IBN HALDUN UNIVERSITY
SCHOOL OF GRADUATE STUDIES
DEPARTMENT OF PSYCHOLOGY

MASTER THESIS

EXAMINING THE RELATIONSHIP BETWEEN COGNITIVE EMPATHY, AFFECTIVE EMPATHY AND SOCIAL ANXIETY IN AUTISM SPECTRUM DISORDER

DİLRUBA SÖNMEZ

THESIS SUPERVISOR: PROF. TIMOTHY JORDAN

ISTANBUL, 2020

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by

DİLRUBA SÖNMEZ

A thesis submitted to the School of Graduate Studies in partial fulfillment of the requirements for the degree of Master of Arts in Clinical Psychology

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APPROVAL PAGE

This is to certify that we have read this thesis and that in our opinion it is fully adequate, in scope and quality, as a thesis for the degree of Master of Arts Clinical Psychology.

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This is to confirm that this thesis complies with all the standards set by the School of Graduate Studies of Ibn Haldun University.

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I hereby declare that all information in this document has been obtained and presented in accordance with academic rules and ethical conduct. I also declare that, as required by these rules and conduct, I have fully cited and referenced all material and results that are not original to this work.

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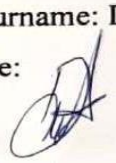

ÖZ

OTİZM SPEKTRUM BOZUKLUĞUNDAKİ SOSYAL KAYGININ BİLİŞSEL VE DUYGUSAL EMPATİ İLE İLİŞKİSİNİN İNCELENMESİ

Sönmez, Dilruba
Klinik Psikoloji Yüksek Lisans Programı
Tez Danışmanı: Prof. Timothy Jordan
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Bu araştırmanın temel amacı Otizm Spectrum Bozukluğu (OSB) olan çocuk ve ergenlerdeki sosyal kaygının bilişsel ve duygusal empati ile ilişkisini incelemektir. Bu amaçla, özel eğitim merkezleri ve devlet okullarından 38 OSB tanısı almış çocuk ve ergen ile yaş ve cinsiyetleri eşleşen 38 kontrol çocuk ve ergen katılımcı ve onların ailelerine ulaşılmıştır. Katılımcılara Gözler Testi, Temel Empati Ölçeği, Empati ve Sistematizasyon Ölçeği, Revize Edilmiş Çocuk Kaygı Ölçeği uygulanmıştır. Bu çalışmada, değişkenli korelasyon ve kısmi korelasyon analizleri kullanılmıştır ve bunun sonucunda OSB grubundaki çocuk ve ergenlerde, duygusal empati arttıkça, kaygı ve sosyal kaygı düzeyinin arttığı bulunmuştur. Kontrol grubundaki çocuk ve ergenlerde ise, bilişsel empati arttıkça kaygı ve sosyal kaygı düzeylerinin azaldığı yaşın etkisi olmadan gösterilmiştir ve ayrıca duygusal empati ile çocuk ve ergenlerin yaşı arasında negatif yönlü bir ilişki olduğu bulunmuştur. Doğrusal regresyon analizleri sonucunda, OSB'li grup için, duygusal empatinin hem kaygı düzeyini hem sosyal kaygı düzeyini pozitif yönlü ve anlamlı derecede yordadığı gösterilmiş ve kaygı düzeyinin duygusal empati ve sosyal kaygı arasındaki ilişkide aracı faktör olduğu bulunmuştur. Kontrol grubu için ise bilişsel empatinin katılımcıların kaygı düzeyini negatif yönlü ve anlamlı derecede yordadığı görülmüştür. Ebeveyn cevaplarına göre ise OSB'li grubunda empati, sosyal kaygı ve kaygı arasında anlamlı bir ilişki bulunamamışken kontrol grubunda empati ile kaygı arasında negatif yönlü ve anlamlı bir ilişki bulunmuştur. T-test analizleri sonucunda, OSB'li grubun bilişsel empati ve Gözler Testi sonuçları kontrol grubunun sonuçlarından

düşük olduğu görülürken, duygusal empati, sosyal kaygı ve genel kaygı düzeyinde anlamlı bir fark bulunamamıştır. Öz bildirim ve ebeveyn bildirim sonuçları karşılaştırıldığında, kaygı ve sosyal kaygı düzeylerinde anlamlı bir fark olduğu bulunmuştur. Kaygı ve sosyal kaygı düzeylerinin öz bildirim sonuçlarında daha yüksek olduğu gösterilmiştir. Çalışmanın bulguları, literatüre katkıları ve eksiklikleri tartışılmıştır.

Anahtar Kelimeler: Bilişsel Empati, Duygusal Empati, Otizm Spektrum Bozukluğu, Sosyal Kaygı

ABSTRACT

EXAMINING THE RELATIONSHIP BETWEEN COGNITIVE EMPATHY, AFFECTIVE EMPATHY AND SOCIAL ANXIETY IN AUTISM SPECTRUM DISORDER

Sönmez, Dilruba

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The main aim of the current study is to examine the relationship between cognitive empathy, affective empathy, and social anxiety in autism spectrum disorder (ASD) via self-report and parent-report. For this purpose, 38 children and adolescents with ASD, 38 control participants matched for age and gender, and their 76 caregivers were recruited from special education and rehabilitation centres and public schools. The Eyes Test, Basic Empathy Scale, Empathy, and Systemizing Quotient, The Revised Child Anxiety Subscale were applied to participants. As a result of correlation analyses, it was found that affective empathy is increasing in children and adolescents with ASD, anxiety and social anxiety are also increasing. For the control group, while cognitive empathy is increasing, anxiety and social anxiety are decreasing without effects of age and the age of the control group is negatively correlated with affective empathy. As a result of linear regression analyses, while affective empathy positively predicts anxiety and social anxiety in ASD and anxiety is the mediator factor in the relationship between social anxiety and affective empathy, cognitive empathy significantly negatively predicts anxiety in the control group. In terms of parent-report, there is no relationship between empathizing, anxiety and social anxiety in ASD; however, the moderate negative relationship between empathizing, social anxiety and anxiety was found in the control group. As a result of t-test analyses, while children and adolescents with ASD have significantly lower scores in cognitive empathy and The Eyes Test, they did not show significant differences in affective empathy, anxiety and social anxiety from the control group. Comparing self-report and parent-report,

significant differences were found in anxiety and social anxiety. Means of self-report were significantly higher than the means of parent-report. Findings of the study, contributions to the literature and limitations were discussed.

