasp of the nature of social

behaviors like disruption, and the factors associated with these behaviors, necessitate using both typically developing and clinical samples. Thus, findings from one inform the other regarding the phenomena under study (Cicchetti, 1990). Secondly, socio-cognitive and emotional skills demonstrate a rapid development during the preschool period and improvement in one facilitates growth in another (Eisenberg et al., 2010). Therefore, social behaviors could be closely tied to the newly emerging and interrelated development of all of these skills during the preschool period. By referring to the theoretical accounts and empirical findings, below we explain in detail how theory of mind, emotion knowledge and empathy could be linked with disruptive behaviors of typically-developing preschoolers.

Theory of mind (ToM), the ability to understand the internal mental states of others, including their beliefs and intentions (Wellman & Liu, 2004), is one of the socio-cognitive correlates of children's social interactions. In a review of seventy-six studies, a meta-analysis (Imuta, Henry, Slaughter, Selcuk, & Ruffman, 2016) showed that preschool and elementary school children's high ToM performance is positively correlated with their prosocial behaviors (e.g., helping, comforting and sharing). Although the magnitude of the association was rather small, as is typical for meta-analytic findings on ToM (see Slaughter, Imuta, Peterson, & Henry, 2015), the review of the existing studies was able to successfully point to a significant correlation between prosocial behaviors and ToM. In contrast, the evidence for the relations between ToM and disruptive behaviors appears more complicated (Sutton, Smith, & Swettenham, 1999) than the link between ToM and prosocial behavior. Focusing on the aggression of bullies who display profound disruption in peer contexts, Sutton et al. (1999) highlighted the necessity of considering the types of children's aggressive actions (reactive vs. proactive). They argued that reactive aggression stems from misunderstanding others' mental states, while proactive aggression arises from higher mental state understanding skills that enable children to predict the possible ways of hurting others to

obtain a desirable outcome. After this conceptualization, a majority of the studies focused on

the association between disruptive behaviors and ToM in samples where children's aggressive

behaviors and oppositions could be differentiated as proactive vs. reactive. A positive relation

was reported between ToM and aggressive behavior of 8–11 year-old ring-leader bullies who

used proactive aggression and opposition to achieve dominance in peer groups; however, a

negative association was found between ToM and aggression in bully-victims of the same age

who impulsively retaliate others' provocations (Gasser & Keller, 2009; Gini, 2006). Likewise,

among school-aged children with conduct problems, those who exhibited reactive aggression,

opposition and rule-breaking showed poor ToM scores (Frick et al., 2014), while a subgroup

of these children (e.g., children with callous-unemotional traits-CU) who displayed proactive

aggression and severe rule-breaking showed intact ToM performance (Jones et al., 2010;

O'Nions et al., 2014).

It is important to note that these samples of school-aged children (e.g., bullies and

children with CU) evidenced severe levels of aggression, opposition and rule-breaking in

multiple situations, making it easier to categorize their behaviors as proactive vs. reactive.

However, in the daily disruptive behaviors of typically developing preschoolers, both reactive

and proactive behaviors are observed in different occasions without one type being clearly

dominant over the other (Wakschlag et al., 2010). Especially in earlier periods of

development, disruptive behaviors include impulsive as well as goal-oriented aggressive acts

of opposition, fighting, defiance and rule-breaking (Hughes, White, Sharpen, & Dunn, 2000),

and high inter-correlations are observed between these impulsive and goal-oriented actions in

community samples ($r = .68$; see Card & Little, 2006 for a meta-analysis). Among the handful

of studies that examined ToM in relation to both reactive and proactive behaviors, some

reported a negative association between ToM and disruptive behaviors, and pointed towards a

deficiency in preschoolers' ToM as the cause of their disruptive actions (Capage & Watson,

2001; Shakoor et al., 2012). Yet, some others found null associations (Hughes et al., 2000; Monks, Smith, & Swettenham, 2005), arguing that ToM is only a cold socio-cognitive skill which can be used either in the service of disruptive or prosocial actions, depending on children's motivations (Björkqvist, Österman, & Kaukiainen, 2000). Moreover, very few studies examined preschoolers' general rule-breaking and opposition behaviors along with their aggressive actions, and their findings failed to yield a direct, significant association between the frequency of these varied disruptive actions and the ToM skills of preschool children (de la Osa & Granero, 2016; Dinolfo & Malti, 2013). Given this inconsistency in the literature, the link of children's disruptive behaviors, such as aggression, rule-breaking, noncompliance and opposition, with their ToM skills should be further investigated within their entirety.

Besides ToM, another critical skill for harmonious social behaviors is emotion knowledge. It describes the ability to recognize emotions in facial expressions and social contexts and has an important role in shaping children's social behaviors (Denham et al., 2002). Starting from the preschool period, identifying others' emotions based on their facial expressions and situational cues enables children to regulate their own emotions and helps them refrain from inappropriate emotional displays. Thus, emotion knowledge gives rise to proper activation, regulation and utilization of emotions in social exchanges (Mostow et al., 2002). A meta-analysis reviewing thirty-four studies revealed a significant negative association between emotion knowledge and disruptive behaviors in both clinical and community samples of preschoolers (Trentacosta & Fine, 2010). Acknowledging the importance of emotion knowledge, a majority of the studies (see Arsenio, Cooperman, & Lover, 2000; Cooley & Triemer, 2002; Denham et al., 2002; Izard et al., 2008) assessed preschoolers' understandings of a variety of emotions (e.g., happiness, fear, sadness, anger) and used aggregate emotion knowledge scores in their analyses. However, with respect to

socially harmonious behaviors, theoretical accounts have predominantly emphasized the significance of recognizing negative emotions (Blair, 1995; Schultz, Izard, & Bear, 2004). From the perspective of social information processing theory (Arsenio & Lemerise, 2001), young children's accurate recognition of others' negative emotions, such as anger and sadness, is very critical. Misreading others' anger and sadness in social encounters can lead to attributions of hostile intent to them and result in aggression, opposition and rule-breaking. Lending support to these arguments, Blair and Coles (2000) reported poorer emotion recognition performance in response to angry and sad expressions compared to happy ones in adolescents with severe disruptive behaviors (Blair & Coles, 2000). Similar difficulties in recognition of anger and sadness were found by Hughes, Dunn and White (1998) in a community sample of "hard-to-manage" preschoolers who displayed rule violations, opposition and aggressive actions.

Nevertheless, negative emotions can vary within themselves and can differ in their relation to disruptive behaviors. The functionalist perspective of emotions (Barrett, 1998) argues that emotions convey certain meanings from emoting persons to others in the environment and regulate social interactions. Each emotion differs in the implicit meaning it relays in a social context and motivates observers to act in ways that are in line with that emotion's underlying meaning. With their increased understanding of emotions, preschoolers become sensitive to the underlying meanings conveyed through others' displays of facial emotions (Denham, 2000). For instance, expressions of sadness communicate loss, defeat and helplessness. People expressing sadness appear as low in self-confidence, helpless and challenged in their interactions with the environment (Smith & Lazarus, 1993). Due to these underlying meanings of sadness, recognition of sad feelings in others triggers avoidance from these helpless individuals (Carver & Harmon-Jones, 2009) and facilitates self-regulation, which can play role in decreasing disruptive tendencies toward them. Research showed that

preschool children with increased understandings of sad expressions were better at regulating their impulses and displayed lower externalizing symptoms (Martin, Boekamp, McConville, & Wheeler, 2010; Martin, et al., 2015).

In contrast to sadness, anger communicates assertiveness and a sense of being blocked from reaching a desired goal (Witherington & Crichton, 2007). People with angry expressions are perceived as competent, persistent, and motivated to get what they desire (Shields, 2005, Tiedens, 2001). These assertive qualities are likely to make them seem insisting and also partly irritable in their social exchanges. Indeed, preschool children's misreadings of others' anger and causes of anger are likely to increase their troublesome behaviors in social interactions (Fine et al., 2004; Garner, Jones, & Miner, 1994; O'Kearney et al., 2017). Inaccurate understandings of others' anger and anger-eliciting situations can undermine children's abilities to successfully regulate themselves and lead to disharmonious behaviors like opposition, aggression and rule-breaking. As such, although inaccurate understandings of both sadness and anger can negatively relate to disruptive tendencies, the differences in the underlying meanings communicated through anger (assertiveness and competence) and sadness (helplessness and vulnerability) may give rise to differential associations with disruptive behaviors, which necessitates their separate examination.

In addition to emotion knowledge (understanding sadness and anger), disruptive behaviors in young children are widely investigated in relation to empathy, too, which is defined as an affective response stemming from comprehension of another's emotional states in ways similar to how the other person is feeling or expected to feel (Eisenberg, 2000). As a combination of affective sharing and empathic concern, empathy occurs through perception-action coupling, whereby perception of others' actions and feelings automatically activates representation of the same actions and feelings in the self, and hence, leads to shared representations between the perceiver and the actor (Decety & Jackson, 2004). Due to these

shared representations that match the emotions of the perceiver with that of the actor, empathy is conceptually involved in inhibition of disruptive tendencies such as aggression, rule-breaking and oppositional behaviors (Blair, 1995; Björkqvist et al., 2000). It also forms the basis of development of conscience and rule-compatible conduct starting from preschool ages (Aksan & Kochanska, 2005). Those children who are competent at empathizing with the feelings of others tend to display frequent helping and comforting behaviors, and are seen as adept in their social interactions (Eisenberg, Spinrad, & Knofo-Noam, 2015). Indeed, many studies revealed a significant negative relation between young children's empathy and disruptive behaviors, including physical and verbal aggression, rule-breaking, opposition and bullying (Lovett & Sheffield, 2007; Miller & Eisenberg, 1988; van Noorden, Haselager, Cillessen, & Bukowski, 2015).

Yet, the strong negative association between empathy and disruptive behavior was reported predominantly in school-aged kids (8-11-year-olds) and adolescents (11-18-year-olds) (Lovett & Sheffield, 2007). Studies with preschoolers yielded inconsistent results, with either positive or negative correlations between empathy and disruptive behaviors (see Eisenberg et al., 2010 for a review). One likely reason for these inconsistent findings may be related to preschoolers' lower abilities in distinguishing others' emotional states from their own emotional states in empathy-eliciting experimental situations (Decety & Meyer, 2008). Empathy may relate to lower disruptive behaviors and higher prosocial actions only when children can successfully make self-other differentiations in emotion-eliciting situations and regulate their own emotional arousal in these situations for the benefit of others (Eisenberg & Eggum, 2009). Recently emerging self-other differentiation and emotion regulation skills in preschoolers can blur the role of empathy in the disruptive behaviors of these children. Additionally, another source of inconsistency in the results might be related to the utilization of diverse empathy measures. Most of the studies with preschool children assessed empathy

in response to children's observations of a wide range of emotions, including happiness, sadness, distress and pain (Gill & Calkins, 2003; Strayer & Roberts, 2004). But, the degree to which empathy was elicited from all of these diverse emotions might not be equal across studies. In other words, not all emotions could uniformly give rise to an equal degree of empathy response in preschoolers. Although empathy by definition comprises emotional responses given to all affective states, from among them, observation of pain might be distinct in its capacity to trigger affective sharing (Lamm, Decety, & Singer, 2011). This is because children are especially sensitive and responsive to others' pain and distress starting from the first year of life, as indicated in the emotion contagion (Eisenberg et al., 2006), and are evolutionally motived to alleviate this pain and distress with comforting behavior (de Waal, 2008). Supporting this evolutionarily favored sensitivity to others' pain, it was found that observation of pain activates similar brain areas (e.g., anterior insula cortices and anterior cingulate) as having a first-hand experience of pain both in adults (Jackson, Meltzoff, & Decety, 2005) and young children (Decety, Michalska, & Akitsuki, 2008), and that children's empathy for others' pain is linked with the areas of the brain involved in social interaction and moral behavior (e.g., the temporo-parietal junction, the paracingulate, orbital medial frontal cortices). As evidence of the critical role of empathy for others' pain in lower disruptive behaviors, school-aged children (Lockwood et al., 2013) and youth (Marsh et al., 2013) with conduct problems, and preschool children with oppositional defiant symptoms (O'Kearney et al., 2017), were found to have difficulty in empathizing with others' pain. Low levels of empathy for others' pain and distress is thought to underlie these children's severe disruptive behaviors (Decety et al., 2008). All of these might indicate that when children can regulate their own distress and differentiate it from the distress of others, empathizing with others' pain can play a substantial negative role in preschoolers' disruptive behaviors.

Although ToM, emotion knowledge and empathy develop in an interrelated fashion at preschool ages (Eisenberg et al., 2006), fine distinctions appear between these skills at the conceptual level (Decety & Meyer, 2008; Eisenberg et al., 2010). Both ToM and empathy rely on perspective taking; however, ToM is mostly conceptualized with respect to understanding unobservable mental states of others, such as their beliefs and intentions, and as such it requires cognitive perspective taking. In contrast, empathy refers to emotional resonance where other peoples' affective states are comprehended and shared, which requires affective perspective taking (Decety & Jackson, 2004). This conceptual distinction between ToM and empathy is most notably seen in school-aged children with conduct problems, especially in those with CU traits (Frick et al., 2014; Jones et al., 2010), and in preschool children with oppositional defiant disorder (de la Osa et al., 2016; Dinolfo & Malti, 2013). Both of these groups display normative performance in ToM tasks but show reduced levels of empathy. In typically developing populations, these skills are interrelated, though it is still important to see which one is more critical for disruptive actions.

Emotion knowledge, on the other hand, is postulated as the initial step and core component of empathy (Eisenberg, 2000). Behavioral evidence indicates that although emotion knowledge is linked with ToM performance of preschool children (Doan & Wang, 2010; Seidenfeld, Johnson, Cavadel, & Izard, 2014), its association with empathy is stronger (Eisenberg et al., 2006). Therefore, understanding emotions of others can facilitate empathic responding to others and may indirectly help inhibition of disruptive tendencies through affective sharing (Camodeca, Caravita, & Coppola, 2015; Garner, 2003). Given that sadness communicates helplessness and vulnerability (Smith & Lazarus, 1993), understanding of others' sadness can elicit empathetic and prosocial responses. Indeed, research shows that understanding others' sadness is likely to lead individuals to empathize with their helpless and painful positions (Harrison, Wilson, & Critchley, 2007), and that people tend to use their sad

expressions to evoke others' empathy and receive their assistance (Hackenbracht & Tamir, 2010). Also, parents' emotion socialization practices that focus on talking about causes and consequences of others' sadness help preschool children develop an increased understanding of sadness and facilitate their empathy skills (Eisenberg, Cumberland, & Spinrad, 1998, Garner, 2003). The sad expressions of others triggered empathetic responses (e.g., concern) in young children once they understood through elaborate and reflective parent-child talk why and how people feel sad. Relatedly, in his violence inhibition mechanism, Blair (1995) argued that humans are evolutionarily sensitive to others' sadness and respond to it by advancing their empathy and inhibiting their aggression. Difficulty in comprehending others' sadness was found to underlie poor empathy performance of school-aged children with disruptive behavior problems (Blair & Coles, 2000), although their empathy responses to positive emotions (e.g., happiness) were not impaired (de Wied, Goudena, & Matthys, 2005). Unlike sadness, less is known about the link between understanding of anger and empathy in children. Since anger signals assertiveness and creates an impression in the observer that the person is capable of reaching his or her goals (Shields, 2005, Tiedens, 2001), empathetic feelings might not readily emerge in response to recognition of anger. However, it might be also possible, as Denham (2007) suggested, that accurate identification of anger in peer contexts could relate to reconciliatory behaviors that promote mutual understanding and reduce disruptive actions. Research showed that, especially in the presence of sophisticated parent-child emotion talk, preschoolers can develop insight about causes and consequences of anger, which in turn promote their self-regulation skills toward an angry person and decrease their disharmonious acts in peer contexts (Cunningham et al., 2009; Garner, Dunsmore, & Southam-Gerrow, 2008). Given these differences, examining children's understandings of anger and sadness could be important to better understand the association between empathy and their disruptive actions.

The present study

Although different studies have addressed children's ToM, emotion knowledge and empathy skills in relation to disruptive behaviors, only those conducted with school-aged (Jones et al., 2010) and preschool children in clinical samples (O'Kearney et al., 2017) have examined them together in one study and identified significant deficits in empathy and emotion knowledge as correlates of disruptive behaviors. Yet, unlike clinically high levels of disruptive problems, normative variations in performance of ToM, emotion knowledge and empathy can all be important for mild levels of daily disruptive behaviors in typically developing preschoolers (Devine & Hughes, 2013). In this study, we investigated the unique relation of ToM, emotion knowledge and empathy with preschoolers' daily disruptive behaviors (e.g., aggression, whining, crying, demanding to be in charge and breaking the rules) in peer contexts. Since previous studies showed inconsistent results (negative or null associations) concerning the relation between ToM and disruptive behaviors, we explored the same link when children's emotion knowledge and empathy skills were controlled. With respect to emotion knowledge, we evaluated understandings of anger and sadness separately and hypothesized that children who have a lower understanding of anger and sadness would display higher levels of disruptive behaviors. Regarding empathy, we focused on empathizing with others' physical pain and expected that preschoolers who empathize with others' pain would be less likely to exhibit disruptive behavior in social interactions. Because empathy requires understanding emotions (Decety & Jackson, 2004), we hypothesized that understanding anger and sadness would be positively associated with empathy and reduce disruptive behaviors via empathy. However, given the differences underlying perspective-taking skills (cognitive vs. affective), we expected either low or no association between ToM and empathy. Finally, as ToM, emotion knowledge and empathy are all developing rapidly

during preschool years (Eisenberg et al., 2006), we predicted positive correlation of these skills with age.

Method

Participants

One hundred and sixteen children (37% girls) between the ages of 45 and 72 months (M_{age} = 58.78 months, SD = 7.23) participated in the study (see Table 1). All children were attending either a public kindergarten (57%) or a public preschool (43%) located in Istanbul or Izmir, the two most populated urban centers of Turkey. According to mothers' reports, none of them had a known developmental delay, disorder or chronic health problem, and a majority of them came from families of married heterosexual couples (96%).

Mothers reported their own education level and the education level of the fathers (rated on 11-point Likert scale from 0 = non-literate to 10 = graduate degree), and also gave information about their monthly household income (rated on 11-point Likert scale from 0 = less than 425 USD to 10 = more than 12.500 USD). The correlations between maternal education, paternal education and the household income were high ($r's$ = .41 to .54, p < .001); thus, we computed socioeconomic status (SES) by averaging standardized (z) scores of these variables. SES profiles (Table 1) showed that a majority of the children came from families with a middle- to upper-middle class background.

Procedure

After receiving approval from the University Institutional Review Board, we contacted the directors of the kindergartens and preschools and asked them to relay our information booklets to the parents. In these booklets we informed the parents that our study will investigate the social and emotional competence of children, and we also briefly described our tasks in simple terms. We noted that the children could leave the study at any time they want, if they feel tired, restless or bored. We do not have the exact number of parents who declined

participation, but those parents who agreed to participate signed the participation form and sent it back to the kindergartens or preschools. We contacted these parents later to arrange a time for data collection. We measured disruptive behavior with the mother reports and used individual assessments to measure children's ToM, emotion knowledge and empathy skills. All individual assessments were administered in kindergartens or preschools in a silent room where only the child and experimenter were present. The tasks were programmed in E-prime 2.0 and presented to children on ASUS™ T101MT Touchscreen computers. For studies like ours, where individual differences and the relations of these differences with one another are being investigated, Carlson and Moses (2001) recommended an administration of tasks in a fixed order. Following this recommendation, the children in our study first completed the empathy and ToM tasks, followed by the emotion knowledge task, in a fixed order. The data collection process lasted for approximately an hour. The tasks were engaging for children, as they included interactions with toys and various pictures, and thus most children did not display concentration problems or any indication of exhaustion. Nevertheless, the experimenter gave short breaks and talked to the children when they showed signs of fatigue due to the admittedly long duration of testing. After the completion of the tasks, the children were given colored stickers, as a token of gratitude for their time and effort. No incentives were provided to the parents for their participation.

Measures

  Disruptive behavior. We used the Disruption subscale of the Penn Interactive Peer Play Scale (PENN; Fantuzzo, Mendez, & Tighe, 1998) to measure the children's levels of disruptive behaviors during peer play. The Subscale includes 12 items (e.g., "Starts fights and arguments during play", "Is physically aggressive", "Demands to be in charge", "Cries, whines, shows temper", "Disrupts the plays of others") rated by the mothers on a 4-point Likert scale (from 1 = Never to 4 = Always). The Turkish version of the scale (Ozturk, 2011)

was shown to be a valid and reliable assessment tool for preschoolers' disruptive behaviors (Korucu, Selcuk, & Harma, 2017), and had a high internal consistency in the present study (α = .78). Item responses given for the Disruption subscale were averaged to compute the disruptive behavior score.

Empathy. Empathy was assessed using a computerized Affective Empathy Task (Cowell et al., 2016). The task measures affective sharing and empathic concern with 18 pictures that depict people undergoing physical pain (e.g., having their foot or hand caught in a closing door). Children were asked to indicate on a visual analog scale, ranging from 0 and 100, how much pain the person in the picture was feeling (affective sharing) and how sorry they felt for that person (empathic concern). Children's responses to these two questions were strongly correlated ($r = .83$, $p < .001$). Given that previous studies conceptualized empathy as a combination of affective sharing and empathic concern (Decety & Jackson, 2004; Eisenberg, 2000), and given the high correlation between them, the mean of the affective sharing and empathic concern scores was taken (see Cowell et al., 2017 for similar calculations) as the overall empathy score.

Theory of mind (ToM). Children's ToM ability was measured by using two first-order ToM tasks that required an understanding of false belief in different situations. The first one was the Unexpected Location task of Wimmer and Perner (1983), which shows children that the location (basket) of the protagonist's object (ball) was changed by another character in her absence and put into a different location (box). To make sure that children fully comprehended the story and remembered the details, two memory control questions probing the initial (e.g., "where was this ball at the beginning?") and final location (e.g., "where is this ball right now?") of the ball were asked. As the test question, children were asked where the protagonist thought the ball was (e.g., "where does this child think the ball is?"). In line with the scoring of false belief tests originally used by Wimmer and Perner (1983) and also

recommended by Welman and Liu (2004), children were given one point if they correctly answered both the memory control questions and the target question. Those who could not pass the control questions got zero, even when they correctly answered the target question. The second ToM task was the Misleading Picture, devised by Astington and Jenkins (1995). In this task, children were shown two petals of a sunflower that looked like the ears of a cat, and then they were asked to guess what they thought the entire picture was by looking at these petals only. Children were then shown that the entire picture, in fact, belonged to a sunflower. As a memory control question, they were asked what they initially thought the entire picture was when they only saw a part of it (e.g., "what did you think this picture showed when you first saw it?"), and as the test question they were asked what their friend who never saw the entire picture would think the picture was. Children received one point if they correctly answered both the memory control and test questions in each ToM task, and they got zero if they failed the memory control question, regardless of their answer to the test question (see Carlson & Moses, 2001 for similar scoring in appearance-reality distinction). The two ToM task scores were significantly correlated ($r = .19$, $p = .04$), so we computed a composite ToM score by averaging the scores children got from each task, resulting in a maximum point of one for passing both ToM tasks and a minimum point of zero for failing both of them. The tasks were previously used in Turkish samples and found to be reliable and valid measures of ToM in Turkish preschoolers (see Cowell et al., 2017; Yagmurlu, 2014; Yagmurlu, Berument, & Celimli, 2005).