Key Words: Affective Empathy, Autism Spectrum Disorder, Cognitive Empathy, Social Anxiety

To my brother…

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To all my family members, *thank you for your endless affection!*

"For indeed, with hardship will be ease.
Indeed, with hardship will be ease.
So when you have finished your duties, still strive hard"
(Al-Inshirah 5:7).

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LIST OF SYMBOLS AND ABBREVIATIONS

AA Atypical Autism

AS Asperger Syndrome

ASD Autism Spectrum Disorder

ASSQ Autism Spectrum Screening Questionnaire

CI Confidence Interval

CV Child Version

DSM Diagnostic and Statistical Manual of Mental Disorder

eg Example given

EK Emotional Knowledge

et al and others

HFA High Functioning Autism

ie in other words

ICD International Classification of Diseases

IQ Intelligence Quotient

PV Parent Version

RCAS The Revised Child Anxiety Subscale

ROC Receiver Operating Characteristic

SAD Social Anxiety Disorder

SES Socioeconomic Status

TD Typically Developing

ToM Theory of Mind

B Unstandardized beta

df Degrees of freedom

F F-statistic/ the ratio of mean squares

N Sample

M Mean

p Statistical significance

r Correlation coefficient

SD	Standard Deviation
t	t-test/ the ratio of the departure of the estimated value of a parameter from its hypothesized value to its standard error
ß	Beta
R^2	Coefficient of determination

CHAPTER I

INTRODUCTION

Autism Spectrum Disorder (ASD) is a neurodevelopmental disorder that leads to reciprocal social interaction and communication difficulties, narrow interests and repetitive activities and behaviours (American Psychiatric Association, 2013). Individuals with ASD are at higher risk for other mental health conditions which include mood disorders and anxiety disorders than typically developing (TD) peers and these other mental health conditions may make worse symptoms of ASD (Jang et al., 2013; Kim, Szatmari, Bryson, Streiner, & Wilson, 2000; Matson & Boisjoli, 2008; Moseley, Tonge, Brereton, & Einfeld, 2011; Niditch, Varela, Kamps, & Hill, 2012). There is no identifiable cause of a higher risk for other mental health conditions that directly explain this problem; however, autistic individuals demonstrate deficits in many areas such as language, executive functions, empathy, and social communication skills are core deficits of ASD (American Psychiatric Association, 2013; Czermainski et al., 2015; Harmsen, 2019; Niditch et al., 2012) that may lead to the vulnerability of other mental health issues.

Anxiety-related issues and co-occurring symptoms are some of the most common problems for children and adolescents with ASD in the clinical setting (Bellini, 2004; White, Oswald, Ollendick, Scahill, 2009). With regards to ASD, deficits in social communication and interaction skills may be a source of distress and eventually may result in anxiety and depression (Bellini, 2004; Tantam, 2000). The rate of comorbidity for anxiety in children and adolescents with ASD is nearly 40% and specifically social anxiety disorder is about 17% (van Steensel, Bögels, & Perrin, 2011). Even though anxiety symptoms and disorders are highly common in children and adolescents with ASD, they are often misdiagnosed or over-diagnosed (Kuusikko et al., 2008; Williams, Leader, Mannion, & Chen, 2015).

Deficits in cognitive and socio-communication skills in ASD such as difficulties in empathy (Baron-Cohen, 2010; Berenguer, Miranda, Colomer, Baixauli, & Roselló, 2017) which is the significant concept including cognitive and affective components that are related to the process of perceiving, identifying, understanding and sharing other's emotions, desires, intentions, beliefs (Baron-Cohen & Wheelwright, 2004; Kerem, Fishman, & Josselson, 2001) and adaptation to the social world (Stiff, Dillard, Somera, Kim, & Sleight, 1988) may contribute to co-occurring symptoms and comorbidity other mental health conditions, social anxiety in particular (Bellini, 2006; Happe, Booth, Charlton, & Hughes, 2006). Accordingly, these social functioning impairments of ASD may not be differentiated with symptoms of social anxiety in the clinical setting because many specific symptoms of ASD and social anxiety might overlap with each other; thus, it can bring about problems for diagnosis as well as intervention and treatment (Kuusikko et al., 2008; Wood & Gadow, 2010).

In order to contribute to the literature and help to facilitate clinical implications including both treatments and interventions for ASD, more research on understanding the association between specific components of social functioning and social anxiety in ASD is needed. The current study aims to examine the relationship between two components of empathy (i.e. cognitive empathy and affective empathy) and social anxiety in ASD. In the following sections, definitions of ASD, cognitive empathy, affective empathy, and social anxiety will be given and the literature on their relationship with each other will be summarized.

CHAPTER II

LITERATURE REVIEW

2.1. Autism Spectrum Disorder

Autism Spectrum Disorder (ASD) is a biological and developmental disorder of communication, socialization, and imagination, and it can be seen at all IQ levels (Fletcher-Watson & Happe, 2019). ASD is firstly defined by Kanner (1943) and is also examined by Asperger (1944). Both of the researchers took the term 'autistic' from Eugen Bleuler, who used this term to describe extremely social withdrawal and loneliness in patients with schizophrenia in 1911 (Barahona-Corrêa & Filipe, 2016). Kanner (1943) described autism as a unique syndrome that differs from childhood schizophrenia and listed symptoms of 11 children in his case study, which are an extreme autistic aloneness, obsessiveness, stereotypy, difficulties in language, and echolalia and lack of affective contact (Kanner, 1943). Kanner has concluded that autism is a biological problem; however, he and his colleagues later ignored this conclusion, and they have supported interpersonal psychodynamic factors that lead to autism (Frith, 2003).

In 1944, Asperger investigated 4 cases of autistic children, and he also listed their similar features such as difficulties in communication and social adaptation, narrow interests and repetitive behaviours like Leo Kanner did; however, he has added some specific features about children who have extraordinary abilities in math or natural sciences, although they showed social and emotional impairments. The label of "Asperger syndrome" is used for this mild form of autism, but it is still controversial in the literature. Additionally, Asperger has included information about the neurological consequences of autism in children who have low and high intelligence (Frith, 2003; Wolff, 2004).

In diagnostic criteria today, according to the Diagnostic and Statistical Manual of Mental Disorder 5 (DSM-5), an individual must have difficulties in two subdomains, which are social communication and restricted - repetitive behaviours to diagnose ASD. Specifically, at least three symptoms in the social communication subdomain and two symptoms in restricted- repetitive subdomain must be present. Table 2.1. displays DSM-5 criteria of ASD (American Psychological Association, 2013). In literature, high functioning autism (HFA), Atypical Autism (AA), or Asperger Syndrome (AS) is often used as terms that refer to meeting the same individual criteria with autism, but there is no intellectual disability and no language delay. In the previous edition of DSM and the 10th edition of International Classification of Diseases (ICD), AS and AA are different categories from ASD. Conversely, in DSM – 5 and ICD 11, AS is under the category of ASD. Additionally, these three terms (HFA, AA, and AS) are often grouped in research design and clinical services (Fletcher-Watson & Happé, 2019; Montgomery et al., 2016).

Table 2.1. DSM-5 Criteria of ASD

A. Persistent deficits in social communication and social interaction across multiple contexts, as manifested by the following, currently or by history (examples are illustrative, not exhaustive, see text):
1. Deficits in social-emotional reciprocity, ranging, for example, from abnormal social approach and failure of normal back-and-forth conversation; to reduced sharing of interests, emotions, or affect; to failure to initiate or respond to social interactions.
2. Deficits in nonverbal communicative behaviours used for social interaction, ranging, for example, from poorly integrated verbal and nonverbal communication; to abnormalities in eye contact and body language or deficits in understanding and use of gestures; to a total lack of facial expressions and nonverbal communication
3. Deficits in developing, maintaining, and understanding relationships, ranging, for example, from difficulties adjusting behaviour to suit various social contexts; to difficulties in sharing imaginative play or in making friends; to the absence of interest in peers.

Table 2.1. DSM-5 Criteria of ASD (Continued)

B. Restricted, repetitive patterns of behaviour, interests, or activities, as manifested by at least two of the following, currently or by history (examples are illustrative, not exhaustive; see text):

1. Stereotyped or repetitive motor movements, use of objects, or speech (e.g., simple motor stereotypies, lining up toys or flipping objects, echolalia, idiosyncratic phrases).

2. Insistence on sameness, inflexible adherence to routines, or ritualized patterns or verbal nonverbal behaviour (e.g., extreme distress at small changes, difficulties with transitions, rigid thinking patterns, greeting rituals, need to take the same route or eat food every day).

3. Highly restricted, fixated interests that are abnormal in intensity or focus (e.g., strong attachment to or preoccupation with unusual objects, excessively circumscribed, or perseverative interest).

4. Hyper- or hyporeactivity to sensory input or unusual interests in sensory aspects of the environment (e.g., apparent indifference to pain/temperature, adverse response to specific sounds or textures, excessive smelling or touching of objects, visual fascination with lights or movement).

C. Symptoms must be present in the early developmental period (but may not become fully manifest until social demands exceed limited capacities or may be masked by learned strategies in later life).

D. Symptoms cause clinically significant impairment in social, occupational, or other important areas of current functioning.

E. These disturbances are not better explained by intellectual disability (intellectual developmental disorder) or global developmental delay. Intellectual disability and autism spectrum disorder frequently co-occur; to make comorbid diagnoses of autism spectrum disorder and intellectual disability, social communication should be below that expected for general developmental level.

The comprehensive assessment procedure is required in order to reach accurate information for ASD. Observation, behaviour checklist, parent interviews and reports, cognitive, language, motor, social and intellectual assessments, social and community contexts are part of the comprehensive diagnostic process (Ozonoff, Goodlin-Jones, Beth, & Solomon, 2005). For instance, commonly used instruments are CHAT (Baron-Cohen,

Allen, & Gillberg, 1992) and ABC (Krug, Arick, & Almond, 1980) as a behaviour checklist, ADI-R (Lord, Rutter, & Le Couteur, 1994) as a systematic interview, ASSQ (Ehlers, Gillberg, & Wing, 1999) as a systematic questionnaire, ADOS (Lord et al., 1989) as a structured observational assessment and CARS (Schopler, Reichler, DeVellis, & Daly, 1980) as the example of the rating scale for diagnoses of ASD (Yoon, 2008).

2.1.1. Prevalence of Autism Spectrum Disorder

There is a dramatic increase in autism prevalence over time due to awareness of autism both in public and medical settings, changes in diagnostic criteria over time, and differences in methodology (Fletcher-Watson & Happé, 2019). While in the USA, ASD has seen 1 to 59 children (Baio J, Wiggins L, Christensen DL, Maenner MJ, Daniels J, Warren Z, Kurzius-Spencer M, Zahorodny W, Robinson Rosenberg C, White T, Durkin MS, Imm P, Nikolaou L, Yeargin-Allsopp M, Lee LC, Harrington R, Lopez M, Fitzgerald RT, Hewitt A, Pettygrove S, Const, 2018), the global prevalence rate is 10 to 10.000 children for ASD. The rates change between 0.3% and 1.2% (Elsabbagh et al., 2012); nevertheless, there have been no attempts to examine the prevalence of ASD in Turkey. The researchers point out that in Turkey, there are 16. 837 children with ASD who are compulsory school age and 53.2% of children who benefit from special education and rehabilitation centres are ASD (Aydın & Özgen, 2018).

Although gender ratio is 3:1 boy to girl (Loomes, Hull, & Mandy, 2017), many autistic girls may confront a lack of diagnosis and be overlooked from autism research that leads to significant other mental health conditions in the future. Specifically, there is still a dramatic increase in the diagnosis of ASD among women and girls (Duvekot, van der Ende, Verhulst, & Greaves-Lord, 2018; Fletcher-Watson & Happé, 2019). There are two possible explanations for misdiagnosis. Firstly, females are better at camouflaging their social communication difficulties than males (Dean, Harwood, & Kasari, 2017; Lai et al., 2017; Sutherland, Hodge, Bruck, Costley, & Klieve, 2017).