Understanding anger and sadness. The ability to understand anger and sadness was measured using the Emotion Knowledge Task of Denham (1986), which was translated to Turkish and has emerged as a reliable and valid assessment tool in Turkish samples (see Gunduz, Yagmurlu, & Harma, 2015). Firstly, children were shown two cards with angry and sad faces and were asked to identify the emotion on the faces verbally, by naming, and non-

verbally, by pointing. Then, children were asked to identify anger and sadness unequivocally appropriate in four different situations that elicit anger and sadness (e.g., having a toy hidden by a sibling and seeing that a parent is going on a trip alone). Children were shown videos for each emotion where the emotion-laden situation was enacted by a puppet, while the puppeteer was making standard facial expressions of anger and sadness. For each situation, children were asked to identify the emotion of the puppet in the video verbally, by naming it, and non-verbally, by pointing to cards of emotion faces laid in front of them. Children received two points for their correct responses, one point for their approximate answers (e.g., saying unhappy instead of sad) and zero for their incorrect responses, which resulted in a maximum of twelve points for understanding anger and sadness separately.

Data analyses

First, the associations between study variables were examined with a Pearson correlation. Then, to investigate the direct and indirect links predicting disruptive behavior, we hypothesized a path model which analyzed the predictive role of ToM, understanding anger, understanding sadness and empathy in disruptive behavior. We analyzed the direct paths from these variables to disruptive behaviors and, given that emotion knowledge is considered the precursor of empathy, we examined the direct path from understanding sadness and understanding anger to empathy, and the indirect path from understanding anger and sadness to disruptive behavior via empathy. As disruptive behaviors tend to decline with age in community samples (Cote et al., 2007), we also investigated the indirect role of age in disruptive behaviors via ToM, understanding anger and understanding sadness. The path analysis was conducted in Mplus 6.12. A maximum likelihood estimator was used for estimations. Fit indices were tested using χ^2 statistics, comparative fit index (CFI), root mean square error of approximation (RMSEA) and standardized root mean residual (SRMR). Models with non-significant χ^2 value, CFI values above .90 and RMSEA and SRMR values

below .08 were considered an acceptable fit to the data (Hu & Bentler, 1999). For an analysis of indirect links, we used bootstrapping with 1000 samples and investigated significance with 90% CI.

Results

Associations between study variables

Zero-order correlations (Table 1) showed that age was positively associated with ToM, understanding anger, and understanding sadness, but was not significantly linked with empathy or disruptive behavior. Disruptive behavior was positively associated with understanding sadness, and negatively associated with empathy. The associations of disruptive behavior with ToM and understanding anger were non-significant. Empathy was positively and significantly correlated with understanding sadness but not with understanding anger or ToM. When age was controlled, the significant negative correlation of disruptive behavior with empathy remained, but the positive association of understanding sadness with disruptive behavior and empathy disappeared, showing that the significance of these correlation was due to the increase in understanding sadness as a function of age. SES was not significantly correlated with any of the study variables. There was no gender difference in disruptive behavior, $F (1, 114) = 1.53$, *ns*. Therefore, the analyses were conducted for the whole sample.

Direct and indirect paths predicting disruptive behavior

Results of the path analysis with the standardized parameter estimates are presented in Figure 1. Overall, the model showed good fit to the data, ($\chi^2 (5, N = 116) = 3.98$, *ns*, *CFI* = 1.00, *RMSEA* = .00 (90% CI= .00, .11), *SRMR* = .03). Analysis of the hypothesized paths revealed that disruptive behavior was significantly and negatively predicted by higher empathy only, and not by ToM, understanding anger or understanding sadness. Empathy explained 8% of the variance in disruptive behavior, while ToM, understanding anger and

understanding sadness together explained 7%. In total, 15% of the variance in disruptive behavior was explained by our model. Moreover, not understanding anger but understanding sadness positively and significantly predicted empathy, and 3% of the variation in empathy was explained by understanding anger and sadness. Understanding sadness significantly predicted higher empathy, and empathy significantly predicted lower disruptive behavior. Yet, the negative indirect link from understanding sadness to disruptive behavior through empathy was not significant (β = -.05, p = .11, 90% CI = -.106, .001), nor was the indirect link from understanding anger to disruptive behavior via empathy (β = .02, p = .39, 90% CI = -.021, .065). When the interaction of understanding sadness with empathy was added to the model, the results revealed a poor model fit (χ^2 (10, N = 116) = 448.64, p = .001, CFI = .08, $RMSEA$ = .62 (90% CI= .58, .67), $SRMR$ = .19) and yielded a non-significant association of interaction term with disruptive behavior, (β = .17, p =.80). Likewise, the model showed a poor fit when the understanding anger by empathy interaction term was added (χ^2 (10, N = 116) = 406.21, p = .001, CFI = .09, $RMSEA$ = .60 (90% CI= .55, .65), $SRMR$ = .41) and presented a non-significant association of the interaction term with disruptive behaviors β = .01, p =.19. Thus, these two interaction terms (understanding sadness by empathy and understanding anger by empathy) were not included to our model. Further, the indirect links from age to disruptive behavior via understanding sadness (β = .04, p = .19, 90% CI = -.009, .083), understanding anger (β = .02, p = .46, 90% CI = -.028, .075) and ToM (β = .03, p = .23, 90% CI = -.012, .074) were also not significant. All three direct paths from age to ToM, understanding anger and understanding sadness were significant and positive.

Table 1

Descriptive statistics, zero-order correlations and partial correlations controlling for age ($N = 116$)

Variables	M	SD	Min.	Max.	1	2	3	4	5	6	7
1.Age (in months)	58.78	7.23	45	72	-						
2.SES (z score)	-0.06	0.81	-2.70	1.30	-.03	-	.04	.05	.05	-.02	-.02
3.ToM (0-1)	0.32	0.36	0	1	.23*	.05	-	-.08	.09	-.04	.14
4.Understanding anger (0-12)	9.71	2.59	3	12	.24*	.04	-.04	-	.32**	-.05	.15
5.Understanding sadness (0-12)	10.24	2.31	4	12	.22*	.04	.14	.37**	-	.16	.17
6.Empathy (0-100)	74.41	15.86	14.44	99.22	.09	-.03	-.03	-.03	.18*	-	-.24*
7.Disruptive behavior (1-4)	1.64	0.30	1.08	2.58	.09	-.01	.15	.17	.18*	-.22*	-

Note: Zero-order correlations are presented below the diagonal and partial correlations controlling for age are presented above the diagonal.

p < .05. **p* < .01.

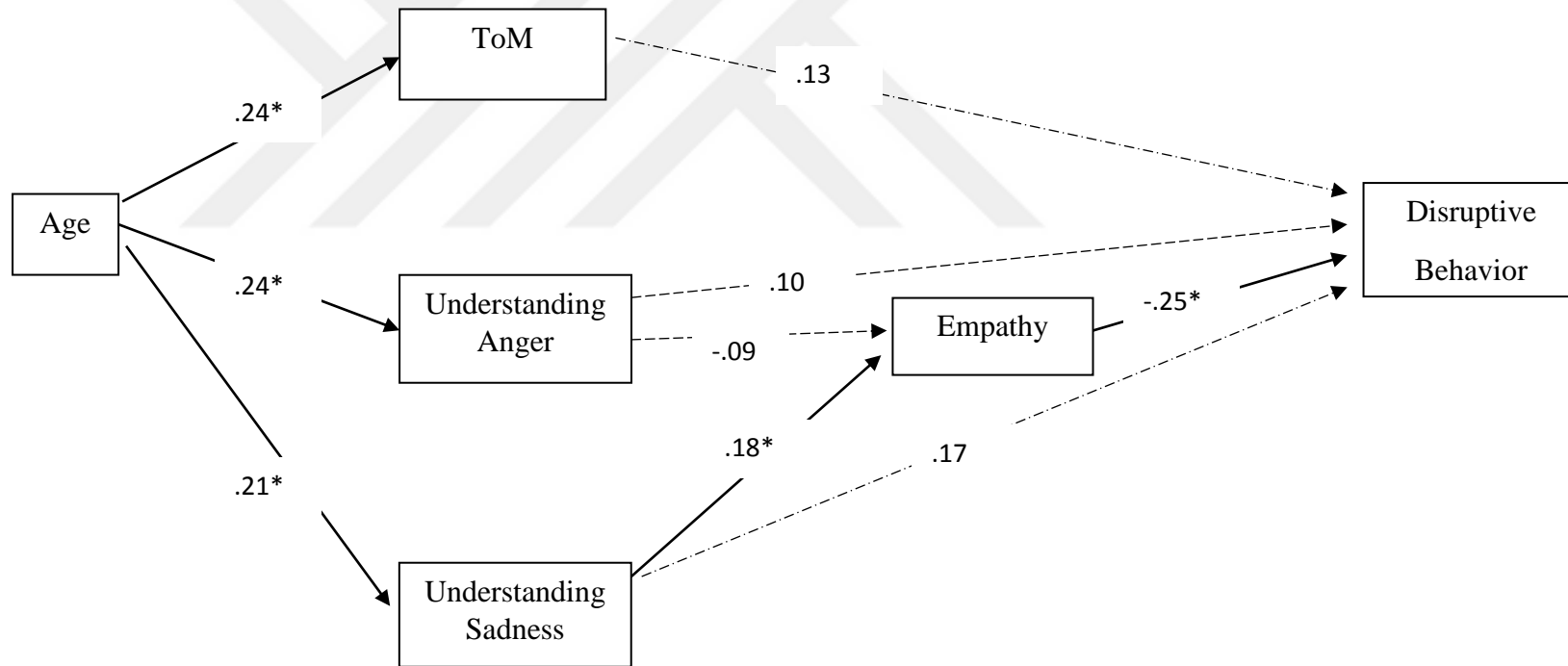*Figure 1.* Standardized estimates predicting disruptive behavior. The dotted lines represent hypothesized but non-significant paths.

p < .05. (N = 116).

Discussion

The results showed that among ToM, emotion knowledge and empathy, it was only empathy that significantly and negatively predicted disruptive behaviors in typically developing children. Consistent with our expectations, children who were better able to share others' pain were less likely to exhibit behaviors that disturb their peers. Empathizing with others' pain can enable children to restrain themselves from engaging in any behavior that would lead to others' discomfort (Björkqvist et al., 2000). As shown at both behavioral and neural levels (Jackson et al., 2005; Lamm et al., 2011), perception of others' pain activates similar representations of pain in the self, with the same brain regions involved in the process of observing pain in others and first-hand experience of pain. Therefore, perceptions of pain can facilitate empathy through a similar degree of arousal in the self and can discourage the observant from any actions that may result in harm. This is in line with Blair's (1995) model that humans are biologically programmed to respond to others' pain with an empathy response, which enables them to inhibit their aggressive tendencies in social relations.

In their review, Eisenberg et al. (2010) noted that the inverse association of empathy with disruptive behaviors is seen starting from school-ages rather than earlier in preschool. The reason why empathy stood out as a significant predictor of preschoolers' lower disruptive behaviors in the current study might be due to our measurement of empathy. In contrast to other studies, which calculated a composite empathy score from children's observations of diverse affective states such as sadness, distress, and pain (see Gill & Calkins, 2003), we solely focused on children's empathy for others' pain. Empathy for pain has been the topic of interest mostly for researchers studying children and adolescents with conduct (Cheng, Hung, & Decety, 2012; Decety, Michalska, Akitsuki, & Lahey, 2009) or oppositional defiant problems (de la Osa & Granero, 2016; Dinolfo & Malti, 2016), but it was examined to a lesser degree in preschool children with lower levels of disruptive behaviors. Given that observing

others' pain activates neural connections associated with a first-hand experience of pain (Lamm et al., 2011), pain might evoke a stronger empathy and arousal response compared to other emotions. Supporting this, in the study of Gill and Calkins (2003), typically-developing preschoolers' empathy scores in response to observations of others' pain were found to be higher compared to observations of sadness. Thus, the same way that empathy for pain predicts the aggression scores of children with conduct problems (Cheng et al., 2012), normative variation in empathy for pain, too, can be a critical predictor of disruptive behaviors in young children with low levels of disruptive behaviors.

Furthermore, our measurement of empathy for pain through pictorial images might have eliminated one of the factors that contributed to inconsistent (mixed) associations that Eisenberg et al. (2010) noted between empathy and disruptive behaviors in preschoolers. Earlier studies assessed empathy levels of preschool children in experimental situations where an unfamiliar experimenter was displaying signs of distress, pain and sadness in front of children (Gill & Calkins, 2003; Hastings et al., 2000; Zahn-Waxler, Cole, Welsh, & Fox, 1995). These situations can create intense arousal (e.g., concern for the well-being of the person in distress and well-being of the self) that is hard to regulate for preschoolers whose inhibitory control skills are merely at the beginning of development (Gill & Calkins, 2003). Thus, self-regulation problems in early ages might underlie both high arousal levels during empathy assessments and disruptive behaviors displayed in general, leading to positive or null links between empathy and such under-controlled behaviors as disruption (Eisenberg et al., 2010). In the current study, we used pictures that depicted physical situations eliciting pain in others. These pictures were probably less arousing for children than experimental enactments of distress and pain, so they may not have created intense and unmanageable concern in young children. Furthermore, the pictorial images might have also made self-other differentiation more explicit and facilitated empathy for others. In other words, with these

pictures, children can be at a safer distance from the individual who is suffering from pain, and thus they can reflect on their own understanding of how *the other* would feel, without mixing it with their own personal distress and discomfort. Thus, normative variations in empathizing with others' pain can in turn emerge as a negative predictor of their aggression. It is also important to note that the children in our sample were relatively older (toward the end of the preschool period) than those in previous studies (2 year-olds in the study of Gill & Calkins, 2003; 4-5 year-olds in Hastings et al., 2000), which means they were better able to grasp the self-other distinction, as indicated by the variability in their ToM scores, and they were better adept at regulating their personal discomfort. These factors may drive the negative link we found between empathy for pain and lower disruptive behavior. Findlay, Girardi, and Coplan (2006) found the same negative association between empathy and aggression in children who are at the same age with those in our sample. Therefore, it may be argued that empathy for pain can predict socially harmonious behaviors when measured at a safe distance, toward the end of preschool, and without creating personal distress or arousal for children (Eisenberg & Eggum, 2009).

In addition to empathy, emotion knowledge is also considered an important correlate of children's social relations, (Denham, 1998) and, therefore, it attracts attention with respect to displays of disruptive behaviors (Arsenio & Lemerise, 2001; O'Kearney et al., 2017). Previous studies noted especially that understandings of negative emotions like anger and sadness are of significance (Schultz et al., 2004), since children with higher levels of disruptive behavior have problems identifying anger and sadness in others (Hughes et al., 1998). Contrary to these studies and our predictions, in the current sample, disruptive behavior was predicted by neither understanding anger nor understanding sadness. Although zero-order correlations initially revealed a positive association between understanding sadness and disruptive behaviors, this association reduced to non-significance when age was

controlled, showing that the initial positive association between understanding sadness and disruptive behaviors was only an artifact of age in zero-order correlation. Additionally, we expected the different meanings (being assertive and competent vs. helpless and victim) conveyed through understanding others' anger and sadness (Carver & Harmon-Jones, 2009) to lead to different associations of these skills with disruptive behavior, but their non-significant links showed that emotion knowledge, on its own, is insufficient in influencing social behavior. This may suggest that emotion knowledge acts as a mere comprehension skill that does not guide whether its presence would increase or decrease disruptive actions. As argued by Carlo, Knight, Eisenberg and Rotenberg (1991), understanding others' emotions can be important for its facilitation of empathy and for its influence on social behaviors like conforming to rules and respecting others' rights via triggering empathy. It is important to note, however, that the non-significant association in our results between emotion knowledge and disruptive behaviors might be due to our sample, which included typically developing children. In their meta-analytic review, Trentacosta and Fine (2010) reported medium-sized correlations ($r = -.26$) between children's emotion recognition and their externalizing problems in clinical samples, while the effect size was small ($r = -.13$) for community samples. It was argued that in clinical samples, a majority of children with severe disruption problems were exposed to poor parenting practices characterized by harsh punishment, neglect and indifference to children's emotions (Dayton, Huth-Bocks, & Busuito, 2016). These early experiences, which are also linked with severity of disruptive actions, might be responsible for children's lower understandings and learning of emotions (Pollak, Cicchetti, Hornung, & Reed, 2000). In contrast, for typically developing children who seemed to achieve a normal course of emotion learning, understanding of others' emotions might be critical for facilitating empathic responses to these emotions in the context of daily disruptive behaviors.

Supporting this argument, our findings showed that understanding sadness positively predicted higher empathy for others' pain. Children who were better at comprehending sadness in the faces of others and who were better at understanding the conditions under which sad feelings would emerge were significantly more likely to feel empathy for others' pain. This result was in line with other developmental studies, which showed that teaching preschoolers' sadness through emotion socialization practices (e.g., talking about causes and consequences of sadness) increased their understandings of sadness and facilitated their empathy skills (Eisenberg, 2000; Garner, 2003). The role of understanding sadness in empathy was also found in adult groups whose empathy performance increased as a function of increases in the accurate comprehension of others' sadness from their facial expressions (Harrison et al., 2007). Blair (1995) argues that understanding sadness evolutionarily prepared humans to be aroused from others' distress and pain and gave rise to inhibitory behaviors to control disruptive urges, like the violation of others rights. Thus, understanding emotions, particularly sadness, can trigger the co-sharing of emotions starting from an early age.

It must be noted that, although understanding anger and understanding sadness were significantly and positively correlated with each other, their associations with empathy differed, as comprehension of sad but not angry feelings gave rise to higher empathy. This result was in line with that of Blair and Coles (2000), where difficulty in emotion knowledge emerged only for understanding of sadness, but not anger, in school-aged children with empathy deficit. Underlying motivations and associated perceptions in recognitions of anger and sadness (Carver & Harmon-Jones, 2009) might explain the current findings. Anger occurs when a goal is blocked by external forces, instigating the tendency for further approach to remove the blockage. In contrast, sadness emerges from failure in reaching a desired outcome and causes avoidance of further action. Following that, in the eyes of the observer, identifying someone's sadness creates a perception that the individual is a victim and has lower

competence in dealing with the problematic situation (Smith & Lazarus, 1993); seeing anger in someone leads to an idea that the person is an active and competent individual who is trying to change the situation to reach his or her goal (Tiedens, 2001). In that sense, understanding others' sadness might trigger the tendency to see them as mere victims of their situations, thus facilitating empathy for their pain. However, understanding anger in others might instead generate a perception of capability to deal with the situation, and, hence, anger might not elicit empathy for pain. These suggestions remain at the level of speculation and must be tested by future studies.

In our study, while disruptive behavior appeared to be alleviated by empathy, it was not related to ToM. Sutton et al. (1999) argued that the link between ToM and aggressive behavior might vary depending on the type of aggression, i.e., proactive vs. reactive. In preschool children, however, these two aggressive behavior forms are hardly differentiated in the daily disruptive behaviors of typical samples (Hughes et al., 2000), and they show a high correlation in childhood ($r = .68$; see Card & Little, 2006). Therefore, the non-significant link between ToM and disruptive behavior in our study might reflect this co-existence of proactive and reactive aggression tendencies. ToM is considered as a cold socio-cognitive skill that serves to understand others' mental states (Björkqvist et al., 2000). For community samples of preschoolers whose level of disruptive behavior is low on average (like our sample), ToM might not by itself directly indicate whether the level of children's disruptive behaviors will be higher or lower (Hughes, 2011). Rather, the motivation and moral values for using ToM (i.e., to get along with others or to hurt them) might make the critical difference (Sutton et at., 1999).

Disruptive behaviors, like opposing others, breaking rules and starting fights, are at odds with moral actions, as they disturb harmonious relations in social groups (Arsenio & Lemerise, 2001). Therefore, our finding that empathy is more critical than ToM and emotion

knowledge for preschoolers' disruptive behaviors might have implications for the development of moral actions. As explained in morality accounts (e.g., Blair, 1995; Haidt, 2001), empathizing with others is the driving force of moral behaviors. It facilitates the development of conscience, and as such, prevents harmful actions towards others. On the other hand, understanding others' mental states (e.g., what they believe or think) or emotions (e.g., anger or sadness) are neutral (Hughes, 2011), cold socio-cognitive skills. Their coldness arises from the fact that these skills are relatively distant from conscience (Haidt, 2001); they can be used for harm or kindness, depending on one's motivation (Sutton et al., 1999). This point is exemplified in the case of children with conduct problems and CU traits whose severe aggressive behaviors, in addition to lying and stealing, are accompanied by their intact ToM but low levels of empathy (Frick et al., 2014). Thus, unless feelings, especially others' pain, is mirrored, advanced understanding of others' mental states or emotions might not translate to moral behaviors, even in samples like ours where the level of disruptive behavior is low and not problematic for parents of young children. In the context of this discussion, it might be worth mentioning that ToM and emotion knowledge improved with age, but neither empathy nor disruptive behaviors were associated with age. This basic correlational finding may add to our argument that empathy is different from "cold skills"—ToM and emotion knowledge— and has a distinct role in disruptive behavior.

Limitations

At this point, we must acknowledge four issues. First, this study had a cross-sectional design and causal inferences cannot be drawn from our results. Yet, the conceptual arguments (e.g., Björkqvist et al., 2000) and empirical findings (e.g., Trentacosta & Fine, 2010) in the literature suggest ToM, emotion knowledge and empathy as possible causes of disruptive behavior, rather than vice versa. While the research on school-aged children with conduct problems and CU traits gave the impetus for our study to investigate these socio-cognitive and

emotional skills as underlying causes of disruptive behaviors, we did not focus on conduct problems, proactive/reactive aggression or CU traits but on the mild disruptive behaviors of typically developing preschool children. Second, the large unexplained variance in disruptive behavior in our data suggests that other variables not examined here could also exist. For example, a child's temperamental characteristics (e.g., fearlessness, negative emotionality) are known to be significantly associated with externalizing behaviors (e.g., Frick et al., 2014). Relatedly, executive functions and behavioral and emotional regulation skills appear critical in controlling such tendencies (Batum & Yagmurlu, 2007; Rothbart et al., 2004). Although these relations are known, the roles of temperament and regulation skills were beyond the scope of our research; therefore, they were not investigated here. Third, the relations reported here were based on mothers' evaluations of children's disruptive behaviors, which might arguably reflect biased information. Children's disruptive behaviors in peer contexts could have also been assessed by teachers, who may have a greater chance of observing disruptive actions during peer interactions than mothers. However, previous research using multi-informant procedures (e.g., teachers, mothers, and researchers as independent observers) found significant and high correlations between scores of disruptive actions reported by parents and teachers (Arseneault et al., 2003; Casas et al., 2006; Keiley et al., 2003). These studies argued that under-controlled behaviors seen in disruption could be consistent across different situations. Hence, we assume that although parents and mothers can differ in their chances to observe these behaviors in peer contexts (e.g., teachers may observe them more frequently in school than mothers who witness such behaviors only on the playground or at home-gatherings with peers), children's consistent disruption across various peer settings and groups would lead to similar reports of disruption by mothers and teachers (Achenbach, McConaughy, & Howell, 1987 for a meta-analysis). Supporting this assumption, Trentacosta and Fine (2010) revealed in their meta-analysis that the magnitude of associations between

emotion knowledge and externalizing behaviors is similar in mother reports and teacher reports of externalizing behaviors. Likewise, the null relation we reported here between ToM and disruption was seen in other studies that assessed aggressive behaviors with teacher reports (Gasser & Keller, 2009) or with ratings of independent coders (Hughes et al., 2000). This evidence shows that diverse informants are evaluating children's overt behaviors alike and that these evaluations mostly yield similar results in relation to their associations with different social skills, such as emotion knowledge and ToM. Still, future studies should test whether the results we found here with respect to the importance of empathy rather than ToM and emotion knowledge for lower disruptive behaviors would also be held using multiple informants and measurements. Lastly, the level of disruptive behaviors in the current sample was relatively low. Yet, it was comparable to the disruptive behaviors and aggression levels of Turkish preschoolers in other studies (see Batum & Yagmurlu, 2007; Korucu et al., 2016). Turkish culture's emphasis on harmonious group relations and interdependence, as well as parents' socialization practices that teach children to conform to social rules and authority figures (Sen, Yavuz-Muren, & Yagmurlu, 2014) might explain Turkish children's relatively low disruptive behaviors. On the other hand, it is also important to mention the socio-economic factors that can relate to variation in levels of disruptive behaviors in the same cultural atmosphere. Higher levels of disruption are usually more common among children from lower SES families (Dodge, Petit, & Bates, 1995). While our sample came from middle SES families, like other studies that have examined disruptive behaviors in Turkish children (Batum & Yagmurlu, 2007; Korucu et al., 2016), investigations of disruptive behaviors in Turkish children from lower education and income groups yielded elevated levels of disruption problems (Ogelman & Topaloğlu, 2014). This shows that variations related to socio-economic factors can override the impact of overall cultural (e.g., interdependent) atmosphere on disruptive behaviors.

Despite these limitations, our results highlighted that relatively mild and low levels of disruptive behaviors, like arguing, rule-breaking, opposing and fighting, among peers are associated with normative variations in only empathy but not ToM and emotion knowledge. While earlier studies examining severe levels of disruptive behaviors in preschool and school-aged children pointed to both emotion knowledge and empathy as critical for lower disruption, our findings revealed empathy as the only contributor to lower conflicting behaviors in normative peer contexts. This difference in findings due to sample characteristics might inform our knowledge about the concept of disruption in general and highlight distinct difficulties in socio-emotional competence depending on levels of rule-breaking, opposition, whining and aggression. High and serious disruptive behaviors displayed in clinical samples probably emerged as a result of lower abilities in recognizing and sharing others' emotions, while normative low-level troublesome actions (e.g., whining, opposition, demanding to be in charge and aggression behaviors of the current sample) in peer contexts appear to be due to lower empathizing with others' emotions, particularly their pain rather than emotion knowledge problems. Normative variation in emotion knowledge skills of typically developing children might be significant only for their function in eliciting empathy. On the other hand, ToM does not seem to be involved in both groups' disruptive actions.

CHAPTER 4
IN TWO MINDS: SIMILARITY, THREAT, AND PREJUDICE CONTRIBUTE TO WORSE MINDREADING OF OUTGROUPS COMPARED TO AN INGROUP

Abstract

We examined Turkish participants' mindreading accuracy toward ingroup versus outgroup targets. Three-hundred and fifty-four Turkish participants were randomly assigned to one of three target groups: Turkish, Syrian or Norwegian. The mindreading accuracy for these targets was measured along with the perceived cultural similarity of the target to the ingroup, as well as prejudice and threat perception. Participants evidenced higher mindreading accuracy toward Turkish targets compared to Syrian and Norwegian targets. Mindreading accuracy for the Syrian and Norwegian targets did not differ, but lower perceived similarity to the Turkish ingroup significantly predicted lower mentalizing for Syrian and Norwegians. In the Syrian target group, lower perceived similarity interacted with lower education and higher prejudice, resulting in a further reduction in mindreading. For Norwegian targets, lower similarity impaired mindreading through an interaction with higher threat perception. Results indicate that even when mentalizing capacity is mature, intergroup factors are linked with the deployment of mindreading.

Keywords: theory of mind, mindreading, prejudice, threat, perceived similarity.

Introduction

Lack of tolerance to outgroups is one of the most prominent social problems of our time. Europe and America, as the center of Western modern societies, have encountered increasingly negative attitudes and widespread discriminatory behavior toward outgroups (Schemer, 2012), particularly toward immigrants (e.g., Mexicans, Syrians, Ethiopians) whose numbers rise due to ongoing political conflicts and civil wars in their homelands (Gorodzeisky & Semyonov, 2015). For instance, Turkey is one of the main countries influenced by the recent influx of immigrants fleeing from Syria. According to official reports released by the Ministry of Internal Affairs, over three million Syrian immigrants live in Turkey as of 2018 (Ministry of Internal Affairs, 2018). This large number created a culturally diverse population in the big cities of Turkey, and gave rise to financial concerns over sharing limited public resources to meet the needs of the immigrant population.

According to the results of a large-scale survey (Erdoğan, 2014) that recruited more than one thousand adults living in cities with the highest Syrian populations (e.g., Adana, Gaziantep, Hatay), Turkish individuals perceived Syrians as a threat to their economic wellbeing and cultural unity, and as such were unwanted in the country. This negativity was also noticed by the majority of Syrian immigrants themselves who indicated that their Turkish hosts did not fully accept and often displayed discriminatory attitudes towards them (Arslan, Bozgeyik, & Alancıoğlu, 2016). Crucially, prejudice has the potential to impair mindreading toward unwanted groups (see below). Thus, in the present study we examined Turkish adults' mindreading of Syrian immigrants.

Mindreading and theory of mind are often used interchangeably. More specifically, mindreading can be broadly construed as referring to the ability to infer subjective mental states of others such as their desires, beliefs and intentions (Wellman, 2014). As a socio-cognitive concept, it reflects the idea that humans are psychological beings whose actions are

governed by their unique mental states. Gaining insight into these mental states enables individuals to predict, explain and also manipulate others' behaviors (Hughes, 2011). This critical ability has been studied in developmental research under the construct of theory-of-mind (ToM), which has been recognized as having two forms: implicit and explicit ToM (Low & Perner, 2012). The suggestion is that face-, eye- and behavior-tracking abilities in infancy (implicit ToM) evolve into deliberate reasoning and explanation about mental states of others (explicit ToM) with the help of language and executive function skills (Apperly & Butterfill, 2009; Ruffman, 2014). Mindreading taps the latter, explicit ToM as it relies on overt and effortful inference of others' minds. Researchers have argued that humans' need for social connections and sustaining interpersonal relations (Waytz, Gray, Epley, & Wegner, 2010) motivates this overt and effortful use of mindreading ability, leading to its selective deployment in social situations (Apperly, 2012). Negative intergroup encounters (e.g., interaction with an outgroup target) might clash with motivations of social connection and impair accurate mindreading.

Consistent with such ideas, Perez-Zapata, Slaughter and Henry (2016) found that young Australian adults inferred the mental states of fellow Australians faster and more accurately than the mental states of Chileans. Similarly, Adams et al. (2010) reported that Americans decoded the mental states of fellow Americans better than those of Japanese. More recently, a new study revealed that Turkish children were most accurate when inferring the mental states of fellow Turks, second-best when doing so for Northern Europeans, and were worst when inferring the mental states of Syrian immigrants (Gönültaş, Selçuk, Slaughter, Hunter, & Ruffman, 2019). Importantly, this study found that worse mindreading of Syrian immigrants was related to perceptions of Syrians as threats and prejudice. Nevertheless, it is not known whether perceptions of similarity to the ingroup, threat and prejudice might also affect young adults' mindreading, a group whose mindreading skills are thought to be

developmentally mature. Below, we examine in greater detail how similarity, threat and prejudice might relate to mentalizing in young adults.

Cultural similarity. Individuals from the same culture share a common knowledge of how to interpret others' behaviors in social situations (Apperly, 2010). Similarly, and in line with the simulation account of mental state understanding (Adolphs, 2002; Meltzoff & Brooks, 2001), it is argued that individuals imagine what they would feel and think in a given situation when making sense of what others would feel and think, which becomes easier and more accurate if the target is from the same cultural group as one's self (Mitchell et al., 2006; van der Meulen, de Ruyter, Blokland, & Krabbendam, 2019). In line with this argument, although they have not measured similarity, both Perez-Zapata et al. (2016) and Adams et al. (2010) implied in their research that an ingroup advantage in mindreading occurs due to perceived similarity.

However, it is possible that factors in addition to similarity might impact on mindreading. The social cognition literature extensively demonstrates that the mere presence of a target is sufficient to instigate an automatic evaluation process that includes positive or negative affect (Castelli et al., 2004; Ito & Cacioppo, 2000). Thus, when a target individual is seen, relevant factual information about the target's group (e.g., its similarity or dissimilarity to the ingroup) is activated along with affective evaluations and reactions toward the individual's group. In other words, a broad affective tag is encoded in memory for category memberships, including social group memberships, and is easily recalled with a mere presentation of a target from that category - a process known as autoevaluation (Fazio et al., 1986). Since memory is conceived of as a wide network of associations where different sets of knowledge about events reside in close connection (Niedenthal & Kitayama, 2013), affective evaluations of targets are also included in this network and arise automatically upon seeing the identity of a target. Therefore, due to their automatic recall in social encounters

with outgroup targets, not only similarity, but also these affective evaluations might influence the accuracy of mental state inferences, a point that has not been addressed before in the literature. Below, we consider two prominent ways in which affective evaluations could become manifest: prejudice and threat perception.

Prejudice. Outgroups are often not just viewed as dissimilar, but are also frequently viewed as threats and are subjected to prejudice (Fiske & Macrae, 2012). Prejudice is described as negative opinions, feelings and actions towards others due to their group memberships (Johnson, 2011) and is frequently activated during an encounter with an outgroup target. Ames (2004) highlighted the importance of considering prejudice along with perceived similarity in mental state understanding. In his similarity-contingency model, he argued that if individuals perceive a target as similar to themselves, they use their self as the anchor to predict the target's behaviors and mental states. However, if they do not perceive similarity with the target, then they tend to utilize their previously held beliefs and emotions about the target as a template to gauge what she/he thinks. In other words, Ames (2004) stated that either perceived similarity or prejudice guides mental state inference, with the former leading to more accurate predictions because they are derived on the basis of one's own experience, and the latter leading to less accurate predictions because they are grounded in prejudiced ideas and emotions. Though not directly assessing the accuracy of mental state inferences, there is some support for this model. For instance, Hugenberg (2005) showed that when the affect (e.g., happiness) of African-American individuals did not correspond to the common prejudices associated with this outgroup (e.g., anger), Caucasian participants were slower and less certain in inferring their subjective feeling states. Gutsell and Inzlicht (2010) found that higher levels of prejudice were negatively linked with activation of mirror neurons, thought to be involved in an accurate comprehension of others' minds. Similarly, the medial

prefrontal cortex, a region of the brain central to mentalizing, was less active in individuals who had high levels of prejudice toward outgroup members (Harris & Fiske, 2006).

Thus, the similarity-contingency model of Ames (2004) provided an important step for researchers to consider prejudice as a relevant factor influencing mental state inference, yet, he argued that the impact of prejudice on mindreading is seen only in the absence of perceived similarity. However, in an intergroup context, prejudice and similarity often co-exist. That is, outgroups could be perceived as relatively similar, yet still be subjected to higher prejudice compared to outgroups that are lower in similarity (Mackie & Smith, 2016). In the Turkish context, Syrians constitute one such group; they are more similar to Turks (in terms of religion and common cultural themes) than an outgroup such as Norwegians. Specifically, Turks and Syrians share a similar cultural history, have similar traditions grounded in their shared religion, and display interdependent orientations in their social relationships (Aras & Köni, 2002). The parallels in social and cultural life of the two groups (e.g., their food, customs, social interactions) are also facilitated by their geographical closeness and shared border. Nevertheless, Syrians are considered as outgroup members with identities distinct from those of Turks (Erdoğan, 2014). They are also the targets of higher levels of prejudice, which is bolstered especially after their recent immigration to Turkey. They are perceived as a burden to the economic resources of Turkey, resented for using limited public resources originally reserved for Turks, and seen as endangering the lives of local citizens in cities (Arslan et al., 2016). As such, Turks and Syrians provide an interesting contrast to study mindreading.

Threat perception. According to integrated threat theory (Stephan & Stephan, 2013), symbolic and realistic threat perception are the main precursors of prejudice toward outgroups. Threat refers to a feeling of vulnerability brought about by the presence of an outgroup or its members (Dutton & Jackson, 1987), and functions to alert the organism about

the possible danger that might come from the outgroup target (Green & Phillips, 2004). As a result, threat is discerned quickly and instigates socio-cognitive processes to ward off potential damage (Balcetis & Lassiter, 2010). For example, individuals perceive the distance of threatening outgroup members to the ingroup as closer than the distance of non-threatening outgroup members (Xiao & Van Bavel, 2012), and shift their attention to follow the eye-gaze of threatening outgroup members at a higher rate compared to non-threatening outgroup members (Chen & Zhao, 2015). Similarly, higher levels of threat perception from outgroups enhance recognition of the faces of the outgroup members (Trawalter et al., 2008), and increase proneness to evaluating inanimate faces as animate and with a mind (Hackel, Looser, & Van Bavel, 2014).

Threat perception is, therefore, critical in social thinking as it influences perceptual and attitudinal processes upon seeing a target. Logically, then, it might also relate to mental state inference. Since the main goal of accurate mental state understanding is to predict the behaviors of targets in advance – either for forming social connections or for gaining dominance (Waytz et al., 2010) – individuals' concern for losing their social (symbolic) or economic benefits due to outgroup members' presence can influence their mentalizing skills. Indeed, as stated above, threat perception has been shown to influence *children's* mentalizing about an outgroup (Gönültaş et al., 2019), although it is not clear whether the same is true for young adults.

If threat does affect adult mentalizing, research suggests that it could do so in very different ways. On the one hand, threat perception from outgroup targets increases adults' attributions of mind and animacy (Hackel et al., 2014). On the other hand, studies also show that individuals choose to psychologically distance themselves from the source of threat by sitting further from threatening outgroup members (Xiao, Wohl, & Van Bavel, 2016) and by considering threatening outgroup members' traits as dissimilar to their own traits (Riketta &

Sacramento, 2008). This tendency for distancing one's self from threatening outgroups might discourage in-depth reasoning about the contents of outgroups members' minds, thereby decreasing accuracy.

Previous studies also indicate that education and income are critical correlates of intergroup attitudes, such that individuals with higher levels of education tend to perceive less threat and have lower prejudice toward outgroups (Coenders & Sheepers, 2003; Thomsen & Olsen, 2016). Longer years of formal education expose individuals to ideas that value intergroup equality and break down the stereotypic beliefs about outgroups (Jenssen & Engesbak, 1994). Similar (though weaker) trends exist for income, with individuals in working class families tending to report higher levels of prejudice and threat from foreigners and immigrants compared to individuals in middle and upper-middle class families (Carvacho et al., 2013; Pettigrew et al., 2008). Income might relate to threat and prejudice, in part, through a confound with education, or more directly, because working-class individuals might engage in direct competition for low-skilled jobs with immigrants compared to middle- and upper-class individuals, in addition to endorsing traditional ideologies by resisting cultural diversity, triggering threat perception and prejudice toward outgroups (Hello, Sheepers, & Sleegers, 2006). Such differences make it necessary to consider levels of education and income when assessing how threat and prejudice might affect mindreading.

Present Study

In the present study, we examined similarity, threat and prejudice as intergroup factors that can impact mindreading. Following a recent study with children (Gönültaş et al., 2019), the ingroup involved mindreading of fellow Turks, and also like that study, we included two different outgroups (Norwegians and Syrians) that varied in (a) cultural similarity to the ingroup (Norwegians less similar than Syrians), and (b) levels of threat/prejudice (Syrians more of an economic threat and subjected to more prejudice). However, unlike Gönültas et

al., we examined whether adults' mindreading performance is influenced by perceived similarity with outgroup targets, prejudice toward these targets, and threat perception from them. Compared to children, adults are more skilled at evaluating outgroup targets based on various dimensions (e.g., cultural similarity with ingroup and attitudes toward outgroups) and even contradictory dimensions (e.g., high prejudice despite high similarity) (Fiske & Macrae, 2012), which might lead perceived similarity, prejudice and threat to operate differently in adults' mindreading performance. In Gönültaş et al.'s (2019) study, prejudice and threat, but not perceived similarity, were associated with children's poorer mindreading of outgroup targets. This shows that children's mindreading was impacted by their affective evaluations of outgroup targets rather than similarity concerns. Contrary to this picture observed in children, Ames (2004) argues that due to their advanced skills in weighing targets from multiple dimensions, adults' mindreading is jointly influenced by perceived similarity and affective evaluations of outgroup targets. Thus, examination of perceived similarity, prejudice and threat in relation to adults' mindreading allows us to see their interacting role when inferring outgroups' mental states.

One possibility, suggested by the model of Ames (2004), is that prejudice might interact with perceived similarity, leading prejudice to negatively impact adults' mental state understanding performance only at a lower level of similarity. Alternatively, higher levels of prejudice, with the accompanying negative feelings and opinions toward outgroup targets, might override the positive effect of similarity, create a barrier in perspective taking, and negatively influence mental state understanding (Galinsky, Ku, & Wang, 2005).

Regarding the role of threat, integrated threat theory (Stephan & Stephan, 2000) distinguishes between two types: realistic threat and symbolic threat. Realistic threat refers to the possibility of losing tangible resources to outgroups (e.g., health facilities, enrolments to public schools), whereas symbolic threat relates to the likelihood of the ingroup's beliefs and

values being undermined by virtue of the fact that members of the outgroup adhere to distinctive customs and cultural mores. We examined both types of threat and their interactions with perceived similarity in influencing mindreading.

In sum, the present study differed from earlier studies in three ways: (1) it investigated whether perceived similarity, prejudice and threat are related to mindreading accuracy in a group of young adults; (2) it assessed adult mindreading in a wide range of social situations (e.g., double bluff, persuasion, white lie) as opposed to interpreting the *benign* actions of outgroups (Hugenberg, 2005) or attributing a mind and animacy to them (Hackel et al., 2014); and (3) it took into account the socio-economic backgrounds (e.g., income and education levels) of the adults as possible mediators or moderators of their mindreading.

More specifically, we used regression and regression tree analysis to examine the following four hypotheses:

1. If Ames's (2004) similarity-contingency model is correct, then individuals should make more accurate mental state inferences about ingroup Turkish targets compared to outgroup Syrian or Norwegian targets. They should also make more accurate mental state inferences about Syrian targets compared to Norwegian targets, as Syrians would be perceived as more similar to Turks than Norwegians.

2. Because the similarity-contingency model argues that prejudice guides individuals' mental state inferences when a target is perceived as dissimilar, then prejudice should be more negatively associated with mindreading for Norwegian than Syrian targets. However, in contrast to this model, and if similarity is not the key determinant of mentalizing similar to the findings of Gönültaş et al. (2019) for children, then regardless of similarity level, prejudice should be negatively related to mindreading accuracy because prejudice hinders perspective taking. In this case,

the association of prejudice with mindreading should be higher for the Syrian target group compared to the Norwegian target group.

3. If perceived threat affects adult mindreading, then perceptions of realistic threat should be more likely to affect mindreading for Syrian targets especially when they were perceived as similar to the ingroup, whereas symbolic threat should be more relevant when judging Norwegian targets who are culturally dissimilar.

4. We expected education and income to be correlated negatively with threat perception, prejudice and mindreading.

Method

Participants

The participants were 354 Turkish young adults (Mage = 22.08, SD = 2.03) of whom there were 130 males. We determined this sample size with a priori power analysis conducted in Gpower. Based on small effect sizes in earlier work (Perez-Zapata et al., 2016), Gpower yielded three hundred participants in total to achieve .80 power. The majority of the sample (92.6%) were recruited from universities in Istanbul which, as the largest metropolitan area of Turkey, hosts students from diverse social backgrounds. Among these students, 13.6% were first-year, 18.7% were second-year, 21.8% were third-year, 21% were fourth-year, and 24.9% were graduate students. The rest of the sample (7.4%) consisted of part-time workers in grocery shops and cafes in neighborhoods around the universities, of whom 20% were intermediate school and 80% were high school graduates.

Participants' monthly household income showed a large variability such that 38% received less than 4000 TL (~1000 USD), 47% earned between 4000 TL and 14000 TL (~3500 USD), 10.2% earned between 14000 TL and 35000 TL (~8750 USD), and 4.9% received more than 35000 TL. All participants were from families where both parents were Turkish and they used Turkish as the primary language at home. They were randomly

assigned to one of the three target groups: the Turkish target group, the Syrian target group and the Norwegian target group. The target groups were compared with respect to demographic variables using analyses of variance (ANOVAs) (see Table 1). The results showed that the three target groups did not differ in age: $F(2, 352) = 1.73$, $p = .18$, $\eta2 = .01$, total years of education: $F(2, 352) = 1.25$, $p = .29$, $\eta2 = .01$, or monthly household income: $F(2, 352) = 0.26$, $p = .77$, $\eta2 = .01$. Also, chi-squared results revealed that the number of females and males in each group was similar, $X 2(2, N = 352) = 0.02$, $p = .99$.

Table 1

Descriptive Statistics and Group Comparisons

Variable	Turkish target group				Syrian target group				Norwegian target group				F	η_p^2
	M	*SD*	*Min*	*Max*	*M*	*SD*	*Min*	*Max*	*M*	*SD*	*Min*	*Max*		
Age (years)	22.27	2.45	19	34	21.78	1.85	18	27	22.21	2.33	18	34	1.73	.01
Total years of education	15.06	1.72	11	20	14.71	2.08	2	19	15.03	1.76	10	20	1.25	.01
Household income (1-8)	3.16	1.57	1	8	3.30	1.68	1	8	3.17	1.62	1	8	0.26	.00
Perceived similarity (1-7)					3.07	1.13	1	5.88	2.71	0.95	1	5.13	7.07**	.03
Prejudice (1-5)					2.91	0.65	1.50	4.38	2.35	0.45	1.25	3.25	29.76**	.20
Realistic threat (1-10)					5.75	2.04	1.20	10	3.16	1.37	1	6.67	130.66***	.36
Symbolic threat (1-10)					5.90	1.82	2.14	10	4.16	1.33	1	7.43	73.83***	.23
Mind-reading stories (0-2)	1.55	0.29	0.88	2	1.49	0.33	0.50	2	1.50	0.31	0.50	2	1.21	.01
Control stories (0-2)	1.46	0.31	0.50	2	1.52	0.34	0.50	2	1.52	0.32	0.63	2	1.55	.01

Note. *p < .05. **p < .01. ***p < .001

Procedure

Before data collection, approval of the university′s Institutional Review Board (Decision no: 2015.200.IRB3.109) and the written consent of participants were obtained. All the study procedures were conducted in accordance with the ethical procedures specified in the APA Code of Conduct. A between-subjects research design was used such that participants were randomly assigned to one of three target groups: Turkish, Syrian or Norwegian. The participants in all three groups were first given culturally adapted versions of the Strange Stories Task (cf., Perez-Zapata et al., 2016). The stories were exactly the same in each group except for the cultural characteristics of the targets. After finishing the stories, the participants in the Syrian and Norwegian target groups completed the demographic form (to report their age, education level and household income), the Perceived Similarity Scale, the Threat Scale and the Classical Prejudice Scale. These scales were translated from English to Turkish by a group of bilingual psychology researchers working in our laboratory. Participants in the Turkish target group filled out only the demographic form. Since participants in the Turkish target group were asked to infer their ingroup members′ mental state only, they were not given questionnaires that assessed perceptions about outgroup members′ behaviors.

The data collection procedure lasted between 35 and 50 minutes and took place in a quiet laboratory located at the participants′ universities. Data was collected in a silent and unoccupied room from those participants who were part-time workers and not attending a university. A gift card worth 20 TL (~5 USD) was given to each participant to thank them for their time and effort.

Measures

Mindreading. To assess mental state understanding, a modified version of the Strange Stories Task (White, Hill, Happé, & Frith, 2009) was used. This task includes eight

mindreading (e.g., scenarios describing double bluff, white lie, persuasion and misunderstanding situations) and eight control stories (e.g., scenarios depicting cause-effect relations among objects), previously adapted by Perez-Zapata et al. (2016) to be used with cultural targets. Following their procedures, we modified the Strange Stories for the Turkish, Syrian and Norwegian targets, presented these stories to participants on a computer, and asked them to type their answers.