Secondly, because males demonstrate a high prevalence of ASD for a long time, clinical services may be focused on diagnosing and detecting symptoms of boys than symptoms of girls (Fletcher-Watson & Happe, 2019).

2.1.2. The Development of Autism Spectrum Disorder

ASD is not commonly diagnosed until after 2 – 3 years. Symptoms become more apparent with age, and infants may show normal development until some points of the life, and then they are diagnosed later as autistic (Frith, 2003; Landa & Garrett-Mayer, 2006; Wozniak, Leezenbaum, Northrup, West, & Iverson, 2016). From the historical perspective, Kanner (1943) has argued that the development of autism may result from the coldness of parents. Bruno Bettelheim also pointed out in 1979 that problems in a mother-child relationship lead to autism, and this idea brings about a hypothesis that claimed that a lack of warmth called "refrigerator mother" results in autism. Nevertheless, due to technological development, biological aspects of autism development became more popular and scientific (Bumiller, 2009). Fletcher-Watson and Happe (2019) indicate that several studies have supported genetic abnormalities in ASD. For instance, mutations in CNTNAP2 gene leads to impairments in working memory and atypical grey matter volume and also affects brain region that is associated with reward and language development (Scott-Van Zeeland et al., 2010). There are various genes linked to the oxytocin system that increase the risk of ASD by affecting emotional and social processing (Meyer-Lindenberg et al., 2009; Sauer, Montag, Wörner, Kirsch, & Reuter, 2012)

Furthermore, environmental factors may lead to a genetic mutation that increases the risk of ASD (Wozniak et al., 2016). For instance, risk of cancer can be affected by diet, use of tobacco, visual simulation, and stress (Mathers, Strathdee, & Relton, 2010). In the same way, the researcher suggests that although identical twins share the same genes, they display variations on the severity of ASD symptoms and behavioural characteristics (Wong et al., 2014). In addition, while parental age is a significant risk factor for autism (Hultman, Sandin, Levine, Lichtenstein, & Reichenberg, 2011), prenatal stress at 21-32

weeks in particular also contributes to ASD (Beversdorf et al., 2005). Prenatal viral infection, zinc deficiency, abnormal melatonin synthesis, maternal diabetes, postnatal risk factors such as allergies, infections, immune system abnormalities are other environmental risk factors for ASD (Grabrucker, 2013).

In Turkey, one study examines developmental reasons for ASD by asking parents' opinions. This study demonstrates that the idea of the "refrigerator mother" disappear as a reason for the ASD. Some of the parents believe that neurological and genetic factors are the main reasons for ASD. Besides, genetic factors, prenatal and postnatal risk factors, brain injuries, infections, vaccination, lack of baby care are common answers of the parents who have autistic children. However, most of the parents do not have any opinion about reasons for ASD, and the most common answer is "*I don't know*." Possible explanations that are given by the researcher are lack of information and descriptions about ASD in Turkey (Töret, Özdemir, Selimoğlu, & Özkubat, 2014).

2.1.3. Executive Functions Impairments in Autism Spectrum Disorder

Executive functions are top-down control processes that contain inhibitory control, self-control, cognitive flexibility, working memory, planning, reasoning, processing speed and response, and problem-solving. These skills have impacts on people's social, psychological, and cognitive development as well as their mental health (Diamond, 2013). Previous studies have emphasized that individuals with ASD show impairments in executive functions such as planning, inhibitory control, self-monitoring and cognitive flexibility (Luna, Doll, Hegedus, Minshew, & Sweeney, 2007; Robinson, Goddard, Dritschel, Wisley, & Howlin, 2009; Van Eylen et al., 2011). On the basis of planning, individuals with ASD have planning consistent difficulties regardless of age, IQ, time, and types of tasks (Olde Dubbelink & Geurts, 2017). The researchers have confirmed previous findings that Turkish children with AS have difficulties in cognitive flexibility, phonological fluency, and attentional tasks (Kilinçaslan, Motavallı Mukaddes, Sözen Küçükyazici, & Gürvit, 2010).

Although given findings support executive dysfunction in ASD, few studies have argued that individuals with ASD display variability of performance in executive function tasks (Czermainski et al., 2015; Robinson et al., 2009). For instance, the researchers had found no significant differences between ASD group and control group considering level or patterns of executive function performance, even though they showed worse performance when the tasks required joint attention skills which are related to ventromedial prefrontal cortex rather than the dorsolateral cortex (Dawson et al., 2002; Griffith et al., 1999). Whereas working memory, inhibitory control, and joint attention are impaired in ASD, some studies have suggested that working memory, speed of processing, control levels, cognitive flexibility and response inhibition in ASD is inconsistent and develop with age; however, individuals with ASD show delayed in these functions compared to TD people. (Geurts, Corbett, & Solomon, 2009; Happe et al., 2006; Luna et al., 2007).

Notably, the researchers have supported previous findings that impairments in planning and set-shifting have found; nonetheless, these impairments were not associated with IQ levels of participants with ASD. Regarding the age factor, the gap between participants with ASD and TD increases during adolescence to adulthood (Ozonoff et al., 2004). Additionally, several studies have demonstrated that there is a significant correlation between several areas of executive functions such as planning, working memory and initiation, and adaptive social behaviours like socio-communication skills (Gilotty, Kenworthy, Sirian, Black, & Wagner, 2002; Happe et al., 2006; Ozonoff et al., 2004).

2.1.4. Social Skills Impairments in Autism Spectrum Disorder

Social skills are a set of observable responses and information about the social world that help people to adapt and cope with their environment. Social skills deficit means failure to perform adequate responses for social interaction, and it is one of the core symptoms of ASD (Matson & Wilkins, 2007). The researchers divided social interactions into three groups for ASD: “social aloofness” which individuals with ASD do not show social interaction, “passive interaction” that individuals with ASD do not seek contact with others. Still, if others do, they do not resist, and “active but odd interaction.”

The latter group means that individuals with ASD try to communicate, but their communication is inappropriate (Wing & Gould, 1979).