Stories in each target group were identical except for the cultural characteristics of the targets and objects in the scenarios such that participants in the Turkish target group read stories about Turkish characters (e.g., Serdar) and objects common in Turkish culture (e.g., a meatball); participants in the Syrian target group were presented with stories about Syrian characters (e.g., Bahira) and objects (e.g., hummus) that are common in Syrian culture, and participants in the Norwegian target group were shown stories about Norwegian characters (e.g., Bartel) and objects commonly known in Norwegian culture (e.g., fried potatoes). After each story, participants were asked a question probing the causal inference about either the mental states of the characters (e.g., Why does Serdar/Bahira/Bartel say so?) or physical events in the scenarios (e.g., Why did the alarm go off?).

Participants′ answers, which they typed on a computer, were later scored on a 3-point scale. For the mindreading stories, the responses involving irrelevant explanations (e.g., ″Because he is a liar″) were coded as 0. The responses that included correct answers that did not refer to the underlying mental states of the characters (e.g., ″Because he is greedy and wants to eat more meatballs″, without mentioning his intention to persuade) were coded as 1. The responses that stated the correct answer by using and referring to such mental state terms as ′know′, ′think′, and ′believe′ (e.g., ″Because he thinks he can persuade the cook to give him more meatballs if he appeals to the cook′s emotions″) were coded as 2. For control stories, the responses that included wrong or irrelevant explanations (e.g., Because the cat′s scream

activated the alarm) were coded as 0, the responses that give partially correct answers without explicitly mentioning cause-effect relations in the scenario (e.g., "The cat/thief activated the alarm", without saying that their movement led the detector to get activated) were coded as 1, and the responses that stated the correct answer by referring to cause-effect relations (e.g., "Because the thief disrupted the cat, leading the cat to move and activate the detector") were coded as 2. Total mindreading and control story scores were calculated separately by taking the mean of responses in eight stories, which resulted in a minimum score of 0 and a maximum score of 2 for both types of stories.

Participants' answers to the story questions were scored separately by the experimenter (first author) and an independent assistant who was blind to the study's design and hypotheses. The reliability between the raters was calculated via the intra-class correlation which measures the agreement between the coders by comparing the variability of different ratings of the same subject and allows for the appropriate estimation of weighted values of rater agreement. The intra-class correlation showed good reliability for the mindreading stories (α = .82; 2-way mixed ICC, 95% CI 0.79-0.84) and the control stories (α = .81; 2-way mixed ICC, 95% CI 0.79-0.83). In cases where disagreements occurred, a final score was reached by discussion.

Perceived similarity. The degree to which participants perceived an outgroup target as similar or dissimilar to their ingroup was assessed using the 8-item Perceived Similarity Scale (Zellmer-Bruhn et al., 2008). Participants rated on a 7-point Likert scale ranging from 1 (*totally different*) to 7 (*totally similar*), the extent to which they thought the Syrian or Norwegian group was similar to their ingroup with respect to eight different features including cultural background, nationality, ethnicity, working habits and interaction style. The total perceived similarity score was calculated by averaging the item responses (Cronbach's α

= .89 and .87 for the Syrian and Norwegian target groups, respectively), with higher scores indicating higher perceived similarity.

Prejudice. Prejudice towards outgroup members was measured with the Classical Prejudice Scale (Akrami et al., 2000) which includes 8 items (Cronbach's α = .85 and .60 in the Syrian and Norwegian target groups respectively), which assesses overtly negative racial evaluations (e.g., 'Syrian immigrants/Norwegian workers in Turkey do not take care of their personal hygiene'). Participants rated the statements on a 5-point scale ranging from 1 (*strongly disagree*) to 5 (*strongly agree*), with higher scores indicating higher prejudice toward outgroup members. The prejudice score was calculated by taking the mean of the item responses.

Realistic and symbolic perceived threat. To assess the level of perceived threat from the Syrian or Norwegian outgroup, the Threat Scale (Stephan, Ybarra, & Bachmann, 1999) was used. This scale has two subscales: perceived realistic threat and perceived symbolic threat. The realistic threat subscale includes 6 items (Cronbach's α = .79 and .65 in the Syrian and Norwegian target groups respectively) and evaluates perception of threat about tangible resources (e.g., 'Because of Syrian immigrants {Norwegian workers} in Turkey, Turkish people benefit less from health care and education facilities'). The symbolic threat subscale consists of seven items (Cronbach's α = .77 and .59 in the Syrian and Norwegian target groups respectively) that measure the perception of threat regarding non-materialistic resources (e.g., 'Syrian immigrants {Norwegian workers} pose a danger for Turkish culture). For both subscales, participants rated the statements on a 10-point Likert scale ranging from 1 (*strongly disagree*) to 10 (*strongly agree*), with higher scores indicating higher perceived threat from outgroup members. The scores were calculated separately for realistic threat and symbolic threat by taking the mean of the item responses in each subscale.

Data analysis plan

First, preliminary analyses were conducted using ANOVA's to compare the Syrian and Norwegian target groups in terms of perceived similarity, prejudice, and realistic and symbolic threat. Then, to examine whether accuracy of mind-reading changes depending on the target group, we compared the mindreading scores of the three target groups using ANCOVA, controlling for their general story comprehension skills (i.e., their control story performance). After investigating the between-group differences in mind-reading accuracy, we focused on the within-group associations in the Syrian and Norwegian target groups to examine whether education, income, perceived similarity, prejudice, and realistic and symbolic threat correlated with mentalizing in each group. Subsequently we used hierarchical regression in each target group to find the unique predictors of mindreading, focusing only on the variables that yielded significant correlations with mindreading scores. Since we were interested in separate roles of prejudice and realistic and symbolic threat in mindreading accuracy, we investigated these variables and their interaction with perceived similarity in separate regressions.

Finally, we used a regression tree to examine complex interactions that might not be evident in classical regression. Regression trees are appropriate for exploring complex interactions between study variables. They split the data into small homogenous groups or nodes based on individuals' cut-off scores on a given variable and create simple profiles out of complicated interactions among the variables (Calvocoressi et al., 2005; Freitas et al., 2012). By classifying groups of individuals in small cohesive groups based on a cut-off score, regression trees present these small groups' relation to the outcome variable relative to other small groups in the data and demonstrate these relations in the framework of a tree. The algorithm used in regression trees automatically determines the optimum cut-off scores and minimizes within group variance. The splitting of the data goes on until no further splitting can yield a significant difference among groups. As such, regression trees allow for

interpreting complex interactions among variables in a simple way and become useful in cases where the hypothesized relations in the data have a non-linear nature and cannot be discovered with linear regression (Breiman et al., 1984; Strobl, Malley, & Tutz, 2009).

Results

Preliminary analysis

Table 1 shows group differences in perceived similarity, prejudice, realistic threat and symbolic threat. There was a significant difference in perceived similarity between the Syrian and Norwegian target groups. That is, the Turkish participants felt more similar to Syrians than to Norwegians, $F(1, 235) = 7.07$, $p = .01$, $\eta^2 = .03$. Despite perceiving Syrians as more similar to their ingroup, participants in the Syrian target group reported higher prejudice toward their target group (Syrians), $F(1, 235) = 29.76$, $p = .001$, $\eta^2 = .20$, higher realistic threat, $F(1, 235) = 130.66$, $p = .0001$, $\eta^2 = .36$, and higher symbolic threat, $F(1, 235) = 70.83$, $p = .0001$, $\eta^2 = .23$, compared to participants in the Norwegian target group.

Group differences in mindreading

Participants' performance in mindreading stories was significantly correlated with their performance in control stories (Turkish target group: $r = .50$, $p = .001$; Syrian target group: $r = .40$, $p = .001$; Norwegian target group: $r = .40$, $p = .001$). Given that the performance in the control stories represents general reasoning and story comprehension, we controlled for this high correlation between mindreading and control stories by analyzing group differences in mindreading scores with ANCOVA, using target group as a between-subjects factor and control story performance as a covariate. Even after controlling for participants' performance in the control stories, there was a significant group difference in mindreading scores, $F(2, 350) = 3.20$, $p = .04$, $\eta^2 = .02$. Pairwise comparisons showed that the Turkish target group ($M = 1.57$, $SD = .03$) showed significantly higher mindreading performance than participants in the Syrian ($M = 1.48$, $SD = .03$), $t(238) = 2.36$, $p = .02$,

Cohen's $d = 0.31$, 95% CI [0.01, 0.16] and Norwegian target groups ($M = 1.49$, $SD = .03$),

$t(233) = 1.97$, $p = .04$, Cohen's $d = 0.26$, 95% CI [0.01, 0.15]. However, there was no

difference in mindreading between participants in the Syrian and Norwegian target groups,

$t(234) = 0.33$, $p = .74$, Cohen's $d = 0.04$, 95% CI [-0.08, 0.06].

Correlations and predictors of mindreading toward outgroup targets

The results above demonstrate an ingroup advantage in mindreading accuracy, with

Turks' mindreading of fellow Turks exceeding their mindreading of Syrians or Norwegians.

Although mindreading accuracy scores between outgroup targets (Syrian and Norwegian) did

not differ, we still investigated the correlates of mindreading accuracy separately for each

target group to examine how differences in perception of the target (prejudice, similarity and

threat) in each group relate to mindreading performance. In the Syrian target group (see Table

2), mindreading performance was positively correlated with total years of education and

perceived similarity, but negatively correlated with prejudice and realistic threat. In contrast,

mindreading did not correlate with monthly household income or symbolic threat. In the

Norwegian target group (see Table 3), the only significant correlation was between

mindreading and realistic threat, such that higher perceived threat was related to worse

mindreading. Total years of education, monthly household income, perceived similarity,

prejudice, and symbolic threat were not associated with mindreading.

We then examined the significant correlates of mindreading in the Syrian group –

education, perceived similarity, prejudice and realistic threat – further with hierarchical

regression analyses. Because prejudice and threat perception correlated highly in the Syrian

target group ($r = .52$, $p = .001$), we examined them separately in different regression

equations. In the first regression (see Table 4), we entered education, perceived similarity,

prejudice and their interactions. Among these variables only education and prejudice

predicted unique variance in mindreading performance. In the second regression (see Table

5), we kept education and perceived similarity but replaced prejudice with realistic threat. We also added the interaction terms. Only perceived similarity predicted mind-reading scores in this regression, indicating that prejudice but not threat explained unique variance in mindreading in the Syrian group. We did not compute a regression for the Norwegian target group since mind-reading performance in this group was correlated only with realistic threat.

Table 2

Correlations for the Syrian target group ($N = 120$)

Variables	Mind-reading stories	1	2	3	4	5	6
1.Total years of education	.33**	-					
2.Household income	.07	.06	-				
3.Perceived similarity	.34**	.24**	.03	-			
4.Prejudice	-.40**	-.26**	-.12	-.53**	-		
5.Realistic threat	-.27**	-.21*	.01	-.47**	.52**	-	
6.Symbolic threat	-.16	-.21*	-.03	-.38**	.42**	.69	-
7.Control stories	.40**	.17	-.05	.18	-.11	-.14	-.09

Note. *$p < .05$. **$p < .01$.

Table 3

Correlations for the Norwegian target group ($N = 115$)

Variables	Mind-reading stories	1	2	3	4	5	6	7
1.Total years of education	-.10	-						
2.Household income	.11	.11	-					
3.Perceived similarity	.01	.11	.01	-				
4.Prejudice	-.20	-.03	-.27	-.04	-			
5.Realistic threat	-.25**	-.11	-.20*	.13	.27*	-		
6.Symbolic threat	-.18	-.13	-.20*	.20*	.39**	.56**	-	
7.Control stories	.40**	-.07	.19	.01	-.06	-.31**	-.15	-

Note. *p < .05. **p < .01.

Table 4

Hierarchical regression predicting mindreading from education, perceived similarity and prejudice in Syrian target group ($N = 120$)

Variables	Step 1			Step 2			Step 3		
	B	*SE*	*β*	*B*	*SE*	*β*	*B*	*SE*	*β*
Education	.04	.02	.26*	.05	.03	.36*	.06	.03	.38*
Perceived similarity				.02	.05	.06	.02	.05	.07
Prejudice	.15	.08	.26	-.18	.08	-.33*	-.18	.08	-.34*
Education*Perceived similarity				-.02	.02	-.15	-.02	.02	-.16
Education*Prejudice				-.02	.02	-.21	-.02	.03	-.20
Perceived similarity*Prejudice				-.06	.06	-.14	-.05	.06	-.13
Perceived similarity*Prejudice*Education							.01	.02	.07
R^2		.22			.25			.25	
F for change in R^2		5.12**			0.78			0.13	

Note. *p < .05. **p < .01.

Table 5

Hierarchical regression predicting mindreading from education, perceived similarity and realistic threat in Syrian target group ($N = 120$)

Variables	Step 1			Step 2			Step 3		
	B	SE	B	B	SE	β	B	SE	β
Education	.04	.01	.25**	.02	.02	.14	.02	.02	.13
Perceived similarity	.07	.03	.23*	.06	.03	.22*	.06	.03	.21*
Realistic threat	-.02	.02	-.08	-.02	.01	-.08	-.01	.02	-.07
Education*Perceived similarity				.00	.01	.01	.00	.02	.03
Education*Realistic threat				.01	.01	.17	.01	.01	.16
Perceived similarity*Realistic threat				.00	.01	.02	.00	.01	.02
Perceived similarity*Realistic threat*Education							.00	.01	-.04
R^2		.18			.19			.19	
F for change in R^2		8.33***			0.60			0.11	

Note. *$p < .05$. **$p < .01$. ***$p < .001$

Regression tree predicting mindreading for outgroup targets

We created the regression trees separately for the Syrian and Norwegian target groups, and investigated the role of education, perceived similarity, prejudice and realistic threat in mindreading performance toward outgroup targets. As for the linear regression analysis, we analyzed the role of prejudice and realistic threat in separate trees because they were highly correlated. When creating the regression trees, we used CRT as the tree-growing criterion. CRT tries to maximize within-group (node) homogeneity and attempts to reduce impurity in groups to create a best-fitting model.

In the Syrian target group, when total years of education, perceived similarity and prejudice were entered, the resulting regression tree (Figure 1) showed that perceived similarity was the best predictor of mindreading, and thus the first branch of the tree started with perceived similarity with the cut-off score of 2.68. Those who perceived Syrians as more similar to their ingroup had higher mindreading scores ($M = 1.60$, $SD = 0.28$) for Syrian targets than those who perceived Syrians as less similar to their ingroup ($M = 1.34$, $SD = 0.34$). However, when perception of lower similarity was coupled with lower education ($<$ 15.5 years), mindreading scores decreased further ($M = 1.27$, $SD = 0.35$) in comparison to the mindreading scores of those who perceived Syrians as less similar to their ingroup but had a higher education level ($M = 1.55$, $SD = 0.18$). The last branch of the tree was prejudice. The lowest mindreading performance was seen when lower perception of similarity and lower education were combined with higher levels of prejudice toward Syrians. Among those who perceived themselves as less similar to Syrians and had less than 15.5 years of education, individuals who had higher prejudice toward Syrians demonstrated less accurate mindreading ($M = 1.11$, $SD = 0.25$) than those who had lower similarity perception and lower education but also lower prejudice ($M = 1.32$, $SD = 0.36$). These findings pointed to an interaction between perceived similarity with education and prejudice as an influence on mindreading and the

model, with all these predictors explaining 27% of the variance in mindreading accuracy toward Syrians targets.

Next, we ran the same regression tree (see Figure 2) with education and perceived similarity by replacing prejudice with realistic threat. Again, the first branch of the tree was perceived similarity. Those who perceived Syrians as more similar to their ingroup displayed higher mindreading scores ($M = 1.60$, $SD = 0.28$) for Syrian targets than those who perceived Syrians as less similar to their ingroup ($M = 1.34$, $SD = 0.34$). However, unlike the first tree where a higher perception of similarity brought the highest mindreading score, here mindreading score decreased when higher similarity was coupled with higher realistic threat from Syrians ($M = 1.49$, $SD = 0.31$) compared to lower realistic threat ($M = 1.66$, $SD = 0.24$). On the other hand, when perception of similarity was low, education interacted with perceived similarity. Those who perceived Syrians as less similar to themselves and had fewer than 15.5 years of education, had lower mindreading scores ($M = 1.27$, $SD = 0.35$) than those who perceived Syrians as less similar but had more than 15.5 years of education ($M = 1.55$, $SD = 0.18$). This model with perceived similarity, realistic threat and education together explained 26% of the variance in mindreading accuracy toward Syrian targets.

The same regression trees were also created for the Norwegian target group (see Figure 3). However, significant splits were found only for education, perceived similarity and realistic threat. When realistic threat was replaced with prejudice, there was no differentiation among the groups, probably due to the low level of prejudice felt for this relatively neutral outgroup. When realistic threat was in the regression tree along with education and perceived similarity, the first branch of the tree that appeared was perceived similarity with the cut-off score of 2.75. Individuals who perceived Norwegians to be more similar to their ingroup had higher mindreading scores ($M = 1.52$, $SD = 0.26$) than individuals who perceived Norwegians as less similar to their ingroup ($M = 1.50$, $SD = 0.33$). Perception of lower similarity was

associated with the lowest mindreading score ($M = 1.44$, $SD = 0.33$) if it was accompanied by higher threat perception compared to lower threat perception ($M = 1.56$, $SD = 0.33$). Education was excluded from this tree because it could not be meaningfully split in the Norwegian target group in its relation to mindreading. This model explained 2% of the variance in mindreading toward Norwegian targets.
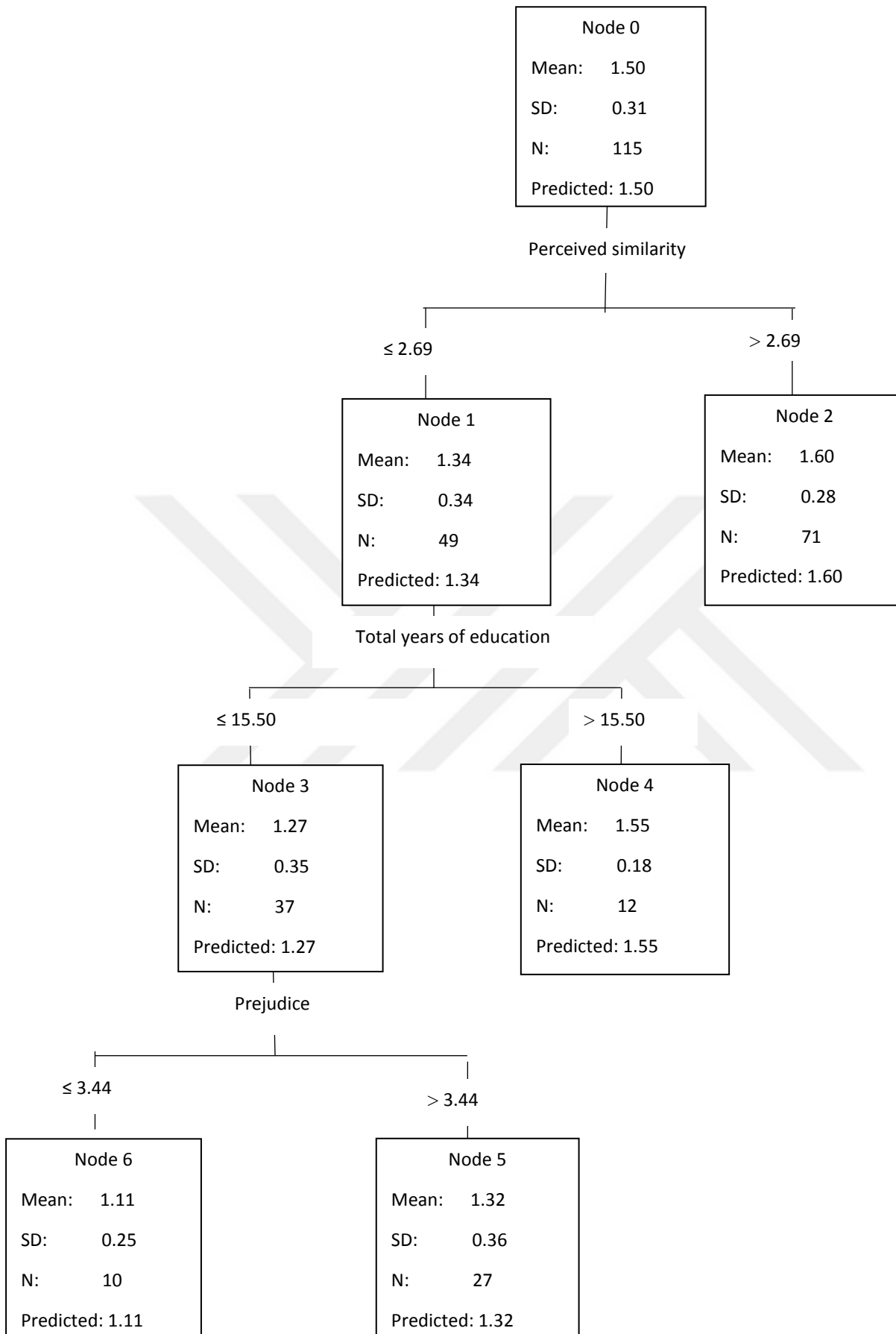
Figure 1. Regression tree predicting mindreading accuracy from perceived similarity, education and prejudice in Syrian target group
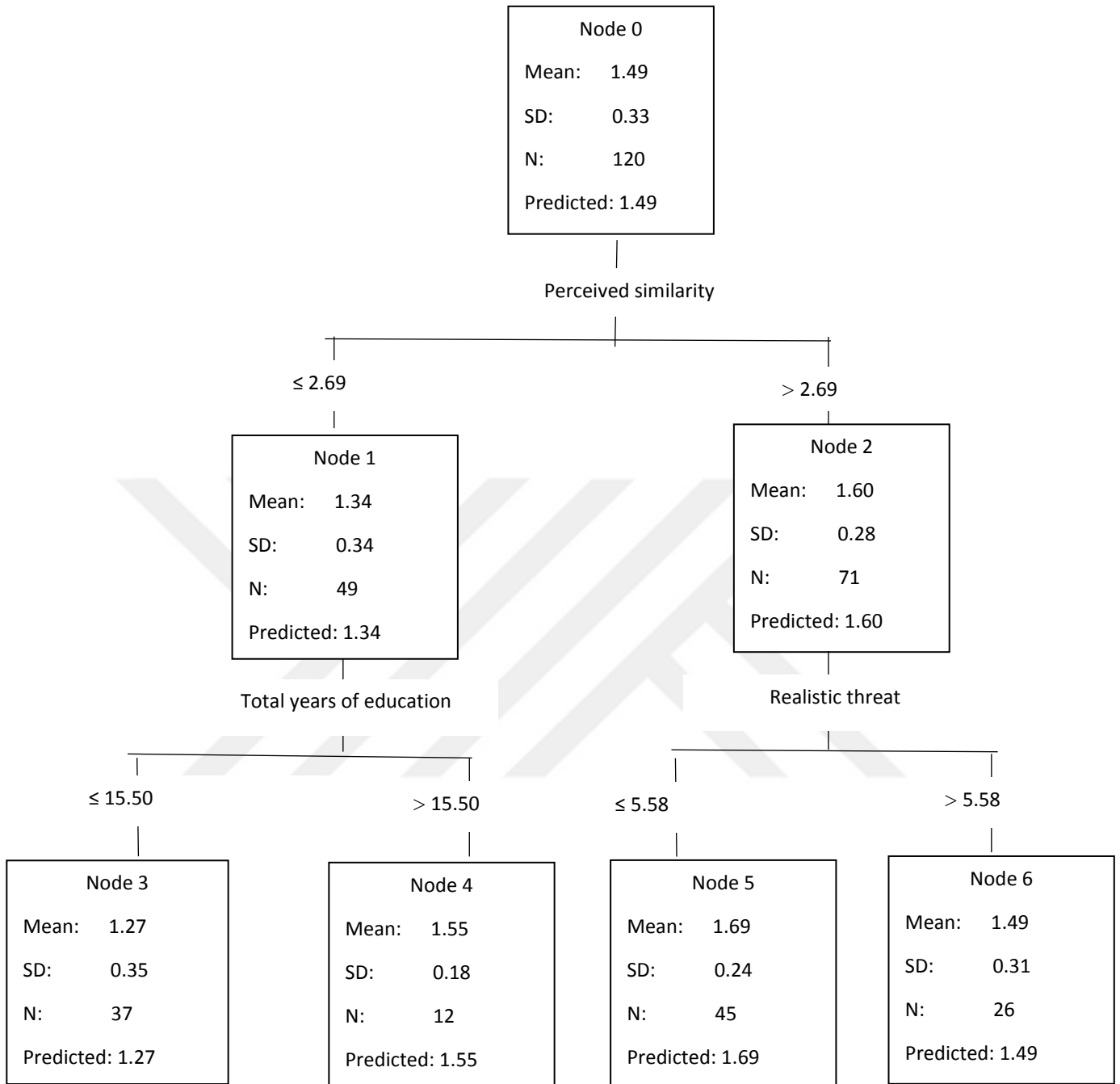
Mindreading toward Syrians