According to Kanner (1943), children with ASD have social and affective impairments from the beginning of their lives. Social impairments in ASD include reduced eye-contact, difficulties in initiating and maintaining interaction with other people and understanding social cues, poor speech prosody, deficits in nonverbal communication, failure to orient to social stimuli, the deficit in joint attention, sharing enjoyment, social and emotional coordination, cognitive empathy and affective empathy (Bellini, Peters, Benner, & Hopf, 2007; Dawson, Meltzoff, Osterling, Rinaldi, & Brown, 1998; Gutstein & Whitney, 2002; Klin A, Jones W, Schultz R, Volkmar F, & Cohen D, 2002; Otero, Schatz, Merrill, & Bellini, 2015; Rao, Beidel, & Murray, 2008; Weiss & Harris, 2001; Williams White, Keonig, & Scahill, 2007).

The longitudinal study on language acquisition in autism conducted by Frith (2003) found that similar language development regarding syntactic structures and grammatical morphology was found in children with ASD compared to Down syndrome and TD children. Nevertheless, children with ASD show significant differences in the use of language (Frith, 2003), which affects the social communication process (Frye, 2018). Moreover, adequate recognition and use of the face, eye, and hands are also crucial for the social communication process in which individuals with ASD often fail. (Frith, 2003). To illustrate, while participants with ASD remember building and landscape, they cannot recognize faces (Blair, Frith, Smith, Abell, & Cipolotti, 2002) which is not related to specific brain region and impairment in the basic socioemotional process that leads to problems in recognition, emotional contagion, social decision-making, and social cognition. (Frith, 2003; Khalil, Tindle, Boraud, Moustafa, & Karim, 2018; McIntosh, Reichmann-Decker, Winkielman, & Wilbarger, 2006); however, situational aids facilitate emotion recognition, both control and ASD groups (Metcalfe, McKenzie, McCarty, & Pollet, 2019).

Some researchers suggest that emotion recognition deficit is associated with reduced empathy in ASD (Blair, 2005) and another possible explanation of emotion recognition deficit is that individuals with ASD keep away from eye-contact and display different skin conductance response from the typically developing individuals (Hirstein, Iversen, & Ramachandran, 2001; Tanaka & Sung, 2016). Even though individuals with ASD demonstrate variability considering social skills deficit, impairments in social functioning still lead to significant difficulties in their lives (Church, Alisanski, & Amanullah, 2000).

Specifically, poor peer relationships and peer rejection, bullying, poor academic performance, and anxiety problems are significant problems due to social skills deficits (Bellini, 2006; Church et al., 2000; Welsh, Parke, Widaman, & O'Neil, 2001). With regards to treatment for ASD, social skills training focus on emotion recognition, ToM skills, and social reasoning leads to excellent improvement in social communication, social awareness, and social cognition as well as anxiety and depression (Didehbani, Allen, Kandalaft, Krawczyk, & Chapman, 2016; Hillier, Fish, Siegel, & Beversdorf, 2011; Kandalaft, Didehbani, Krawczyk, Allen, & Chapman, 2013; Patriquin, 2019).

Furthermore, cognitive empathy (i.e., the theory of mind) is one of the significant concepts that help to explain socio-communicative impairments in ASD as well as affective empathy. Briefly, cognitive empathy is the mentalizing process that helps to understand, and reason about one's own and other people's mental states and affective empathy is an adequate emotional response and sharing to other people's emotion (Frye, 2018; Jones, Happé, Gilbert, Burnett, & Viding, 2010; Leekam, 2016). Besides, these impairments are not specific to autism. Lack of cognitive and affective empathy can be present in different disorders such as schizophrenia (Fernandes, Cajão, Lopes, Jerónimo, & Barahona-Corrêa, 2018). However, several studies have argued that impairments in empathic processing are related to social skills deficits in individuals with ASD (Berenguer et al., 2017; Frith, 2008)

2.2. Empathy

The term empathy was firstly used by Titchener (1909) as 'Einfühlung,', and it translated from German to English as an empathy. It means the projection of the self into an object that you observe (Baron-Cohen & Wheelwright, 2004; Eisenberg & Strayer, 1987). In literature, the researchers have argued that empathy has two components that are cognitive empathy (i.e., theory of mind) and affective empathy (Belacchi & Farina, 2012; Zahn-Waxler & Radke Yarrow, 1990). While affective empathy is defined by responding and sharing other person's emotion appropriately and it is related to various processes such as emotional contagion, emotion recognition and shared pain (Blair, 2005; Rueda, Fernandez-Berrocal & Baron-Cohen, 2015; Baron-Cohen, Tager-Flusberg, & Lomardo, 2013), In 1978, Premack and Woodruff firstly defined Theory of Mind (ToM) by "imputing mental states to himself and others" (p. 515) and ToM is often used interchangeably with mentalizing or cognitive empathy (Blair, 2005; Baron-Cohen & Wheelwright, 2004; Grove et al., 2014). Cognitive empathy is identifying their own and other's mental states and reasoning about those mental states with regards to explaining and predicting actions (Sabbagh, 2004).

From an evolutionary perspective (Baron-Cohen et al., 2013), there are pieces of evidence that support several systems that mediate empathy. An emotional contagion system is one of the earliest systems in which one person's emotional states are affected by another person's emotions or arousal states without awareness of source. The cognitive empathic perspective-taking system is a more developed system that is related to more advanced functions (Baron-Cohen et al., 2013). For instance, joint attention, which refers to shared mutual attention and high order social skills such as understanding the desire and intention of other people and making complex judgments are also significant features of the cognitive empathic system (Lei & Ventola, 2018).

Empathy is essential for communicative processes such as perspective-taking, prosocial behaviour, and empathic concern (Stiff et al., 1988). Charman and his colleagues (1997) summarized four abilities that are essential features of empathy for social communication:

Empathic sharing and responding to other people's emotion which babies show from the first days of their lives (Geangu, Benga, Stahl, & Striano, 2010), *pretend play* that demonstrates a relationship with social and language development, and academic skills (Bergen, 2002), *joint attention* which is associated with social communication, language ability and early emotion regulation process (Dawson et al., 2004; Kasari, Sigman, Mundy, & Yirmiya, 1990) and *imitation* ability that is related to the early social communication process and language development (Charman et al., 1997).
Specifically, motor imitation is associated with social skills in 15-18 month infants (Dadgar et al., 2017; Hanika & Boyer, 2019).

In order to measure cognitive empathy, Wimmer and Perner (1983) invented the first false belief task, which was extended later on with different kinds of stories. In their research, while %57 of the 4-year-olds children correctly responded, 3-year-old children, did not answer. Additionally, Reading Mind in the Eyes (Baron-Cohen, Wheelwright, Spong, & Lawson, 2001), Strange Stories (Happé, 1994), Hogan's empathy scale which consists of 64 items (Hogan, 1969), Mehrabian and Epstein's measurement of emotional empathy which has 33 items (Mehrabian & Epstein, 1972), Davis's Interpersonal Reactivity Index which consists of 28 questions (Davis, 1983) and Basic Empathy Scale which has 20 items in both cognitive and affective empathy (Jolliffe, & Farrington, 2006) are some of the most widely used questionnaires for both affective and cognitive empathy. In Turkey, there is a limitation about empathy measurement for children and adolescents; however, recently, Topçu, Erdur-Baker, and Çapa-Aydın (2010) tested validity and reliability of Basic Empathy Scale in Turkey, and it is also used for children and adolescents.

2.2.1. Empathy Development

On the one hand, some studies have argued that 4-year-old children can start to pass the first-order false belief task which is about understanding the distinction between one's perspective and others' perspective, such as people can think differently in the same situation and this capacity increases sufficiently at 6 years compared to 3-4-year-old children (Wellman & Liu, 2004; Wimmer & Perner, 1983). On the other hand, other

studies have assumed that attribution of false belief starts even earlier than 3-4 years. For instance, when several spontaneous response tasks are applied, second-year infants can attribute false beliefs about location, identity, and false perception (Baillargeon, Scott, & He, 2010). Even 12 day to 21 day old infants imitate their caregivers' facial expression, which imitation process is also related to the development of the ToM process (Meltzoff & Gopnik, 1993; Meltzoff & Moore, 1977).

During to first days of infants' life, they show empathic reactions such as starting to cry when they hear another newborn baby's cry, then 18-36 months old babies' responses become more specific to emotional and personal distress (Bandstra, Chambers, McGrath, & Moore, 2011; Cheng, Chen, & Decety, 2014) and their level of empathy increased (Knafo, Zahn-Waxler, Van Hulle, Robinson, & Rhee, 2008). Empathy development increases during adolescence and differences in empathy level in this period is associated with the level of self-report social competencies in adulthood (Allemand, Steiger, & Fend, 2015).

Different factors contribute to empathy development. Gender is one of the factors associated with the development of empathic skills. For instance, many studies have indicated female superiority in empathy with higher scores on sharing and turn-taking, responding empathically to the distress of other people, sensitivity to facial expressions, empathy questionnaires, values in a relationship and talking about emotions (Allemand et al., 2015; Baron-Cohen, 2002, 2010; Harmsen, 2019). Additionally, while genetic and environmental factors lead to changes in empathy development (Knafo et al., 2008), parental practising, early socialization, and temperament are also linked to the development of empathic skills (Zahn-Waxler & Radke-Yarrow, 1990). In addition, the level of oxytocin and early child-parent relationship is related to the development of empathy, and these two variables are risk factors for ASD (McDonald, Baker, & Messinger, 2016). Empathy is also strongly associated with prosocial behaviour, which is voluntary positive social behaviours (Roberts & Strayer, 1996).

In one study, compared to Australian and Turkish children, prosocial behaviour is associated with maternal warmth and child persistence for Australian children. For Turkish children, obedience-demanding action is related to the development of prosocial behaviour (Yagmurlu & Sanson, 2009).

2.2.2. Autism Spectrum Disorder and Empathy

People with ASD demonstrate impairments in empathizing (Baron-Cohen, 2002; Harmsen, 2019). While cognitive empathy (i.e., theory of mind) impairment leads to core social difficulties (e.g., emotion recognition, reasoning about others' mental states) in ASD (Montgomery et al., 2016), difficulties in affective empathy lead to problems on the ability to respond appropriately to emotions in others (Baron-Cohen, 2002). In 1985, Baron-Cohen, Leslie, and Frith proposed the ToM hypothesis that demonstrates impairment in ASD. In their study, they used the Sally- Anne Task, which is a type of false belief task for measuring ToM. The results show that %80 of autistic children cannot identify and mentalize beliefs in others, which can lead to disadvantages in the way of predicting the actions of the other people when compared with children with Down's Syndrome and TD children. Only %20 of autistic children passed this task. The interesting point is that even though children with Down's Syndrome have lower verbal and non-verbal IQ than autistic children, %86 of children with Down's Syndrome did higher scores on ToM tasks than autistic children. Hence, deficits in ToM for autistic children cannot be explained with just IQ or delayed developmental problems. Baron-Cohen (1989) tested %20 of autistic children who passed the first belief task, and the results claim that even though autistic children passed on first belief task, they demonstrate a failure on second belief ToM task.

Baron-Cohen (1995) proposed the mind-blindness theory of autism, which ToM is a kind of device in order to understand social behaviours and development of ToM is delayed in ASD. An individual with ASD demonstrates impairments and delay in joint attention, pretend play, false belief task which is recognition of wrong belief about the world (Baron-Cohen, 2010). Nonetheless, the deficit in social cognition is specific for their ToM skills,

and there are some aspects of social cognition such as visual self-recognition, peer recognition, distinguishing self from other people, identifying the animate and inanimate subject and perceiving relationship and perceptual role-taking that are intact in ASD (Baron-Cohen, 1990).

Furthermore, Baron-Cohen (2002) developed the mind-blindness theory and proposed Empathizing and Systemizing theory. The researcher used the term 'empathy' in order to explain social and communication difficulties in ASD which is the empathizing part and used the systemizing term for areas (e.g., numerical systems or natural systems) in ASD which are intact or even superior. In this theory, empathizing consists of the cognitive component of empathy (i.e., theory of mind) and an affective component of empathy. In this newer theory, ASD is explained with not just empathy or mind-blindness but also a second psychological factor (systemizing) whose skills in ASD are either intact or even above average.