Figure 2. Regression tree predicting mindreading accuracy from perceived similarity, education and realistic threat in Syrian target group
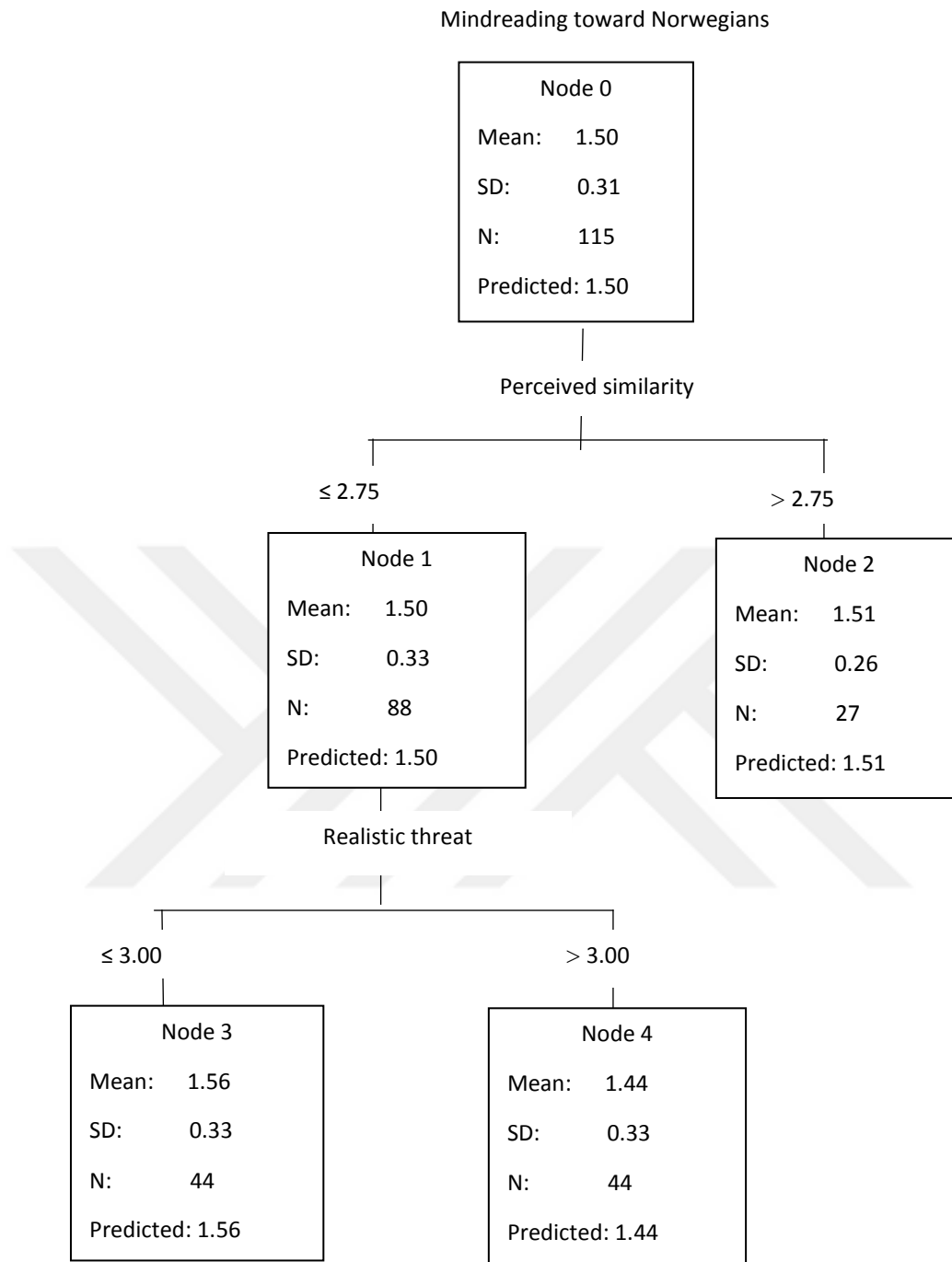
Mindreading toward Norwegians

Figure 3. Regression tree predicting mindreading accuracy from perceived similarity and realistic threat in Norwegian target group

Discussion

This study contrasted young Turkish adults' accuracy in comprehending the minds of individuals from their ingroup with two distinct outgroups that varied in similarity to the ingroup. The results both confirmed the findings of earlier studies that mindreading is poorer when target individuals are dissimilar, and also helped demonstrate that perceived dissimilarity on its own does not explain worse mindreading. In keeping with previous studies (Adams et al., 2010; Perez-Zapata et al., 2016), our findings showed an ingroup advantage in mental state inference such that Turkish participants demonstrated higher accuracy in reading the minds of ingroup members compared to the minds of Syrian and Norwegian outgroup members. This ingroup advantage apparently stems from a similar cultural background that provides a means for explaining ingroup members' behaviors. Living in the same culture bestows individuals with a shared meaning-making system through which ingroup members can grasp each other's behaviors, including those that imply unobservable mental states (Apperly, 2012). This shared meaning-making system, therefore, facilitates the interpretation of fellow ingroup members' overt behaviors with reference to their underlying mental states.

In addition, and contrary to our predictions, there was no difference in accuracy of understanding mental states of the two different outgroups. Participants perceived Syrians as more similar to Turks than Norwegians, and reported higher levels of prejudice toward and threat perception from Syrians than Norwegians; yet, these differences did not lead to differential mindreading performance when comparing the Syrian and Norwegian target groups. It might be the case that although outgroup members' identity differences at the time of mentalizing were fully recognized, their characteristics balanced out. Syrians were more similar to Turks than Norwegians but also more of a realistic threat and more subject to prejudice than Norwegians. In contrast, Norwegians were more dissimilar to Turks than Syrians but less of a realistic threat and less subject to prejudice than Syrians. This trade-off

between similarity, threat and prejudice between Syrians and Norwegians might have balanced out the reactions toward these two outgroups, leading to equally poor mentalizing for both outgroup targets. Moreover, Norwegians' relatively high social status as members of developed European culture might have offset the effect of dissimilarity when compared to the Syrians who are lower in social status to Turks but culturally similar to them.

The link between mindreading and perceived similarity: Within-group examinations

Although overall mentalizing was similar when comparing the Syrian and Norwegian target groups, important associations that partly supported our hypotheses were observed when perceived similarity, prejudice and threat perception were examined *within* each group. Regression tree analysis yielded perceived similarity as the most important predictor of mindreading accuracy in both the Syrian and Norwegian target groups. Those who perceived Syrians and Norwegians as more similar to the Turkish ingroup displayed greater accuracy in inferring these outgroup members' mental states compared to those who perceived them as less similar. As Ames (2004) pointed out, during perspective taking, individuals tend to use their own subjective mental states (e.g., beliefs, ideas and intentions) as a guide to grasp what others might be thinking so that similarity can facilitate mentalizing. As expected, Syrian targets received higher perceived similarity scores than Norwegian targets in group comparisons; yet within each group, perceived similarity emerged as important for mind-reading accuracy. This indicates that the perception of the target's similarity is critical to mindreading rather than the actual cultural similarity. Previous studies also highlighted the importance of perceived similarity in mindreading (Mitchell et al., 2006; Perez-Zapata et al., 2016), yet only obtained group differences (e.g., reasoning about Australians versus Chileans). We obtained both group differences (Turks versus Syrians/Norwegians), but also within-group differences. Further, unlike previous studies, we examined both the role of similarity and the role of threat and prejudice, finding a unique effect for similarity even after

accounting for threat and prejudice. As such, our results support existing arguments that favor the ease and accuracy of perspective taking for targets perceived as similar to self and one's ingroup (Adolphs, 2002; Meltzoff & Brooks, 2001).

The link between mindreading and threat/prejudice

  Prejudice. In the Syrian target group, the lowest mindreading accuracy scores were obtained by those who reported lower perceived similarity and higher prejudice toward Syrians. This finding supports Ames's (2004) similarity-contingency model. In this model Ames asserted that when the target is not perceived as similar, individuals use long-held prejudices about the target to infer his/her mind. In line with this argument, we found that higher prejudice toward Syrians decreased participants' mindreading accuracy only among those who consider Syrians as less similar to Turks. We reasoned that Syrians, as a cultural group, are relatively similar to Turks but are also subjected to high levels of prejudice, yet the actual pattern was more complex. Those participants who could not see much similarity between themselves and Syrians and had more negative attitudes toward Syrians, displayed lower mindreading scores when inferring Syrians' minds. In contrast, for those who thought of Syrians as more similar to Turks, prejudice was not a significant determinant of mental state comprehension. Thus, prejudice and perceptions of dissimilarity combined in their relation to worse mindreading.

  When explaining why prejudice relates to lower mindreading skills, Harris and Fiske (2006) referred to dehumanization, which is one of the most undesirable forms of prejudice toward low-status groups (e.g., immigrants, homeless people). Dehumanization creates a tendency to see outgroup members as beings that do not have unique human characteristics such as possessing a distinctive mind. Given this, negative attitudes in prejudice that cast Syrians as immoral, untrustworthy and unintelligent might result in participants being less able to consider Syrians as individuals with idiosyncratic minds. One consequence of this is

lower comprehension of what they might be thinking. In the current study, high levels of prejudice could have decreased Turkish individuals' adeptness in accounting for Syrians' behaviors based on their mental states. Moreover, the negative feelings and opinions intrinsic to prejudice, are likely to build a barrier between the perspective-taker and the target (Ames & Mason, 2012), and thus impede the core process of perspective taking, and self-other overlap (Galinsky et al., 2005).

The results also showed an interaction between perceived similarity, education and prejudice such that within the group who perceived less similarity between Syrians and Turks, those with lower education levels displayed worse mindreading toward Syrian targets if they also had higher prejudice. In other words, lower education acted as a risk factor for prejudice and impaired mindreading. These findings are consistent with the results of previous studies highlighting the role of education in relation to prejudice (Coenders & Sheepers, 2003; Thomsen & Olsen, 2016). Although we also investigated the role of income as well, our results showed that income was not associated with prejudice, threat or mindreading for either of the outgroup targets. While some studies highlight that individuals with lower income can be prone to prejudice, particularly toward immigrants as they compete for jobs (Carvacho et al., 2013; Pettigrew et al., 2008), our results did not reveal a direct association between income and mindreading. This might be because our participants were mostly young adults at universities, with relatively equal educations and incomes, whose opinions are still in transition. Future studies should examine income in older samples with a wider income distribution.

The relations outlined so far about the role of prejudice and education in mindreading held only for participants in the Syrian target group and showed consistency with the similarity-contingency model of Ames (2004). In contrast, understanding Norwegian targets' minds was not associated with prejudice or education. Although the similarity-contingency

model would predict that perceiving Norwegians as less similar to Turks could lead participants to rely on their prejudiced beliefs and ideas when inferring the mental states of Norwegian targets, this was not observed in our data. This might be due to the relatively low level of prejudice participants reported for Norwegian compared to Syrian targets. Prejudice may not be a critical factor affecting mindreading when individuals perceive outgroup targets as less similar to the ingroup, yet also evaluate them relatively neutrally. Prejudice includes biased beliefs and emotions which guide the mindreading process for dissimilar outgroup targets (Ames, 2004). However, when outgroup targets come from a relatively neutral high-status European group, prejudice would not guide mindreading even when outgroup targets are dissimilar to the ingroup. Thus, while our results supported the model of Ames (2004) for Syrian targets for whom prejudice is high, it is clear that dissimilarity in and of itself is not enough to cause prejudice or biased mindreading.

Realistic and symbolic threat. In addition to prejudice, the current study also investigated the role of threat perception in mindreading. Assessing whether an outgroup endangers the wellbeing of ingroup members is linked with various socio-cognitive mechanisms in the intergroup context (Chen & Zhao, 2015; Hackel et al., 2014). Motivated by the desire to predict others' behaviors in advance (Epley & Waytz, 2010), mindreading can also relate to threat perception from outgroup targets. We found that perceiving realistic threat from outgroup members (e.g., using public hospitals and schools, applying for available jobs) was significantly associated with lower accuracy of mindreading of Syrian and Norwegian targets. It is important to note that only realistic threat and not symbolic threat (e.g., losing cultural dominance of ingroup or change in entrenched local beliefs and way of life) was a significant predictor of lower accuracy in mindreading. For young adults, realistic threat from outgroups might be more prominent in that its consequences are foreseen easily in the short-term, such as having to compete in the job market with many more people or having to wait

longer for accessing health services. As explained by integrated threat theory (Stephan & Stephan, 2013) realistic threat might rapidly direct individuals' attention to themselves (e.g., their social and economic conditions) and render them unable to consider the perspectives of outgroup targets. This might be especially true for Turkish young adults living in a developing country with limited resources.

Besides realistic threat, symbolic threat is also a critical predictor for intergroup emnity (Stephan et al., 2002). However, its influence on mindreading was not observed in our sample for either outgroup. One possible reason for this is that the effects of symbolic threat on mindreading may only emerge over longer periods, with a gradual change in cultural norms. A protracted effect may thus not be as readily discernible as an influence on the mindreading of young adults whose sensitivity for a change in cultural atmosphere is not as high as those of adults. Future studies should delve more into the mechanisms that make realistic rather than symbolic threat a disadvantage for understanding outgroup members' minds.

Although realistic threat impaired mindreading for both Syrian and Norwegian targets, the effect manifested itself somewhat differently. In the Syrian target group, perceived similarity increased mindreading accuracy in general toward Syrians; yet, its advantage was dampened if individuals felt highly threatened by Syrians. In contrast, in the Norwegian target group, realistic threat further decreased the already low mindreading accuracy of those participants who perceived lower similarity between Norwegians and Turks. Thus, Syrians' similarity but Norwegians' dissimilarity constituted a threat for Turkish participants. The difference in the status of Syrians and Norwegians in the eyes of young Turkish adults could be a reason for the discrepancy observed in the antecedents of realistic threat. As integrated threat theory argues, status differences between ingroup and outgroups make realistic threat a significant aspect of intergroup relations (Stephan et al., 2000). Ingroup members can feel

threated by both low- and high-status outgroups (Stephan & Renfro, 2002; Tausch et al., 2007). Research suggests that high-status ingroup members feel threatened by low-status outgroups when they sense that the existing status differences in social and economic conditions are in favor of the low-status outgroups (Riek et al., 2006). In line with this idea, Syrian immigrants' attempts to improve their social and economic conditions in Turkey as minorities can lead Turks to believe they will lose their current privileges. Turks' perception of Syrians as similar to the Turkish ingroup (e.g., in religion and traditions) might further increase this threat perception with reluctance to having to share limited resources with Syrians as "equals", especially given the recent political talks of granting citizenship rights to Syrian immigrants.

In contrast to Syrians, Norwegians, are individuals belonging to a high-status modern European culture as indicated by Norway's first-rank among 189 countries in the Human Development Index (see the United Nations Development Programme, 2018). As such, Norwegians might be perceived as possessing highly valued attributes (e.g., discipline, expertise, hard-work, self-sufficiency) that increase the status difference between them and the Turkish ingroup. Thus, Norwegians' possible presence in Turkey as high-status outgroup members might lead to realistic threat with Turks believing that they have a disadvantaged social and economic position, and decrease the mindreading accuracy of Turkish participants. In short, in line with integrated threat theory, our results showed that depending on their similarity to the ingroup, both low- and high-status outgroups can be perceived as posing a realistic threat to the ingroup, which in turn impairs reading the minds of outgroup members.

Given the similar nature of our study with the study of Gönültaş et al. (2019), it might be important to compare our findings with young adults to the findings Gönültaş et al. (2019) obtained with children. Firstly, both our results and theirs pointed to an ingroup advantage in mindreading. School-aged children and young adults were similar in that they understood

minds of their ingroup members better than minds of outgroup members. These parallel results in mindreading across age groups might reflect that social context (e.g., cumulative experiences with ingroup members) starts shaping socio-cognitive skills early on in childhood and continue exerting its influence on social cognition in young adulthood. Although young adults have higher chance to interact with outgroup members either directly or indirectly through media, they still display higher accuracy when reading minds of ingroup than outgroup members, a trend set in motion in early years. Nevertheless, our results also showed divergence from findings of Gönültaş et al. (2019) with respect to the role of perceived similarity in inferring outgroup members' minds. Gönültaş et al. (2019) found that perceived similarity was not associated with reading the minds of outgroup members and only prejudice and threat were independently linked with it. In contrast, our results demonstrated that perceived similarity interacts with prejudice and threat when influencing reading of outgroup members' minds. This difference might arise due to school-aged children's lower ability to evaluate outgroup members in multiple dimensions that involve both similarity judgements and affective evaluations such as prejudice and threat (Smetana, 2006). Indeed, beginning of adolescence marks the critical point at which children start attending to multiple sides of the situations and perceive the world on the basis of varied aspects, which in turn enables them to have a sophisticated comprehension of the world (Killen, Margie, & Sinno, 2006; Raabe & Beelmann, 2011). Thus, for children, mindreading is influenced by only the most salient aspects of the outgroups' features, namely prejudice and threat, whereas for young adults, making sense of outgroup members minds occurs as a function of complex interaction between perceived similarity, prejudice and threat.

Based on our results, it is critical to highlight the importance of using a regression tree to capture complex interactions of variables when investigating their link with mindreading. Linear regression showed the independent links of education, perceived similarity and

prejudice with mindreading in the Syrian target group; however, it did not identify

interactions among these variables. The regression tree analyses revealed that perceived

similarity is an important predictor of mindreading in both target groups - a finding that was

seen only in the Syrian but not the Norwegian target group in the linear regression - and also

showed that education, prejudice and threat are all critical for mindreading as they relate to it

by interacting with different levels of perceived similarity.

The reason why these associations were not found in linear regression but were found

with the regression tree is related to the nature of regression tree analysis. Regression trees

classify data into small homogenous groups based on a cut-off score determined by its

algorithm and explore whether these small groups interact with scores in other variables of the

tree (Calvocoressi et al., 2005). The interactions observed in regression tree analysis might not

be found in simple linear regression when classification of these homogenous groups and their

interactions with other variables display a complex non-linear relationship (Breiman et al.,

1984; Strobl, Malley, & Tutz, 2009). Therefore, interaction of perceived similarity with

realistic threat in the Norwegian target group, and with education and prejudice in the Syrian

target group, was not apparent in simple linear regression but was observed with the

regression tree. These results indicated that unlike children whose mindreading is impacted by

affective evaluations through prejudice and threat (Gönültaş et al., 2019), young adults'

mindreading is influenced by both perceived similarity to ingroup attributes as well as

prejudice and threat. In other words, our findings demonstrated that in mature mindreaders,

targets' similarity to the ingroup, along with prejudice and threat, influence mental state

inference.

It is noteworthy that other studies (Gönültaş et al., 2019, Perez-Zapata et al., 2016)

which used Strange Stories to evaluate participants' mindreading performance obtained

parallel findings to ours in demonstrating higher mindreading for ingroup than outgroup

targets. Moreover, studies using measures other than Strange Stories, too, yielded an ingroup advantage in mindreading. For instance, by using the Reading the Mind in the Eyes Test, both Adams et al. (2010) and van der Meulen et al. (2019) found that young adults inferred the mental states of ingroup members better than outgroups. Likewise, Mitchell et al. (2006) gave participants a series of questions about the beliefs, tastes and preferences of ingroup and outgroup members, and observed an ingroup advantage in inferring mental states. Similar results were found with empathy measures in child samples. Masten, Gillen-O′Neel and Brown (2010) assessed children′s empathy toward a group of peers who were socially excluded, and found that children displayed higher empathy toward their ingroup than outgroup members. In short, research conducted with children and adults using diverse measures converges on the conclusion that individuals display higher mental state understanding toward ingroup than outgroup members. This indicates that an ingroup advantage in mindreading is not dependent on measurement tools, and rather reflects a robust phenomenon in social cognition. Apart from the measurement of mindreading, it is important to note that the prejudice and perceived threat scales for the Norwegian target group revealed Cronbach′s alpha scores only in the "acceptable" range. Thus, although our findings are in line with the extant literature, they should be replicated in the future with regard to reading the minds of high-status but dissimilar outgroup members.

To conclude, these results can be interpreted within a wider context whereby anti-immigrant attitudes have risen along with ingroup favoritism in the United States and Europe (Schemer, 2012). As individuals in host countries believe that their own social and economic wellbeing is at risk due to an increasing immigrant population, their level of tolerance and sympathy toward these immigrants gradually decreases. One corollary of this lack of tolerance is reflected in individuals′ comprehension of outgroup minds. Our results demonstrated for the first time in young adults that prejudice toward, and threat perception from outgroup targets,

can impair mindreading and interacts with perceived similarity to the ingroup. Mindreading, even amongst mature, young adult mindreaders, varies as a function of the interacting characteristics of the target group whose mental states one tries to assess. As Waytz et al. (2010) highlighted, mindreading is not solely about the cognitive skills of the perspective taker; the target whose perspective is taken also influences this process.

CHAPTER 5

GENERAL DISCUSSION

This dissertation aimed to investigate the role of social context in development and use of ToM—mental state understanding skill that is unique to humans and grants them their capacity for coordinated and cooperative action (Epley & Waytz, 2010; Tomasello et al., 2012). Both domain general (e.g., language and executive functions) and domain specific (theory-theory, modules, simulation) perspectives attempted to explain emergence, development and deployment of ToM, and in varying degrees, all of these perspectives acknowledged the contribution of social context (Wellman, 2002). However, social context appeared to be an indispensable part of theory-theory's conceptualization of ToM as it argued that social experiences help children improve their initial rudimentary theories about behaviors of others (e.g., their explanation of others' actions) and give rise to progressive acquisition of more complex mental states (Wellman et al., 2001). This explanation favors the idea that social context provides children necessary social and cultural input (e.g., norms, beliefs, shared knowledge), according to which they could tailor their existing constructs about mental states of others and use these constructs depending on the contingencies of a given social situation (Wellman & Gelman, 1998). With such a focus on social context and experiences within this social context, theory-theory can successfully account for emergence, development and deployment of ToM. Within the framework of the theory-theory, this dissertation focused on the ways in which social context contributes to the development and use of ToM. The current chapter discusses the main results of the studies explained in the second, third and fourth chapters of this dissertation as well as their implications for the literature on ToM.