Happé (1994) developed a more advanced ToM task which is called "Strange Stories" to measure mentalizing ability both autistic and normal children and adults. It consists of 24 short real-world stories and participants are asked to identify and explain why a character says strange things. Task requires attribution of mental states (e.g. desires, thoughts, knowledge, emotions and intentions). The researchers have found that autistic people demonstrate more errors and lower scores on Strange Stories battery and the Reading the Mind in the Eyes test (Baron-Cohen, 2002; Happé, 1994). More recently, Girli (2017) also supports the previous studies that when Turkish children with ASD compared to TD children, children with ASD demonstrate lower scores on Strange Stories battery and Reading Mind in the Eyes test.

A number of studies have suggested that cognitive empathy performance (i.e., ToM) is related to language ability and communicative competence (Hale & Tager-Flusberg, 2005; Milligan, Astington, & Dack, 2007; Tager-Flusberg, 2007) such as autistic children who have higher verbal mental age show better performance on ToM task (Happe, 1995). A more recent study shows that Turkish children with ASD and TD children who were

matched in terms of length of utterance demonstrate similar performance on ToM tasks. In addition, while language ability is associated with their performance on the ToM task for both groups, chronologic age is related to ToM performance for only TD children (Kaysılı, 2013); however, emotion recognition which is another important aspect of ToM develops significantly through chronological age in ASD (Golan, Baron-Cohen, & Golan, 2008; Kuusikko et al., 2009). Whereas impairments in cognitive and affective empathy performance help to explain problems about socio-emotional information in individuals with ASD, some researchers suggest that their impairments are not associated with executive function difficulties (Ziermans, de Bruijn, Dijkhuis, Staal, & Swaab, 2019). In contrast to this finding, empathy is associated with age, executive functions, verbal, general reasoning and mentalizing abilities (Cascia & Barr, 2017; Gökçen, Frederickson, & Petrides, 2016; Scheeren, De Rosnay, Koot, & Begeer, 2013).

Dissociation between cognitive and affective empathy is required in order to understand the whole empathy process in ASD. Several studies have indicated that individuals with ASD perform worse than control groups in cognitive empathy tasks which include recognition of emotions, intentions, and beliefs of others; however, they do not differ in affective empathy tasks from the control group (Dziobek et al., 2008; Mul, Stagg, Herbelin, & Aspell, 2018; Rogers, Dziobek, Hassenstab, Wolf, & Convit, 2007; Rueda, Fernández-Berrocal, & Baron-Cohen, 2015) and individuals with ASD show intact affective empathy when other people express their emotions in positive valence rather than negative valence (Mazza et al., 2014). In contrast to previous findings, the researches have reported that an individual with ASD has difficulties in both cognitive and affective empathy compared to control groups (Bos & Stokes, 2018; Grove, Baillie, Allison, Baron-Cohen, & Hoekstra, 2014). Impairments in affective empathy are related to the severity of social symptoms in ASD which may lead to social difficulties (Altschuler et al., 2018). Additionally, in the one study, children's emphatic behavior was examined and they have found that children with ASD show less behavioral empathy than TD children and younger preschool children in their social interactions. The researchers did not find the relationship between ToM and affective empathy in children with ASD (Peterson, 2014).

Although emotion recognition is an important concept based on understanding both cognitive and affective empathy in ASD, the literature does not have a consensus on whether people with ASD recognize basic emotions. While some studies have argued that people with ASD demonstrate difficulties in basic emotion recognition (Kuusikko et al., 2009; Wright et al., 2008), others' results point out that individuals with ASD are intact in basic emotion recognition but they show impairments in complex emotion recognition such as surprise, guilt, shame, pride and embarrassment which is needed more complex mental reasoning process and high levels of self-awareness (Baron-Cohen et al., 2013; Golan et al., 2008; Jones et al., 2011). For instance, although 42% of TD children have reported their guilt, only 14% of high IQ children with autism have mentioned about their feelings of guilt. With regards to the embarrassment, most of the children with ASD demonstrate difficulty reporting their feelings and speaking of the embarrassment clearly and compared to normally developing children, their understanding of pride is highly different (Capps, Yirmiya, & Sigman, 1992; Kasari, Chamberlain, & Bauminger, 2001).

Empathy is also considered as a projection of the self into others' shoes, identifying and understanding what they will experience in a similar situation and responding to others' emotions appropriately through simulation and imitation (Mahy, Moses, & Pfeifer, 2014). In terms of ASD, the literature does not have a consensus on this topic. On the one hand, few studies have shown that people with ASD can imitate the goal direct actions of other people and display a basic level of imitation process (e.g., gestures; Charman & Baron-Cohen, 1994) and may echo the behaviour of others. In addition, many studies have stated that children with ASD demonstrate responsiveness when adults imitate them and they are more active and sociable in this situation (Baron-Cohen et al., 2013). On the other hand, it has been reported that individuals with ASD display difficulties in imitation of emotional expressions, bodily movements, and actions of other people (Baron-Cohen et al., 2013); therefore, deficits in simulation and imitation processes in individuals with ASD lead to social and communicative difficulties which are core symptoms of ASD

2.3. Social Anxiety

Social anxiety is defined as an anxiety disorder that leads to intense fear in and avoidance of social situations, and it brings about distress and clinically important interference with the person's normal routines. Social anxiety disorder (SAD) is also known as social phobia and they can be used interchangeably (American Psychiatric Association, 2013; Detweiler, Comer, Crum, & Albano, 2014). According to Huppert and Foa, four main aspects of social anxiety disorder facilitate to distinguish it from other anxiety disorders. The first one is that the stimuli which are feared by the person are social, not physical things. Secondly, this fear includes physiological symptoms like blushing or sweating which are related to anxiety. Thirdly, in order to conceal fear, a person shows specific verbal and behavioural responses associated with anxiety. Lastly, these stimuli, fear and the responses are related to the idea of being ashamed, social incompetence, and rejection (Yiend & Mathews, 2004).

Social phobia firstly was used in DSM-III as a distinct diagnosis for adults. Nonetheless, children and adolescent have different category as an avoidant disorder that is defined by withdrawal from others and interference with peer relationship (American Psychiatric Association, 1980). In DSM- IV, a distinct category for youth was also included if the symptoms are stable for six months (American Psychiatric Association, 1994). The criteria of social anxiety are revised and new subtype as performance only is added in DSM-V (Detweiler et al., 2014). To diagnose SAD, an individual must show fear or anxiety in social situations due to a person's actions or showing anxiety symptoms (e.g. blushing or sweating) that result in the negative evaluation of others or rejection from others. The avoidance from social situations or enduring social situations with intense fear must be present. Table 2.1. displays DSM-5 criteria of SAD (American Psychiatric Association, 2013).