Children's ToM abilities develop gradually in a predictable sequence. Although cross-cultural research pointed that false-belief understanding is achieved between the ages of 3 to 6 across cultures (Callaghan et al., 2005), cultural differences in timing and sequence of

acquisition were found for other mental state concepts such as diverse beliefs (DB) and knowledge access (KA). Specifically, studies demonstrated that preschool children in individualist cultures achieve insight about DB earlier than their peers in collectivist cultures who evidence success in KA before DB (Shahaeian et al., 2011; Wellman et al., 2006). This indicates that development of ToM takes place in line with the broad cultural norms which regulate social experiences of children and facilitate insight about certain mental concepts over others. Since individualist cultures prioritize individuals' unique experiences, beliefs and ideas over those of the social groups (Markus & Kitayama, 1991), children are socialized in an atmosphere that accentuates and glorifies individuals' independent viewpoints. In such a cultural context, children learn DB earlier than their peers in collectivist cultures who are raised in an atmosphere where collective action, harmony, unity in thoughts and beliefs are more important than individual uniqueness (Slaughter & Perez-Zapata, 2014). When harmony and going in line with the group norms are of prime importance, members of that society are required to know the norms in the first place in order to conform to them. Thus, in collectivist cultures, KA which is the ability to understand the ways of reaching knowledge (e.g., linking seeing something with knowing about it) develops earlier.

In light of these discussions, it was critical to investigate sequence of ToM acquisition in Turkish children who are living in a culture that blends elements of individualism with collectivism following the social transformations in the aftermath of 1980s (Göregenli, 1995). The study reported in the second chapter of this dissertation showed that majority of Turkish children in the sample displayed collectivist ToM acquisition pattern with earlier understanding of KA than DB. However, further analyses focusing only on achievement in KA and DB tasks showed that those children who evidenced DB but not KA understanding were living in more crowded households with higher number of adults than children who evidenced KA but not DB. It appeared that living with higher number of adults promotes early

understanding of DB probably because interactions within the household make varying beliefs of family members more apparent for children. This implies that in social context of Turkey where individualist and collectivist values co-exist, family characteristics play a critical role in determining whether children's ToM acquisition sequence would fit to individualist vs. collectivist pattern.

While the role of social context in development of ToM can be seen in sequential acquisition of different mental state concepts such as DB and KA, social context can also act as a ground in which acquired ToM skills are applied (Paterson et al., 2016). It is argued that developing insight about mental states of others should transform the social behaviors of children in contexts where coordination and cooperation is required (Devine & Hughes, 2013; Hughes, 2011). Since ToM was found to be a facilitator of smooth social interactions, the social context of peer play can be an arena in which children put an effort to use their mental state understanding skills and engage in harmonious play behaviors. The study reported in the third chapter of this dissertation investigated if higher ToM performance was involved in children's display of lower disruptive actions (e.g., whining, crying, hitting others) during peer play. It also examined the role of emotion understanding and empathy as two critical socio-emotional skills associated with social behaviors of children. The findings demonstrated that not higher ToM or emotion understanding but higher empathy predicted lower disruptive behaviors of preschoolers in peer context. Although it was argued that accurate interpretation of others' minds in ongoing social interactions can give rise to smooth peer relationship (Hughes, 2011), our results were in line with the claims stating that ToM is a cold comprehension skill which can be used either to harm or please others depending on individuals' motivation (Björkqvist et al., 2000). In other words, in the context of peer play behavior, ToM emerged as a general socio-cognitive ability to make sense of subjective mental states of others and high performance in ToM did not necessarily pave the way of

more coordinated peer play behaviors. Studies conducted with clinical samples of school-aged (Jones et al., 2010) and preschool children (Dinolfo & Malti, 2013) with behavioral disorders (e.g., conduct problems and opposition and defiance disorder) echoed our findings and demonstrated that these children have intact ToM skills but deficient empathy performance. These results imply that although ToM provides an insight to comprehend the causes of others' behaviors, its use to bolster cooperative vs. disruptive behavior in peer context is dependent on the motivation of children. This finding informs the discussions about the nature of ToM and appears to be consistent with the claims of Epley and Waytz (2010) who posit that humans evolved the ability to read others' minds both to get along with them at times of peace and also outperform them at times of threat and competition. This function of ToM could be the main mechanism through which it contributes to humankind's thrive in the world.

While the second and third chapters emphasized children' development and use of ToM in social context, the fourth chapter concentrates on young adults' deployment of their ToM skills depending on the characteristics of individuals whose mental state is in question. Although ToM capacity is mostly mature through the end of adolescence (Dumontheil et al., 2010), the identity of the target can influence the accuracy of individuals' mental state understanding. Research conducted with adults (Perez-Zapata et al., 2016) and children (Gönültaş et al., 2019) demonstrated that individuals display higher mindreading performance toward ingroup than outgroup targets. These findings were mostly interpreted on the basis of similarity arguments, stating that perspective taking is facilitated by cultural similarity of the target who is likely to think and act according to the common cultural codes shared by the perspective taker (Apperly, 2012). However, encountering targets from outgroups not only triggers judgements based on similarity vs. dissimilarity but also brings about affective evaluations (e.g., prejudice and threat) based on previous knowledge about those targets

(Castelli et al., 2004). Therefore, it is likely that both similarity concerns and affective evaluations are important predictors of mindreading in intergroup situations. Indeed, the results reported in the fourth chapter displayed that Turkish young adults performed higher mindreading accuracy toward Turkish targets than Syrian and Norwegian targets. Moreover, analyses conducted within each target group revealed complex interactions between perceived similarity, realistic threat and prejudice. In Syrian target group, when perceived similarity was low, high levels of prejudice predicted poor mindreading scores. Lack of perception of similarity between the self and the target along with negative attitudes toward the targets' group led to a difficulty in comprehending Syrian targets' minds. Although high levels of perceived similarity was a positive predictor of mindreading in general, its positive effect was dampened if individuals also feel threatened by the presence of Syrian targets. In other words, even thinking of the outgroup member as close to your ingroup is not beneficial for mindreading if this closeness is also accompanied by feelings of threat or competition. While high perception of similarity coupled with high threat impaired mindreading toward Syrians, for Norwegian targets lower perceived similarity and higher threat perception predicted poorer mindreading. Thus, complex interaction between perceived similarity and threat in influencing mindreading changed depending on the type of outgroup. These results suggested that although young adults can be competent readers of their ingroup members' minds, their perception and evaluations of targets from outgroups can take a toll on their mental state understanding skills. It appears that ToM is not a fixed capacity which develops at a certain age and is used invariably across contexts (Apperly et al., 2010). Rather, it continuously interacts with the aspects of the social environment, particularly with the target characteristics, even at a time when perspective taking is fairly developed. These results might explain why mind-readers who seem very considerate of others' viewpoints in general might look

bewildered when they encounter targets from outgroups who are both dissimilar to ingroup and subject to negative evaluations.

In short, the three studies reported in this dissertation highlighted the important contribution of social context to ToM in childhood and early adulthood years. In line with the theory-theory's contention (Wellman & Gelman, 1998), these three studies showed that although humans are endowed with the capacity to make sense of others' subjective minds, their social experiences are critical in guiding development and later utilization of this capacity in a given situation. Briefly, children's acquisition of different mental state concepts proceed in line with the norms of their culture and their social experiences (Chapter II); children can apply their ToM skills to their social setting (e.g., peer groups) either to promote harmonious behaviors or achieve dominance depending on their motivation (Chapter III); and young adults who are thought to have a developed ToM capacity display higher accuracy when inferring mental states of ingroup than outgroup members (Chapter IV). As such, these results support a constructivist approach to development and deployment of socio-cognitive skills, and imply that cognition about behaviors of others is not independent from the context but rather intrinsically linked with the contingency of the social environment and experiences of the individuals (Slaughter & de Rosnay, 2017). In fact, this fits with the very function of social cognition which evolved in order to navigate individuals within the intricacies of their social lives and relationships.

REFERENCES

Achenbach, T. M., McConaughy, S. H., & Howell, C. T. (1987). Child/adolescent behavioral and emotional problems: implications of cross-informant correlations for situational specificity. *Psychological Bulletin, 101,* 213-232. doi:10.1037/0033-2909.101.2.213.

Adams Jr, R. B., Rule, N. O., Franklin Jr, R. G., Wang, E., Stevenson, M. T., Yoshikawa, S., ... & Ambady, N. (2010). Cross-cultural reading the mind in the eyes: an fMRI investigation. *Journal of Cognitive Neuroscience*, *22*, 97-108. doi: 10.1162/jocn.2009.21187

Adolphs, R. (2002). Neural systems for recognizing emotion. *Current Opinions in Neurobiology, 12,* 169–177. doi: 10.1016/S0959-4388(02)00301-X

Akrami, N., Ekehammar, B., & Araya, T. (2000). Classical and modern racial prejudice: A study of attitudes toward immigrants in Sweden. *European Journal of Social Psychology, 30,* 521-532. doi: 10.1002/1099-0992(200007/08 30:4<521::AID-EJSP5>3.0.CO;2-N

Aksan, N., & Kochanska, G. (2005). Conscience in childhood: old questions, new answers. *Developmental Psychology, 41,* 506-516. doi:10.1037/0012-1649.41.3.506

Albayrak, A.S., Karamustafa, O., Savaş, F., & Baki G.R. (2015). The year of 2012 socioeconomic development ranking of provinces in Turkey according to geographic regions. *The International Journal of Economic and Social Research, 11,* 1-22.

Ames, D. R. (2004). Inside the mind reader's tool kit: Projection and stereotyping in mental state inference. *Journal of Personality and Social Psychology, 87,* 340-353. http://dx.doi.org/10.1037/0022-3514.87.3.340

Anastassiou-Hadjicharalambous, X., & Warden, D. (2008). Physiologically-indexed and self-perceived affective empathy in conduct-disordered children high and low on callous-unemotional traits. *Child Psychiatry and Human Development, 39,* 503-517.

Andrich, D. (1985). An elaboration of Guttman scaling with Rasch models for measurement. In N. Brandon-Tuma (Eds.), *Sociological Methodology* (pp. 33-80). San Francisco: Jossey-Bass.

Apperly, I. A. (2010). *Mindreaders: The cognitive basis of ''theory of mind''.* Hove: Psychology Press/Taylor & Francis Group.

Apperly, I. A. (2012). What is "theory of mind"? Concepts, cognitive processes and individual differences. *The Quarterly Journal of Experimental Psychology, 65,* 825-839. doi: 10.1080/17470218.2012.676055

Apperly, I. A., & Butterfill, S. A. (2009). Do humans have two systems to track beliefs and belief-like states? *Psychological Review, 116,* 953-970.

Apperly, I. A., & Butterfill, S. A. (2009). Do humans have two systems to track beliefs and belief-like states? *Psychological Review, 116,* 953-970.

Apperly, I. A., Carroll, D. J., Samson, D., Humphreys, G. W., Qureshi, A., & Moffitt, G. (2010). Why are there limits on theory of mind use? Evidence from adults' ability to follow instructions from an ignorant speaker. *The Quarterly Journal of Experimental Psychology*, *63*, 1201-1217. doi: 10.1080/17470210903281582.

Aras, B., & Köni, H. (2002). Turkish-Syrian relations revisited. *Arab Studies Quarterly, 24,* 47-60.

Arseneault, L., Moffitt, T. E., Caspi, A., Taylor, A., Rijsdijk, F. V., Jaffee, S. R., ... & Measelle, J. R. (2003). Strong genetic effects on cross-situational antisocial behaviour among 5-year-old children according to mothers, teachers, examiner-observers, and twins' self-reports. *Journal of Child Psychology and Psychiatry, 44),* 832-848. doi:10.1111/1469-7610.00168.

Arsenio, W. F., & Lemerise, E. A. (2001). Varieties of childhood bullying: Values, emotion processes, and social competence. *Social Development, 10,* 59–73. doi:10.1111/1467-9507.00148.

Astington, J.W., & Jenkins, J.M. (1995). Theory of mind development and social understanding. *Cognition and Emotion*, *9*, 151-165. doi:10.1080/02699939508409006

Baillargeon, R., Scott, R. M., & He, Z. (2010). False-belief understanding in infants. *Trends in Cognitive Sciences, 14,* 110-118. doi: 10.1016/j.tics.2009.12.006

Balcetis, E., & Lassiter, G. D. (Eds.). (2010). *Social psychology of visual perception.* New York, NY: Psychology Press.

Baron-Cohen, S. (1995). Mindblindness: An essay on autism and theory of mind. Boston: MIT Press/Bradford Books.

Barrett, K. C. (1998). A functionalist perspective to the development of emotions. In M. F. Mascolo & S. Griffin (Eds.), *What develops in emotional development?* (pp. 109–133). New York: Plenum Press.

Batson, C. D., Shaw, L. L., & Oleson, K. C. (1992). Differentiating affect, mood, and emotion. In M. S. Clark (Ed.), *Emotion: Review of personality and social psychology* (Vol. 13, pp. 294-326). Newbury Park, CA: Sage.

Batum, P., & Yagmurlu, B. (2007). What counts in externalizing behaviors? The contributions of emotion and behavior regulation. C*urrent Psychology, 25,* 272-294. doi: 10.1007/BF02915236.

Bianco, F., Lecce, S., & Banerjee, R. (2016). Conversations about mental states and theory of mind development during middle childhood: a training study. *Journal of Experimental Child Psychology*, *149*, 41-61. doi: 10.1016/j.jecp.2015.11.006

Björkqvist, K., Österman, K., & Kaukiainen, A. (2000). Social intelligence − empathy= aggression? *Aggression and Violent Behavior*, *5*, 191-200. doi: 10.1016/S1359-1789(98)00029-9

Blair, R. J. R., & Coles, M. (2000). Expression recognition and behavioural problems in early adolescence. *Cognitive Development, 15,* 421-434.

Blair, R.J.R. (1995). A cognitive developmental approach to morality: Investigating the psychopath. *Cognition*, *57*, 1-29 doi: 10.1016/0010-0277(95)00676-P

Bock, R.D. (1997). A brief history of item theory response. *Educational Measurement: Issues and Practice*, *16*, 21-33.

Bond, T., & Fox, C. (2001). *Applying the Rasch model: Fundamental measurement in the human sciences.* Mahwah, NJ: Erlbaum.

Booth, J. R., Hall, W. S., Robison, G. C., & Kim, S. Y. (1997). Acquisition of the mental state verb know by 2-to 5-year-old children. *Journal of Psycholinguistic Research, 26,* 581-603. doi: 10.1023/A:1025093906884

Breiman, L., Friedman, J. H., Olshen, R. A., & Stone, C. J. (1984). *Classification and regression trees.* Monterey, CA: Wadsworth.

Brown, L. M., & Lopez, G. E. (2001). Political contacts: Analyzing the role of similarity in theories of prejudice. *Political Psychology*, *22*, 279-292. doi: 10.1111/0162-895X.00239

Callaghan, T., Rochat, P., Lillard, A., Claux, M. L., Odden, H., Itakura, S., ... & Singh, S. (2005). Synchrony in the onset of mental-state reasoning evidence from five cultures. *Psychological Science*, *16*, 378-384. doi: 10.1111/j.0956-7976.2005.01544.x

Calvocoressi, L., Stolar, M., Kasl, S. V., Claus, E. B., & Jones, B. A. (2005). Applying recursive partitioning to a prospective study of factors associated with adherence to

mammography screening guidelines. *American Journal of Epidemiology*, *162*, 1215-1224. doi: 10.1093/aje/kwi337

Camodeca, M., Caravita, S., & Coppola, G. (2015). Bullying in preschool: The associations between participant roles, social competence, and social preference. *Aggressive Behavior*, *41*, 310-321. doi: 10.1002/ab.21541

Campbell, S. B. (1995). Behavior problems in preschool children: A review of recent research. *Journal of Child Psychology and Psychiatry*, *36*, 113-149. doi:10.1111/j.1469-7610.1995.tb01657.x

Campbell, S. B., Spieker, S., Burchinal, M., Poe, M. D., & NICHD Early Child Care Research Network. (2006). Trajectories of aggression from toddlerhood to age 9 predict academic and social functioning through age 12. *Journal of Child Psychology and Psychiatry, 47,* 791-800. doi:10.1111/j.1469-7610.2006.01636.x

Capage, L., & Watson, A. C. (2001). Individual differences in theory of mind, aggressive behavior, and social skills in young children. *Early Education and Development, 12,* 613-628.

Card, N. A., & Little, T. D. (2006). Proactive and reactive aggression in childhood and adolescence: A meta-analysis of differential relations with psychosocial adjustment. *International Journal of Behavioral Development, 30,* 466-480.

Carlo, G., Knight, G. P., Eisenberg, N., & Rotenberg, K. J. (1991). Cognitive processes and prosocial behaviors among children: The role of affective attributions and reconciliations. *Developmental Psychology, 27,* 456–461. doi:10.1037/0012-1649.27.3.456.

Carlson, S. M., & Moses, L. J. (2001). Individual differences in inhibitory control and children's theory of mind. *Child Development, 72,* 1032-1053. doi:10.1111/1467-8624.00333.

Carvacho, H., Zick, A., Haye, A., González, R., Manzi, J., Kocik, C., & Bertl, M. (2013). On the relation between social class and prejudice: The roles of education, income, and ideological attitudes. *European Journal of Social Psychology, 43,* 272-285. doi: 10.1002/ejsp.1961

Carver, C. S., & Harmon-Jones, E. (2009). Anger is an approach-related affect: evidence and implications. *Psychological Bulletin*, *135*, 183-204. doi: 10.1037/a0013965

Casas, J. F., Weigel, S. M., Crick, N. R., Ostrov, J. M., Woods, K. E., Yeh, E. A. J., & Huddleston-Casas, C. A. (2006). Early parenting and children's relational and physical aggression in the preschool and home contexts. *Journal of Applied Developmental Psychology, 27,* 209-227. doi:10.1016/j.appdev.2006.02.003

Castelli, L., Zogmaister, C., Smith, E. R., & Arcuri, L. (2004). On the automatic evaluation of social exemplars. *Journal of Personality and Social Psychology,* 86, 373-387. doi: 10.1037/0022-3514.86.3.373

Chen, Y., & Zhao, Y. (2015). Intergroup threat gates social attention in humans. Biology Letters, 11, 20141055. doi: 10.1098/rsbl.2014.1055

Cheng, Y., Hung, A. Y., & Decety, J. (2012). Dissociation between affective sharing and emotion understanding in juvenile psychopaths. *Development and Psychopathology, 24,* 623-636. doi: 10.1017/S095457941200020X

Cicchetti, D. (1990). An historical perspective on the discipline of developmental psychopathology. In J. Rolf, A. S. Masten, D. Cicchetti, K. H. Nuechterlein, & S. Weintraub (Eds.), *Risk and protective factors in the development of psychopathology* (pp. 2-28). New York: Cambridge University Press

Coenders, M., & Scheepers, P. (2003). The effect of education on nationalism and ethnic exclusionism: An international comparison. *Political Psychology, 24,* 313-343. doi: 10.1111/0162-895X.00330

Cole, S., Balcetis, E., & Dunning, D. (2013). Affective signals of threat increase perceived proximity. *Psychological Science, 24,* 34-40. doi: 10.1177/0956797612446953

Coll, C.G., Akerman, A., & Cicchetti, D. (2000). Cultural influences on developmental processes and outcomes: Implications for the study of development and psychopathology. *Development and Psychopathology*, *12*, 333-356. doi: 10.1017/S0954579400003059

Cooley, E. L., & Triemer, D. M. (2002). Classroom behavior and the ability to decode nonverbal cues in boys with severe emotional disturbance. *Journal of Social Psychology*, 142, 741-751.

Côté, S. M., Vaillancourt, T., Barker, E. D., Nagin, D., & Tremblay, R. E. (2007). The joint development of physical and indirect aggression: Predictors of continuity and change during childhood. *Development and Psychopathology*, *19*, 37-55. doi:10.10170S0954579407070034

Cowell, J. M., Lee, K., Malcolm-Smith, S., Selcuk, B., Zhou, X., & Decety, J. (2017). The development of generosity and moral cognition across five cultures. *Developmental Science*. doi: 10.1111/desc.12403

Cunningham, J. N., Kliewer, W., & Garner, P. W. (2009). Emotion socialization, child emotion understanding and regulation, and adjustment in urban African American families: Differential associations across child gender. *Development and Psychopathology, 21,* 261-283. doi:10.1017/S0954579409000157

Cutting, A.L., & Dunn, J. (1999). Theory of mind, emotion understanding, language, and family background: Individual differences and interrelations. *Child Development, 70,* 853-865. doi: 10.1111/1467-8624.00061

D'Andrade, R. (1987). A folk model of the mind. In D. Holland & N. Quinn (Eds.), *Cultural models in language and thought* (pp. 112–148). Cambridge: Cambridge University Press.

Dayton, C. J., Huth-Bocks, A. C., & Busuito, A. (2016). The influence of interpersonal aggression on maternal perceptions of infant emotions: Associations with early parenting quality. *Emotion, 16,* 436-448. doi:10.1037/emo0000114

de la Osa, N., Granero, R., Trepat, E., Domenech, J. M., & Ezpeleta, L. (2016). The discriminative capacity of CBCL/1½-5-DSM5 scales to identify disruptive and internalizing disorders in preschool children. *European Child and Adolescent Psychiatry, 25,* 17-23. doi: 10.1007/s00787-015-0694-4

de Wied, M., Goudena, P. P., & Matthys, W. (2005). Empathy in boys with disruptive behavior disorders. *Journal of Child Psychology and Psychiatry, 46,* 867-880. doi:10.1111/j.1469-7610.2004.00389.x

Decety, J., & Jackson, P. L. (2004). The functional architecture of human empathy. *Behavioral and Cognitive Neuroscience Reviews*, *3*, 71-100. doi: 10.1177/1534582304267187

Decety, J., & Meyer, M. (2008). From emotion resonance to empathic understanding: A social developmental neuroscience account. *Development and Psychopathology*, *20*, 1053-1080. doi: 10.1017/S0954579408000503

Decety, J., Michalska, K. J., Akitsuki, Y., & Lahey, B. B. (2009). Atypical empathic responses in adolescents with aggressive conduct disorder: a functional MRI investigation. *Biological Psychology, 80,* 203-211. doi: 10.1016/j.biopsycho.2008.09.004.

Denham, S. A. (1986). Social cognition, prosocial behavior, and emotion in preschoolers: Contextual validation. *Child Development*, *57*, 194-201.doi: 10.2307/1130651

Denham, S. A. (2007). Dealing with feelings: How children negotiate the worlds of emotions and social relationships. *Cognition, Brain and Behavior, 11,* 1-48.

Denham, S. A., Caverly, S., Schmidt, M., Blair, K., DeMulder, E., Caal, S., ... & Mason, T. (2002). Preschool understanding of emotions: Contributions to classroom anger and aggression. *Journal of Child Psychology and Psychiatry*, *43*, 901-916. doi: 10.1111/1469-7610.00139

Devine, R. T., & Hughes, C. (2013). Silent films and strange stories: Theory of mind, gender, and social experiences in middle childhood. *Child Development, 84,* 989-1003. doi: 10.1111/cdev.12017

Devine, R. T., & Hughes, C. (2013). Silent films and strange stories: Theory of mind, gender, and social experiences in middle childhood. *Child Development, 84,* 989-1003. doi: 10.1111/cdev.12017

Devine, R. T., & Hughes, C. (2014). Relations between false belief understanding and executive function in early childhood: A meta-analysis. *Child Development, 85,* 1777-1794. doi: 10.1111/cdev.12237

Devine, R.T., & Hughes, C. (2013). Silent films and strange stories: Theory of mind, gender, and social experiences in middle childhood. *Child Development, 84*, 989-1003. doi:10.1111/cdev.12017

Dinolfo, C., & Malti, T. (2013). Interpretive understanding, sympathy, and moral emotion attribution in oppositional defiant disorder symptomatology. *Child Psychiatry and Human Development, 44,* 633-645. doi: 10.1007/s10578-013-0357-y

Doan, S. N., & Wang, Q. (2010). Maternal discussions of mental states and behaviors: Relations to emotion situation knowledge in European American and immigrant Chinese children. *Child Development, 81,* 1490-1503. doi:10.1111/j.1467-8624.2010.01487.x

Dodge, K. A., Pettit, G. S., & Bates, J. E. (1994). Socialization mediators of the relation between socioeconomic status and child conduct problems. *Child Development, 65,* 649-665. doi:10.1111/j.1467-8624.1994.tb00774.x

Dovidio, J. F., Hewstone, M., Glick, P., Esses, V. M. (2010). *The SAGE handbook of prejudice, stereotyping and discrimination.* London, England: Sage

Dumontheil, I., Apperly, I. A., & Blakemore, S. J. (2010). Online usage of theory of mind continues to develop in late adolescence. *Developmental Science, 13,* 331-338. doi: 10.1111/j.1467-7687.2009.00888.x

Dumontheil, I., Apperly, I. A., & Blakemore, S. J. (2010). Online usage of theory of mind continues to develop in late adolescence. *Developmental Science, 13,* 331-338. doi: 10.1111/j.1467-7687.2009.00888.x

Dunn, J., & Slomkowski, C. (1992). Conflict and the development of social understanding. In C. Shantz & W. Hartup (Eds.), *Conflict in child and adolescent development* (pp. 70-92). New York: Cambridge University Press.

Dunn, J., Brown, J., Slomkowski, C., Tesla, C., & Youngblade, L. (1991). Young children's understanding of other people's feelings and beliefs: Individual differences and their antecedents. *Child Development*, *62*, 1352-1366. doi: 10.1111/j.1467-8624.1991.tb01610.x

Durgel, E.S., van de Vijver, F.J., & Yagmurlu, B. (2013). Self-reported maternal expectations and child-rearing practices: Disentangling the associations with ethnicity, immigration, and educational background. *International Journal of Behavioral Development*, *37*, 35-43. doi: 10.1177/0165025412456145

Dutton, J. E., & Jackson, S. E. (1987). Categorizing strategic issues: Links to organizational action. *Academy of Management Review, 12,* 76-90. doi: 10.5465/AMR.1987.4306483

Eisenberg, N. (2000). Emotion, regulation, and moral development. *Annual Review of Psychology*, *51*, 665-697. doi: 10.1146/annurev.psych.51.1.665

Eisenberg, N., & Eggum, N.D. (2009). Empathic responding: Sympathy and personal distress. In J. Decety & W. Ickes (Eds.) (2009). *The Social Neuroscience of Empathy* (pp. 71-83). Cambridge, MA: MIT Press

Eisenberg, N., Eggum, N. D., & Di Giunta, L. (2010). Empathy-related responding: associations with prosocial behavior, aggression, and intergroup relations. *Social Issues and Policy Review*, *4*, 143-180. doi: 10.1111/j.1751-2409.2010.01020.x

Eisenberg, N., Spinrad, T. L., & Sadovsky, A. (2006). Empathy-related responding in children. In M. Killen & J. G. Smetana (Eds.), *Handbook of moral development* (pp. 517–549). Mahwah, NJ: Erlbaum.

Eisenberg, N., Spinrad, T.L., & Knafo-Noam, A. (2015). Prosocial development. In M.E. Lamb & C.G. Coll (Eds.), *Handbook of child psychology* (7. Eds., Vol. 3. *Social, emotional, and personality development*, pp. 610–658). New York: Wiley.

Epley N (2014) *Mindwise: how we understand what others think, believe, feel, and want.* New York: Random House.

Epley, N. & Waytz, A. (2010) Mind perception. In (S. T. Fiske, D. T. Gilbert, & G. Lindsay (5th Eds.), *The handbook of social psychology* (pp. 498–541). New York, NY: Wiley.

Erdogan, M. M. (2014). *Syrian people in Turkey: Social acceptance and harmony research.* Ankara: Hacettepe University Migration and Politics Research Center.

Etel, E., & Yagmurlu, B. (2015). Social competence, theory of mind, and executive function in institution-reared Turkish children. *International Journal of Behavioral Development, 39,* 519-529. doi: 10.1177/0165025414556095

Evans, G. W., Gonnella, C., Marcynyszyn, L. A., Gentile, L., & Salpekar, N. (2005). The role of chaos in poverty and children's socioemotional adjustment. *Psychological Science, 16,* 560-565. doi: 10.1111/j.0956-7976.2005.01575.x

Fantuzzo, J., Mendez, J., & Tighe, E. (1998). Parental assessment of peer play: Development and validation of the parent version of the Penn Interactive Peer Play Scale. *Early Childhood Research Quarterly, 13*, 659-676. doi: 10.1016/S0885-2006(99)80066-0

Fazio, R. H., Sanbonmatsu, D. M., Powell, M. C., & Kardes, F. R. (1986). On the automatic activation of attitudes. *Journal of Personality and Social Psychology, 50,* 229–238. doi: 10.1037/0022-3514.50.2.229

Findlay, L. C., Girardi, A., & Coplan, R. J. (2006). Links between empathy, social behavior, and social understanding in early childhood. *Early Childhood Research Quarterly, 21,* 347-359. doi:10.1016/j.ecresq.2006.07.009

Fine, S. E., Trentacosta, C. J., Izard, C. E., Mostow, A. J., & Campbell, J. L. (2004). Anger perception, caregivers' use of physical discipline, and aggression in children at risk. *Social Development, 13,* 213-228. doi:10.1111/j.1467-9507.2004.000264.x

Fiske, S. T., & Macrae, C. N. (2012). *The SAGE Handbook of Social Cognition*. Los Angeles, CA: SAGE Publications.

Fodor, J. A. (1983). *Modularity of mind: An essay on faculty psychology.* Cambridge, MA: MIT Press.

Foote, R.C., & Holmes-Lonergan, H.A. (2003). Sibling conflict and theory of mind. *British Journal of Developmental Psychology*, *21*, 45-58. doi: 10.1348/026151003321164618

Frick, P. J., Ray, J. V., Thornton, L. C., & Kahn, R. E. (2014). Annual research review: A developmental psychopathology approach to understanding callous-unemotional traits in children and adolescents with serious conduct problems. *Journal of Child Psychology and Psychiatry*, *55*, 532-548. doi: 10.1111/jcpp.12152

Gabarrot, F., Falomir-Pichastor, J. M., & Mugny, G. (2009). Being similar versus being equal: Intergroup similarity moderates the influence of in-group norms on discrimination and prejudice. *British Journal of Social Psychology, 48,* 253-273. doi: 10.1348/014466608X342943

Galinsky, A. D., Ku, G., & Wang, C. S. (2005). Perspective-taking and self-other overlap: Fostering social bonds and facilitating social coordination. *Group Processes and Intergroup Relations*, *8*, 109-124. doi: 10.1177/1368430205051060

Garner, P. W. (2003). Child and family correlates of toddlers' emotional and behavioral responses to a mishap. *Infant Mental Health Journal: Official Publication of the World Association for Infant Mental Health, 24,* 580-596. doi:10.1002/imhj.10076

Garner, P. W., Dunsmore, J. C., & Southam-Gerrow, M. (2008). Mother–child conversations about emotions: Linkages to child aggression and prosocial behavior. *Social Development, 17,* 259-277. doi:10.1111/j.1467-9507.2007.00424.x

Garner, P. W., Jones, D. C., & Miner, J. L. (1994). Social competence among low-income preschoolers: Emotion socialization practices and social cognitive correlates. *Child Development, 65,* 622-637. doi:10.1111/j.1467-8624.1994.tb00772.x

Gasser, L., & Keller, M. (2009). Are the competent the morally good? Perspective taking and moral motivation of children involved in bullying. *Social Development, 18,* 798-816. doi: 10.1111/j.1467-9507.2008.00516.x

Gauvain, M. (1998). Cognitive development in social and cultural context. *Current Directions in Psychological Science, 7,* 188-192. doi: 10.1111/1467-8721.ep10836917

Gill, K. L., & Calkins, S. D. (2003). Do aggressive/destructive toddlers lack concern for others? Behavioral and physiological indicators of empathic responding in 2-year-old children. *Development and Psychopathology*, *15*, 55-71. doi: 10.1017/S095457940300004X

Gini, G. (2006). Social cognition and moral cognition in bullying: What's wrong? *Aggressive Behavior, 32,* 528-539. doi: 10.1002/ab.20153

Goldman, A. I. (1992). In defense of simulation theory. *Mind & Language, 1,* 104–119. doi: 10.1111/j.1468-0017.1992.tb00200.x

Gopnik, A., & Wellman, H. (1994). The theory theory. In L. A. Hirschfeld & S. A. Gelman (Eds.), *Mapping the mind: Domain specificity in cognition and culture* (pp. 257–293). New York, NY: Cambridge University Press

Gorodzeisky, A., & Semyonov, M. (2015). Not only competitive threat but also racial prejudice: Sources of anti-immigrant attitudes in European societies. *International Journal of Public Opinion Research, 28,* 331-354. doi:10.1093/ijpor/edv024

Gönültaş, S., Selçuk, B., Slaughter, V., Hunter, J. A., & Ruffman, T. (2019). The capricious nature of theory of mind: Does mental state understanding depend on the characteristics of the target? *Child Development.* https://doi.org/10.1111/cdev.13223

Göregenli, M. (1995). Individualism-collectivism orientations in the Turkish culture: A preliminary study. *Turkish Journal of Psychology, 10,* 1-14.

Green, B.F. (1956). A method of scalogram analysis using summary statistics. *Psychometrika*, *21*, 79-88.

Greenfield, P.M., & Suzuki, L. (1998). Culture and human development: Implications for parenting, education, pediatrics, and mental health. In I. E. Sigel & K. A. Renninger (Eds.), *Handbook of child psychology: Vol. 4. Child psychology in practice* (5th ed., pp. 1059-1109). New York: Wiley.

Gutsell, J. N., & Inzlicht, M. (2010). Empathy constrained: Prejudice predicts reduced mental simulation of actions during observation of outgroups. *Journal of Experimental Social Psychology, 46,* 841-845. doi: 10.1016/j.jesp.2010.03.011

Gündüz, G., Yagmurlu, B., & Harma, M. (2015). Self-regulation mediates the link between family context and socioemotional competence in Turkish preschoolers. *Early Education and Development, 26,* 729-748. doi:10.1080/10409289.2015.985148

Hackel, L. M., Looser, C. E., & Van Bavel, J. J. (2014). Group membership alters the threshold for mind perception: The role of social identity, collective identification, and intergroup threat. *Journal of Experimental Social Psychology, 52,* 15-23. doi: 10.1016/j.jesp.2013.12.001

Hackenbracht, J., & Tamir, M. (2010). Preferences for sadness when eliciting help: Instrumental motives in sadness regulation. *Motivation and Emotion, 34,* 306-315. doi: 10.1007/s11031-010-9180-y

Haidt, J. (2001). The emotional dog and its rational tail: a social intuitionist approach to moral judgment. *Psychological Review, 108,* 814-834.

Harris, L. T., & Fiske, S. T. (2006). Dehumanizing the lowest of the low: Neuroimaging responses to extreme out-groups. *Psychological Science, 17,* 847-853. doi: 10.1111/j.1467-9280.2006.01793.x

Harrison, N. A., Wilson, C. E., & Critchley, H. D. (2007). Processing of observed pupil size modulates perception of sadness and predicts empathy. *Emotion, 7,* 724-729. doi: 10.1037/1528-3542.7.4.724.

Hastings, P. D., Zahn-Waxler, C., Robinson, J., Usher, B., & Bridges, D. (2000). The development of concern for others in children with behavior problems. *Developmental Psychology, 36,* 531-546. doi: 10.1037//0O12-1649.36.5.531.

Hello, E., Scheepers, P., & Sleegers, P. (2006). Why the more educated are less inclined to keep ethnic distance: An empirical test of four explanations. *Ethnic and Racial Studies, 29,* 959-985. doi: 10.1080/01419870600814015

Heyes, C. (2014). Submentalizing: I am not really reading your mind. *Perspectives on Psychological Science, 9,* 131 – 143. doi: 10.1177/1745691613518076

Hofstede, G., Hofstede, G. J., & Minkov, M. (2010). *Cultures and organizations: Software of the mind* (3rd ed.). New York, NY: McGraw-Hill.

Hofstede, G., Hofstede, G.J., & Minkov, M. (2010). Cultures and Organizations: Software of the Mind. Pearson Education: France.

Hu, L. T., & Bentler, P. M. (1999). Cutoff criteria for fit indexes in covariance structure analysis: Conventional criteria versus new alternatives. *Structural Equation Modeling: A Multidisciplinary Journal*, *6*, 1-55. doi: 10.1080/10705519909540118

Hugenberg, K. (2005). Social categorization and the perception of facial affect: Target race moderates the response latency advantage for happy faces. *Emotion, 5,* 267-276. doi: 10.1037/1528-3542.5.3.267

Hughes, C. (2011). *Social understanding and social lives: From toddlerhood through to the transition to school.* New York: Psychology Press.

Hughes, C. (2011). *Social understanding and social lives: From toddlerhood through to the transition to school.* New York: Psychology Press.

Hughes, C., & Cutting, A. L. (1999). Nature, nurture, and individual differences in early understanding of mind. *Psychological Sciences, 10,* 429-432. doi: 10.1111/1467-9280.00181

Hughes, C., & Devine, R. T. (2015). A social perspective on theory of mind. In M. E. Lamb (Ed.), *Handbook of Child Psychology and Developmental Science (Volume III): Socioemotional Processes* (7th ed., pp. 564 - 609). Hoboken, NJ: Wiley.

Hughes, C., & Ensor, R. (2005). Executive function and theory of mind in 2 year olds: A family affair? *Developmental Neuropsychology*, *28*, 645-668. doi: 10.1207/s15326942dn2802_5

Hughes, C., Dunn, J., & White, A. (1998). Trick or treat? Uneven understanding of mind and emotion and executive dysfunction in "hard-to-manage" preschoolers. *Journal of child Psychology and Psychiatry*, *39*, 981-994.

Hughes, C., White, A., Sharpen, J., & Dunn, J. (2000). Antisocial, angry, and unsympathetic: "Hard-to-manage" preschoolers' peer problems and possible cognitive influences. *Journal of Child Psychology and Psychiatry*, *41*, 169-179. doi: 10.1111/1469-7610.00558

Imuta, K., Henry, J. D., Slaughter, V., Selcuk, B., & Ruffman, T. (2016). Theory of mind and prosocial behavior in childhood: A meta-analytic review. *Developmental Psychology, 52,* 1192-1205. doi: 10.1037/dev0000140

Ito, T. A., & Cacioppo, J. T. (2000). Electrophysiological evidence of implicit and explicit categorization processes. *Journal of Experimental Social Psychology, 36,* 660–676. doi: 10.1006/jesp.2000.1430

Izard, C. E., King, K. A., Trentacosta, C. J., Morgan, J. K., Laurenceau, J. P., Krauthamer-Ewing, E. S., & Finlon, K. J. (2008). Accelerating the development of emotion competence in Head Start children: Effects on adaptive and maladaptive behavior. *Development and Psychopathology, 20,* 369-397.

Jackson, L. M. (2011). *The psychology of prejudice: From attitudes to social action.* Washington, DC: American Psychological Association.

Jackson, P. L., Meltzoff, A. N., & Decety, J. (2005). How do we perceive the pain of others? A window into the neural processes involved in empathy. *Neuroimage*, *24*, 771-779. doi: 10.1016/j.neuroimage.2004.09.006

Jenkins, J.M., & Astington, J.W. (1996). Cognitive factors and family structure associated with theory of mind development in young children. *Developmental Psychology*, *32*, 70-78. doi: 10.1037/0012-1649.32.1.70

Jenssen, A. T., & Engesbak, H. (1994). The many faces of education: Why are people with lower education more hostile towards immigrants than people with higher education? *Scandinavian Journal of Educational Research, 38,* 33-50. doi: 10.1080/0031383940380103

Jones, A. P., Happé, F. G., Gilbert, F., Burnett, S., & Viding, E. (2010). Feeling, caring, knowing: different types of empathy deficit in boys with psychopathic tendencies and autism spectrum disorder. *Journal of Child Psychology and Psychiatry*, *51*, 1188-1197. doi: 10.1111/j.1469-7610.2010.02280.x

Keiley, M. K., Lofthouse, N., Bates, J. E., Dodge, K. A., & Pettit, G. S. (2003). Differential risks of covarying and pure components in mother and teacher reports of externalizing and internalizing behavior across ages 5 to 14. *Journal of Abnormal Child Psychology, 31,* 267-283.

Killen, M., Margie, N. G., & Sinno, S. (2006). Morality in the context of intergroup relationships. In M. Killen & J. G. Smetana (Eds.), *Handbook of moral development* (pp.155–183). Mahwah, NJ: Erlbaum.

Korucu, I., Selcuk, B., & Harma, M. (2017). Self-regulation: Relations with theory of mind and social behaviour. *Infant and Child Development, 26,* 1-23. doi: 10.1002/icd.1988.

Kristen, S., Thoermer, C., Hofer, T., Aschersleben, G., & Sodian, B. (2006). Skalierung von "Theory of Mind"-Aufgaben [Validation of the "Theory of Mind" scale]. *Zeitschrift für Entwicklungspsychologie und Paedagogische Psychologie, 38,* 186-195. doi: 10.1026/0049-8637.38.4.186

Kuntoro, I.A., Saraswati, L., Peterson, C., & Slaughter, V. (2013). Micro-cultural influences on theory of mind development: A comparative study of middle-class and Pemulung children in Jakarta, Indonesia. *International Journal of Behavioral Development*, *37*, 266-273. doi: 10.1177/0165025413478258

Lamm, C., Decety, J., & Singer, T. (2011). Meta-analytic evidence for common and distinct neural networks associated with directly experienced pain and empathy for pain. *Neuroimage, 54,* 2492-2502. doi: 10.1016/j.neuroimage.2010.10.014

Lecce, S., Bianco, F., Devine, R. T., Hughes, C., & Banerjee, R. (2014). Promoting theory of mind during middle childhood: A training program. *Journal of Experimental Child Psychology, 126,* 52-67. doi:10.1016/j.jecp.2014.03.002

Legare, C.H., Evans, E.M., Rosengren, K.S., & Harris, P.L. (2012). The coexistence of natural and supernatural explanations across cultures and development. *Child Development*, *83*, 779-793.

Lerner, R. M. (2001). *Concepts and theories of human development.* Mahwah, New Jersey: Lawrence Erlbaum Associates.

Leslie, A. M. (1987). Pretense and representation: the origins of "theory of mind*."* *Psychological Review, 94,* 412–426.

Lewis, C., Freeman, N.H., Kyriakidou, C., Maridaki-Kassotaki, K., & Berridge, D. M. (1996). Social influences on false belief access: Specific sibling influences or general apprenticeship? *Child Development*, *67*, 2930-2947. doi: 10.1111/j.1467-8624.1996.tb01896.x

Lillard, A. (1998). Ethnopsychologies: Cultural variations in theories of mind. *Psychological Bulletin*, *123*, 3-32. doi: 10.1037/0033-2909.123.1.3

Lillard, A. S. (2002). Pretending, understanding pretense, and understanding minds. In S. Reifel (Ed.), *Play and culture studies (Vol. 3).* New Jersey: Ablex.

Liszkowski, U., Carpenter, M., Striano, T., & Tomasello, M. (2006). 12- and 18-month-olds point to provide information for others. *Journal of Cognition and Development, 7,* 173–187. doi:10.1207/S15327647jcd0702_2

Lockwood, P. L., Sebastian, C. L., McCrory, E. J., Hyde, Z. H., Gu, X., De Brito, S. A., & Viding, E. (2013). Association of callous traits with reduced neural response to others' pain in children with conduct problems. *Current Biology, 23,* 901-905. doi: 10.1016/j.cub.2013.04.018

Lovett, B. J., & Sheffield, R. A. (2007). Affective empathy deficits in aggressive children and adolescents: A critical review. *Clinical Psychology Review*, *27*, 1-13. doi: 10.1016/j.cpr.2006.03.003

Low, J., & Perner, J. (2012). Implicit and explicit theory of mind: State of the art. *British Journal of Developmental Psychology, 30,* 1-13. doi:10.1111/j.2044-835X.2011.02074.x

Luhrmann, T.M. (2001). *Of two minds: An anthropologist looks at American psychiatry.* New York: Vintage Books.

Mackie, D. M., & Smith, E. R. (2016). *From prejudice to intergroup emotions: Differentiated reactions to social groups.* New York, NY: Routledge.

Markus, H.R., & Kitayama, S. (1991). Culture and the self: Implications for cognition, emotion, and motivation. *Psychological Review*, *98*, 224-253.

Marsh, A. A., Finger, E. C., Fowler, K. A., Adalio, C. J., Jurkowitz, I. T., Schechter, J. C., ... & Blair, R. J. R. (2013). Empathic responsiveness in amygdala and anterior cingulate cortex in youths with psychopathic traits. *Journal of Child Psychology and Psychiatry, 54,* 900-910. doi: 10.1111/jcpp.12063

Martin, S. E., Boekamp, J. R., McConville, D. W., & Wheeler, E. E. (2010). Anger and sadness perception in clinically referred preschoolers: Emotion processes and externalizing behavior symptoms. *Child Psychiatry and Human Development,* 41, 30-46. doi: 10.1007/s10578-009-0153-x

Martin, S. E., Williamson, L. R., Kurtz-Nelson, E. C., & Boekamp, J. R. (2015). Emotion understanding (and misunderstanding) in clinically referred preschoolers: The role of child language and maternal depressive symptoms. *Journal of Child and Family Studies, 24,* 24-37. doi: 10.1007/s10826-013-9810-6

Mayer, A., & Träuble, B.E. (2013). Synchrony in the onset of mental state understanding across cultures? A study among children in Samoa. *International Journal of Behavioral Development*, *37*, 21-28. doi:10.1177/0165025412454030

Mayer, B., Trommsdorff, G., Kagitcibasi, C., & Mishra, R. C. (2012). Family models of independence/interdependence and their intergenerational similarity in Germany, Turkey, and India. *Family Science*, *3*, 64-74. doi: 10.1080/19424620.2011.671503

McAlister, A.R., & Peterson, C.C. (2013). Siblings, theory of mind, and executive functioning in children aged 3–6 years: New longitudinal evidence. *Child Development*, *84*, 1442-1458. doi: 10.1111/cdev.12043

McKinnon, M. C., & Moscovitch, M. (2007). Domain-general contributions to social reasoning: Theory of mind and deontic reasoning re-explored. *Cognition, 102,* 179-218. doi: 10.1016/j.cognition.2005.12.011

Meltzoff, A.N., and Brooks, R. (2001). ''Like me'' as a building block for understanding other minds: Bodily acts, attention, and intention. In *Intentions and intentionality: Foundations of social cognition,* B.F. Malle, L.J. Moses, and D.A. Baldwin (Eds), pp. 171–191. Cambridge, MA: MIT Press.

Miller, P. A., & Eisenberg, N. (1988). The relation of empathy to aggressive and externalizing/antisocial behavior. *Psychological Bulletin*, *103*, 324-344. doi: 10.1037/0033-2909.103.3.324

Ministry of Internal Affairs. (2018). Yıllara Göre Geçici Koruma Kapsamındaki Suriyeliler [Number of Syrians under the temporary protection status in Turkey by years]. Retrieved from https://www.goc.gov.tr/icerik3/gecici-koruma_363_378_4713.

Mitchell, J. P., Macrae, C. N., & Banaji, M. R. (2006). Dissociable medial prefrontal contributions to judgments of similar and dissimilar others. *Neuron*, *50*, 655-663. doi: 10.1016/j.neuron.2006.03.040

Monks, C. P., Smith, P. K., & Swettenham, J. (2005). Psychological correlates of peer victimisation in preschool: Social cognitive skills, executive function and attachment profiles. *Aggressive Behavior, 31,* 571-588. doi: 10.1002/ab.20099.

Moses, L. J. (2001). Executive accounts of theory-of-mind development. *Child Development, 72,* 688-690. doi: 10.1111/1467-8624.00306

Mostow, A. J., Izard, C. E., Fine, S., & Trentacosta, C. J. (2002). Modeling emotional, cognitive, and behavioral predictors of peer acceptance. *Child Development, 73,* 1775-1787. doi:10.1111/1467-8624.00505

Nelson, T. D. (2009). *Handbook of prejudice, stereotyping and discrimination.* New York: Psychology Press.

Niedenthal, P. M., & Kitayama, S. (2013). *The heart's eye: Emotional influences in perception and attention.* San Diego, California: Academic Press

Norris, P., & Inglehart, R. (2009). *Cosmopolitan communications: Cultural diversity in a globalized world*. New York, NY: Cambridge University Press.

O'Kearney, R., Salmon, K., Liwag, M., Fortune, C. A., & Dawel, A. (2017). Emotional abilities in children with oppositional defiant disorder (ODD): Impairments in perspective-taking and understanding mixed emotions are associated with high callous–unemotional traits. *Child Psychiatry and Human Development, 48,* 346-357. doi: 10.1007/s10578-016-0645-4

Ogelman, H. G., & Topaloğlu, Z. Ç. (2014). 4-5 yaş çocuklarının sosyal yetkinlik, saldırganlık, kaygı düzeyleri ile anne-babalarının ebeveyn özyeterliği algısı arasındaki ilişkilerin incelenmesi [The relationships between social competence, aggression, anxiety levels of 4-5 year old children and their mother and father's parental perceptions of self-efficacy]. *Abant İzzet Baysal Üniversitesi Eğitim Fakültesi Dergisi, 1,* 241-271. doi:10.17240/aibuefd.2014.14.1-5000091511

Oh, S., & Lewis, C. (2008). Korean preschoolers' advanced inhibitory control and its relation to other executive skills and mental state understanding. *Child Development*, *79*, 80-99. doi: 10.1111/j.1467-8624.2007.01112.x

Okur, Z. E., & Corapci, F. (2016). Turkish children's expression of negative emotions: Intracultural variations related to socioeconomic status. *Infant and Child Development, 25,* 440-458. doi: 10.1002/icd.1945

O'Nions, E., Sebastian, C. L., McCrory, E., Chantiluke, K., Happé, F., & Viding, E. (2014). Neural bases of theory of mind in children with autism spectrum disorders and children with conduct problems and callous-unemotional traits. *Developmental Science, 17,* 786-796. doi: 10.1111/desc.12167

Onishi, K. & Baillargeon, R. (2005). Do 15-month-old infants understand false beliefs? *Science, 308,* 255–258. doi: 10.1126/science.1107621

Onishi, K. H., Baillargeon, R., & Leslie, A. M. (2007). 15-month-old infants detect violations in pretend scenarios. *Acta Psychologica, 124,* 106-128. doi: 10.1016/j.actpsy.2006.09.009

Ozturk, A. (2011). Social competence and parent child system in preschool (Unpublished doctoral dissertation). Hacettepe University, Ankara.

Perez-Zapata, D., Slaughter, V., & Henry, J. D. (2016). Cultural effects on mindreading. *Cognition, 146,* 410-414. doi:10.1016/j.cognition.2015.10.018

Perner, J., Leekam, S. R., & Wimmer, H. (1987). Three-year-olds' difficulty with false belief: The case for a conceptual deficit. *British Journal of Developmental Psychology*, *5*, 125-137. doi: 10.1111/j.2044-835X.1987.tb01048.x

Perner, J., Ruffman, T., & Leekam, S.R. (1994). Theory of mind is contagious: You catch it from your sibs. *Child Development*, *65*, 1228-1238. doi: 10.1111/j.1467-8624.1994.tb00814.x

Peterson, C., Slaughter, V., Moore, C., & Wellman, H. M. (2016). Peer social skills and theory of mind in children with autism, deafness, or typical development. *Developmental Psychology*, *52*, 46-57. http://dx.doi.org/10.1037/a0039833

Peterson, C.C. (2000). Kindred spirits: Influences of siblings' perspectives on theory of mind. *Cognitive Development*, *15*, 435-455. doi:10.1016/S0885-2014(01)00040-5

Peterson, C.C., Wellman, H.M., & Liu, D. (2005). Steps in theory-of-mind development for children with deafness or autism. *Child Development*, *76*, 502-517. doi: 10.1111/j.1467-8624.2005.00859.x

Petrill, S. A., Pike, A., Price, T., & Plomin, R. (2004). Chaos in the home and socioeconomic status are associated with cognitive development in early childhood: Environmental mediators identified in a genetic design. *Intelligence, 32,* 445-460. doi: 10.1016/j.intell.2004.06.010

Pettigrew, T. F., Christ, O., Wagner, U., Meertens, R. W., Van Dick, R., & Zick, A. (2008). Relative deprivation and intergroup prejudice. *Journal of Social Issues, 64,* 385-401. doi:10.1111/j.1540-4560.2008.00567.x

Pollak, S. D., Cicchetti, D., Hornung, K., & Reed, A. (2000). Recognizing emotion in faces: developmental effects of child abuse and neglect. *Developmental Psychology, 36,* 679-688. doi: 10.1037//0012-1649.36.5.679.

Power, J. G., Murphy, S. T., & Coover, G. (1996). Priming prejudice: How stereotypes and counter-stereotypes influence attribution of responsibility and credibility among ingroups and outgroups. *Human Communication Research*, *23*, 36-58. doi: 10.1111/j.1468-2958.1996.tb00386.x

Raabe, T., & Beelmann, A. (2011). Development of ethnic, racial, and national prejudice in childhood and adolescence: A multinational meta-analysis of age differences. *Child Development, 82,* 1715-1737. doi: 10.1111/j.1467-8624.2011.01668.x

Rasch, G. (1960). *Probabilistic models for some intelligence and achievement tests.* Copenhagen: Nielsen and Lydiche.

Rasuly-Paleczek, G. (1996). Some remarks on the study of household composition and intra-family relations in rural and urban Turkey. In G. Rasuly-Paleczek (Ed.), *Turkish families in transition* (pp. 1-44). New York: Peter Lang.

Realo, A., Allik, J., & Vadi, M. (1997). The hierarchical structure of collectivism. *Journal of Research in Personality*, *31*, 93-116. doi:10.1006/jrpe.1997.2170

Riek, B. M., Mania, E. W., & Gaertner, S. L. (2006). Intergroup threat and outgroup attitudes: A meta-analytic review. *Personality and Social Psychology Review, 10,* 336-353. doi: 10.1207/s15327957pspr1004_4

Riketta, M., & Sacramento, C. A. (2008). They cooperate with us, so they are like me': Perceived intergroup relationship moderates projection from self to outgroups. *Group Processes and Intergroup Relations, 11,* 115-131. doi: 10.1177/1368430207084849

Rothbart, M. K., Ellis, L. K., & Posner, M. I. (2004). Temperament and self-regulation. In R. F. Baumeister & K. D. Vohs (Eds.), *Handbook of self-regulation: Research, theory, and applications* (pp. 357–70). New York: Guilford

Ruffman, T. (2014). To belief or not belief: Children's theory of mind. *Developmental Review, 34,* 265-293. doi: 10.1016/j.dr.2014.04.001.

Ruffman, T. (2014). To belief or not belief: Children's theory of mind. *Developmental Review, 34,* 265-293. doi: 10.1016/j.dr.2014.04.001

Ruffman, T., Perner, J., Naito, M., Parkin, L., & Clements, W. A. (1998). Older (but not younger) siblings facilitate false belief understanding. *Developmental Psychology*, *34*, 161-174. doi: 10.1037/0012-1649.34.1.161

Sagar, H. A., & Schofield, J. W. (1980). Racial and behavioral cues in black and white children's perceptions of ambiguously aggressive acts. *Journal of Personality and Social Psychology, 39,* 590-598. doi: 10.1037/0022-3514.39.4.590

Samson, D., & Apperly, I. A. (2010). There is more to mind reading than having theory of mind concepts: New directions in theory of mind research. *Infant and Child Development*, *19*, 443-454. doi: 10.1002/icd.678

Schemer, C. (2012). The influence of news media on stereotypic attitudes toward immigrants in a political campaign. *Journal of Communication*, *62*, 739-757. doi:10.1111/j.1460-2466.2012.01672.x

Schultz, D., Izard, C. E., & Bear, G. (2004). Children's emotion processing: Relations to emotionality and aggression. *Development and Psychopathology, 16, 371-387.*

Schwartz, S.H. (1999). A theory of cultural values and some implications for work. *Applied Psychology*, *48*, 23-47. doi: 10.1111/j.1464-0597.1999.tb00047.x

Schweder, R.A., & Sullivan, M.A. (1993). Cultural psychology: Who needs it? *Annual Review of Psychology*, *44*, 497-523.

Scott, R. M., & Baillargeon, R. (2009). Which penguin is this? Attributing false beliefs about object identity at 18 months. *Child Development, 80,* 1172-1196. doi: 10.1111/j.1467-8624.2009.01324.x

Seidenfeld, A. M., Johnson, S. R., Cavadel, E. W., & Izard, C. E. (2014). Theory of mind predicts emotion knowledge development in head start children. *Early Education and Development*, *25*, 933-948. doi: 10.1080/10409289.2014.883587

Sen, H., Yavuz-Müren, M., & Yagmurlu, B. (2014). Parenting: The Turkish context. In. H. Selin (Ed.), *Parenting across cultures: Childrearing, motherhood and fatherhood in non-western cultures. Science across Cultures: The History of Non-Western Science.* vol 7. (pp. 175-192). Netherlands: Springer.

Sen, H., Yavuz-Müren, M., & Yagmurlu, B. (2014). Parenting: The Turkish context. In H. Selin (Ed.), *Science across cultures: The history of non-Western science: Vol. 7. Parenting across cultures: Childrearing, motherhood and fatherhood in non-Western cultures* (pp. 175–192). Dordrecht, The Netherlands: Springer.

Shahaeian, A., Nielsen, M., Peterson, C.C., & Slaughter, V. (2014). Cultural and family influences on children's theory of mind development: A comparison of Australian and Iranian school-age children. *Journal of Cross-Cultural Psychology*, *45*, 555-568. doi: 10.1177/0022022113513921

Shahaeian, A., Peterson, C.C., Slaughter, V., & Wellman, H.M. (2011). Culture and the sequence of steps in theory of mind development. *Developmental Psychology*, *47*, 1239-1247. doi: 10.1037/a0023899

Shakoor, S., Jaffee, S. R., Bowes, L., Ouellet-Morin, I., Andreou, P., Happé, F., ... & Arseneault, L. (2012). A prospective longitudinal study of children's theory of mind and adolescent involvement in bullying. *Journal of Child Psychology and Psychiatry*, *53*, 254-261. doi: 10.1111/j.1469-7610.2011.02488.x

Shatz, M., Wellman, H. M., & Silber, S. (1983). The acquisition of mental verbs: A systematic investigation of the first reference to mental state. *Cognition, 14,* 301-321. doi: 10.1016/0010-0277(83)90008-2

Shields, S. A. (2005) The politics of emotion in everyday life: 'Appropriate' emotion and

    claims on identity. *Review of General Psychology, 9,* 3–15. doi:10.1037/1089-

    2680.9.1.3

Siegel, D. J. (2010). *Mindsight: The new science of personal transformation*. New York:

    Bantam.

Slaughter, V. (2015). Theory of mind in infants and young children: A review. *Australian*

    Psychologist, 50, 169-172. doi: 10.1111/ap.12080

Slaughter, V., & De Rosnay, M. (2017). *Theory of mind in context.* Oxford, UK: Routledge.

Slaughter, V., & Perez-Zapata, D. (2014). Cultural variations in the development of mind

    reading. *Child Development Perspectives*, *8*, 237-241. doi: 10.1111/cdep.12091

Smetana, J. G. (2006). Social-cognitive domain theory: Consistencies and variations in

    children's moral and social judgments. In M. Killen & J. G. Smetana (Eds.),

    Handbook of moral development (pp. 119–154). Mahwah, NJ: Lawrence Erlbaum

    Associates.

Smith, C. A., & Lazarus, R. S. (1993). Appraisal components, core relational themes, and the

    emotions. *Cognition and Emotion, 7,* 233-269. doi:10.1080/02699939308409189

Song, H. J., Onishi, K. H., Baillargeon, R., & Fisher, C. (2008). Can an agent's false belief be

    corrected by an appropriate communication? Psychological reasoning in 18-month-old

    infants. *Cognition, 109,* 295-315. doi: 10.1016/j.cognition.2008.08.008

Sönmez, M. E., & Adigüzel, F. (2017). Perceptions of Syrian refugees in Turkey: The case of

    Gaziantep City. *Gaziantep University Journal of Social Sciences, 16,* 797-807.

Stephan, W. G., & Renfro, C. L. (2002). The role of threat in intergroup relations. In D. M.

    Mackie & E. R. Smith (Eds.), *From prejudice to intergroup emotions: Differentiated*

    reactions to social groups (pp. 191–207). New York: Psychology Press

Stephan, W. G., Boniecki, K. A., Ybarra, O., Bettencourt, A., Ervin, K. S., Jackson, L. A., et al. (2002). The role of threats in the racial attitudes of Blacks and Whites. *Personality and Social Psychology Bulletin, 28,* 1242–1254. doi:10.1177/01461672022812009

Stephan, W. G., Ybarra, O., & Bachman, G. (1999). Prejudice toward immigrants. *Journal of Applied Social Psychology*, *29*, 2221-2237. doi: 10.1111-j.1559-1816.1999.tb00107.x

Stephan, W. G., Ybarra, O., Martnez, C. M., Schwarzwald, J., & Tur-Kaspa, M. (1998). Prejudice toward immigrants to Spain and Israel: An integrated threat theory analysis. *Journal of Cross-Cultural Psychology, 29,* 559-576. doi: 10.1177/0022022198294004

Strayer, J., & Roberts, W. (2004). Empathy and observed anger and aggression in five-year-olds. *Social Development, 13,* 1-13. doi: 10.1111/j.1467-9507.2004.00254.x

Strobl, C., Malley, J., & Tutz, G. (2009). An introduction to recursive partitioning: Rationale, application, and characteristics of classification and regression trees, bagging, and random forests. *Psychological Methods, 14,* 323-348. doi: 10.1037/a0016873

Sunar, D. (2002). Change and continuity in the Turkish middle class family. In E. Ozdalga & R. Liljestrom (Eds.), *Autonomy and dependence in family: Turkey and Sweden in critical perspective.* Istanbul, Turkey: Swedish Research Institute.

Sutton, J., Smith, P. K., & Swettenham, J. (1999). Bullying and 'theory of mind': A critique of the 'social skills deficit' view of anti-social behaviour. *Social Development, 8,* 117-127. doi: 10.1111/1467-9507.00083/full

Taumoepeau, M., & Ruffman, T. (2006). Mother and infant talk about mental states relates to desire language and emotion understanding. *Child Development, 77,* 465–481.

Tausch, N., Hewstone, M., Kenworthy, J., Cairns, E., & Christ, O. (2007). Cross-community contact, perceived status differences, and intergroup attitudes in Northern Ireland: The mediating roles of individual-level versus group-level threats and the moderating role

of social identification. *Political Psychology, 28,* 53-68. doi: 10.1111/j.1467-9221.2007.00551.x

Thomsen, J. P. F., & Olsen, M. (2017). Re-examining socialization theory: How does democracy influence the impact of education on anti-foreigner sentiment? *British Journal of Political Science, 47,* 915-938. doi: 10.1017/S0007123415000496

Tiedens, L. Z. (2001) Anger and advancement versus sadness and subjugation: The effect of negative emotion expressions on social status conferral. *Journal of Personality and Social Psychology*, *80,* 86–94. doi:10.1037/0022-3514.80.1.86

Tomasello, M. & Moll, H. (2010). The gap is social: human shared intentionality and culture. In P. M. Kappeler & J. B. Silk (Eds.), *Mind the gap. tracing the origins of human universals*, (pp. 331–350). Springer, Berlin.

Tomasello, M., Melis, A. P., Tennie, C., Wyman, E., Herrmann, E., Gilby, I. C., ... & Melis, A. (2012). Two key steps in the evolution of human cooperation: The interdependence hypothesis. *Current Anthropology*, *53*, 673-692. doi: 10.1086/668207

Trawalter, S., Todd, A. R., Baird, A. A., & Richeson, J. A. (2008). Attending to threat: Race-based patterns of selective attention. *Journal of Experimental Social Psychology, 44,* 1322-1327. doi: 10.1016/j.jesp.2008.03.006

Trentacosta, C. J., & Fine, S. E. (2010). Emotion knowledge, social competence, and behavior problems in childhood and adolescence: A meta-analytic review. *Social Development*, *19*, 1-29. doi: 10.1111/j.1467-9507.2009.00543.x

Turkish Statistical Institute (2014). *Population and demographic statistics report.* Ankara, Turkey.

United Nations Development Programme (2018). *Human development indices and indicators.* New York, USA. Retrieved from

http://hdr.undp.org/sites/default/files/2018_human_development_statistical_update.pdf

Van der Meulen, A., de Ruyter D., Blokland, A., & Krabbendam, L. (2019). Cross-cultural mental state reading ability in Antillean Dutch, Moroccan Dutch, and Dutch young adults. *Journal of Cross-Cultural Psychology, 50,* 419-440. doi: 10.1177/0022022118823283

Van Noorden, T. H., Haselager, G. J., Cillessen, A. H., & Bukowski, W. M. (2015). Empathy and involvement in bullying in children and adolescents: A systematic review. *Journal of Youth and Adolescence*, *44*, 637-657. doi: 10.1007/s10964-014-0135-6

Vinden, P.G. (1996). Junin Quechua children's understanding of mind. *Child Development*, *67*, 1707-1716. doi: 10.1111/j.1467-8624.1996.tb01822.x

Vinden, P.G., & Astington, J. (2000). Culture and understanding other minds. In S. Baron-Cohen (Ed.), *Understanding other minds: Perspectives from developmental cognitive neuroscience* (pp. 503-519). Oxford: Oxford University Press.

Vygotsky, L. S. (1978). *Mind in society.* Cambridge, MA: Harvard Univ. Press

Waite, P., Codd, J., & Creswell, C. (2015). Interpretation of ambiguity: Differences between children and adolescents with and without an anxiety disorder. *Journal of Affective Disorders, 188*, 194-201. doi: 10.1016/j.jad.2015.08.022

Wakschlag, L. S., Tolan, P. H., & Leventhal, B. L. (2010). Research Review: 'Ain't misbehavin': Towards a developmentally-specified nosology for preschool disruptive behavior. *Journal of Child Psychology and Psychiatry, 51,* 3-22. doi:10.1111/j.1469-7610.2009.02184.x

Wellman, H. M. (1990). *The child's theory of mind.* Cambridge MA: MIT Press.

Wellman, H. M. (2002). Understanding the psychological world: Developing a theory of mind. In U. Goswami (Ed.), *Handbook of childhood cognitive development* (pp. 167-187). Oxford, England: Blackwell.

Wellman, H. M. (2014). *Making minds: How theory of mind develops*. New York: Oxford University Press.

Wellman, H. M., & Gelman, S. A. (1998). Knowledge acquisition in foundational domains. In W. Damon (Series Ed.), D. Kuhn, & R. S. Siegler (Vol. Eds.), *Handbook of child development: Vol. 2. Cognition, perception, and language* (5th ed., pp. 523–573). New York: Wiley.

Wellman, H. M., & Liu, D. (2004). Scaling of theory-of-mind tasks. *Child Development*, 75, 523-541. doi: doi:10.1111/j.1467-8624.2004.00691.x

Wellman, H. M., Cross, D., & Watson, J. (2001). Meta-analysis of theory-of-mind development: The truth about false belief. *Child Development, 72,* 655-684. doi: 10.1111/1467-8624.00304

Wellman, H.M., & Liu, D. (2004). Scaling of theory-of-mind tasks. *Child Development*, *75*, 523-541. doi: 10.1111/j.1467-8624.2004.00691.x

Wellman, H.M., Cross, D., & Watson, J. (2001). Meta-analysis of theory-of-mind development: The truth about false belief. *Child Development*, *72,* 655-684. doi: 10.1111/1467-8624.00304

Wellman, H.M., Fang, F., & Peterson, C.C. (2011). Sequential progressions in a theory-of-mind scale: longitudinal perspectives. *Child Development*, *82*, 780-792. doi: 10.1111/j.1467-8624.2011.01583.x

Wellman, H.M., Fang, F., Liu, D., Zhu, L., & Liu, G. (2006). Scaling of theory-of-mind understandings in Chinese children. *Psychological Science*, *17*, 1075-1081. doi: 10.1111/j.1467-9280.2006.01830.x

White, S., Hill, E., Happé, F., & Frith, U. (2009). Revisiting the strange stories: Revealing mentalizing impairments in autism. *Child Development, 80*, 1097-1117. doi: 10.1111-j.1467-8624.2009.01319.x

Wilson, M. (1989). Saltus: A psychometric model of discontinuity in cognitive development. *Psychological Bulletin*, *105*, 276-289.

Wimmer, H., & Perner, J. (1983). Beliefs about beliefs: Representation and constraining function of wrong beliefs in young children's understanding of deception. *Cognition*, *13*, 103-128. doi: 10.1016/0010-0277(83)90004-5.

Witherington, D. C., & Crichton, J. A. (2007). Frameworks for understanding emotions and their development: Functionalist and dynamic systems approaches. *Emotion, 7,* 628-637. doi: 10.1037/1528-3542.7.3.628

Wright, B.D., & Masters, G.N. (1982). *Rating scale analysis.* Chicago: MESA Press.

Xiao, Y. J., & Van Bavel, J. J. (2012). See your friends close and your enemies closer: Social identity and identity threat shape the representation of physical distance. *Personality and Social Psychology Bulletin, 38,* 959-972. doi: 10.1177/0146167212442228

Xiao, Y. J., Wohl, M. J., & Van Bavel, J. J. (2016). Proximity under threat: The role of physical distance in intergroup relations. *PloS One, 11,* doi: 10.1371/journal.pone.0159792

Yagmurlu, B. (2014). Relations among sociocognitive abilities and prosocial behavior. *Journal of Child and Family Studies, 23,* 591-603. doi:10.1007/s10826-013-9726-1

Yagmurlu, B., Berument, S. K., & Celimli, S. (2005). The role of institution and home contexts in theory of mind development. *Journal of Applied Developmental Psychology*, *26(5),* 521-537. doi: 10.1016/j.appdev.2005.06.00.

Yagmurlu, B., Berument, S. K., & Celimli, S. (2005). The role of institution and home contexts in theory of mind development. *Journal of Applied Developmental Psychology, 26,* 521-537. doi:10.1016/j.appdev.2005.06.004

Yavuz, S., & Özmete, E. (2012). Assessment of problems between young individuals and their parents in Turkey according to results of "Research on Family Structure 2006" Survey. *Journal of Social Policy Research, 7,* 9-27.

Zahn-Waxler, C., Cole, P. M., Welsh, J. D., & Fox, N. A. (1995). Psychophysiological correlates of empathy and prosocial behaviors in preschool children with behavior problems. *Development and Psychopathology, 7,* 27-48. doi: 10.1017/S0954579400006325

Zellmer-Bruhn, M. E., Maloney, M. M., Bhappu, A. D., & Salvador, R. B. (2008). When and how do differences matter? An exploration of perceived similarity in teams. *Organizational Behavior and Human Decision Processes, 107,* 41-59. doi: 10.1016-j.obhdp.2008.01.004

Zlatev, J., Racine, T. P., Sinha, C., & Itkonen, E. (Eds.), (2008). *The shared mind: Perspectives on intersubjectivity.* Amsterdam: Benjamins.