Table 2.2. DSM-5 Criteria of SAD

A.	A persistent fear of one or more social or performance situations in which the person is exposed to unfamiliar people or possible scrutiny by others. The individual fears that he or she will act in a way (or show anxiety symptoms) that will be embarrassing and humiliating.
B.	Exposure to the feared situation almost invariably provokes anxiety, which may take the form of a situationally bound or situationally predisposed Panic Attack.
C.	The person recognizes that this fear is unreasonable or excessive.
D.	The feared situations are avoided or else are endured with intense anxiety and distress.
E.	The avoidance, anxious anticipation, or distress in the feared social or performance situation(s) interferes significantly with the person's normal routine, occupational (academic) functioning, or social activities or relationships, or there is marked distress about having the phobia.
F.	The fear, anxiety, or avoidance is persistent, typically lasting 6 or more months.
G.	The fear or avoidance is not due to direct physiological effects of a substance (e.g., drugs, medications) or a general medical condition not better accounted for by another mental disorder.

In the assessment procedure of social anxiety, Clark and his colleagues (1997) reviewed the most commonly used social anxiety measurements. Researchers indicate four questionnaires and two interviews to measure social anxiety. The Social Phobia and Anxiety Inventory (Turner, S, Beidel, Dancu, & Stanley, 1989) the Social Interaction and Anxiety Scale (Mattick & Clarke, 1998), the Social Phobia Scale (Mattick & Clarke, 1998), Social Anxiety and Distress Scale (Watson & Friend, 1969) are questionnaires and the Liebowitz Social Anxiety Scale (Liebowitz, 1987) and Brief Social Phobia Scale (Davidson et al., 1991) are interviews for assessments of social anxiety.

2.3.1. Prevalence of Social Anxiety

SAD is the third most common psychiatric disorder with 13% in the USA, after major depressive disorder and alcohol dependence (Kessler et al., 1994). The prevalence rate of SAD increases from childhood through adolescence and the incidence rate of SAD is highest for ages between 10-19; thus, SAD is relatively common among adolescents and young adults. (Beesdo et al., 2007; Burstein et al., 2011; Spence & Rapee, 2016) According to more recent data, the lifetime prevalence rate of SAD is 12.1% in total and for ages between 18-29, the rate is 13.6% in the USA (Kessler, Demler, Jin, Merikangas, & Walters, Ellen, 2005). Across all countries, the age of onset is mid-late adolescence to middle age. Being younger, being female, unemployment, being single, lower education level, low income is correlated with SAD. Life-time or 12-month SAD displays comorbidity with other anxiety disorders. (Stein et al., 2017).

In Turkey, prevalence studies have been limited; however, the prevalence rate of SAD have reported as 1.8% in 1996 by the Turkish Ministry of Health (Kılıç, 1997). A more recent study points out that 20.9% of the participants had SAD and %21.7 of participants experienced SAD for a lifetime (Gültekin & Dereboy, 2011). Additionally, early-onset SAD is associated with the persistence and stability of symptoms in later life (Beesdo-Baum et al., 2012; Burstein et al., 2011; Spence & Rapee, 2016). A number of studies have stated that gender difference is quite clear for many anxiety disorders. The prevalence rate of females is higher than the rate of males and differences between females and males increase with age (Beesdo, Knappe, & Pine, 2009; Detweiler et al., 2014).

2.3.2. The Development of Social Anxiety

Several factors are associated with the development of social anxiety (Spence & Rapee, 2016). As for genetic influences, parents who have SAD significantly increase risk of experiencing social anxiety symptoms and being SAD in their children and heritability rate is around 40%; however, this rate may probably indicate heritability of anxiety in general rather than specifically social phobia (Detweiler et al., 2014; Elizabeth et al., 2006; Freeman & Freeman, 2012). From a biological perspective, previous studies have claimed

that increased activation in the amygdala and prefrontal cortex are related to social anxiety (Detweiler et al., 2014; Fox & Kalin, 2014). The research demonstrates that when a social threat is present, there is a correlation between activation of amygdala and severity of social anxiety (Phan, Fitzgerald, Nathan, & Tancer, 2006); nevertheless, the role of the prefrontal cortex is still unclear (Spence & Rapee, 2016). Puberty is also another risk factor for many affective disorders. In particular, early puberty may contribute to the risk of an anxiety disorder (Detweiler et al., 2014; Zehr, Culbert, Sisk, & Klump, 2007).

Attachment, parenting styles, peer influence, temperament, trauma, abuse, and stressful life events are also significant factors that contribute to the development of social anxiety. (Acarturk et al., 2009; Detweiler et al., 2014; Spence & Rapee, 2016). To illustrate, the studies have shown that secure attachment is associated with positive self-esteem, positive social behaviour, high level of social problem-solving skills and low level of loneliness, whereas insecure attachment predicts a high level of social anxiety (Clark & Symons, 2009; Irons & Gilbert, 2005; Raikes & Thompson, 2008). Negative temperament styles predict anxiety problems in later life such as behavioural inhibition are linked to a high risk of social anxiety (Chronis-Tuscano et al., 2009; Biederman et al., 2001; Chorpita & Daleiden, 2002; Muris, Merckelbach, Schmidt, Gadet, & Bogie, 2001). Especially, negative experiences with peers contribute both to the development and maintenance of SAD (Blöte, Miers, Heyne, & Westenberg, 2015). Being a victim of bullying also increases the risk of anxiety problems. Victims of bullying are generally lonely, have low self-esteem, socially anxious, and depressed. However, this relationship may be bi-directional because low self-esteem, social skills deficit, and introversion may also lead to victimization of bullying (Detweiler et al., 2014; Graham, Bellmore, & Mize, 2006).

2.3.3. Cognitive Processes in Social Anxiety

According to cognitive models of social anxiety, the main focus is the maintenance of social anxiety rather than the development and these models indicate that people with SAD have similar cognitive biases in social situations. (Spence & Rapee, 2016). For instance, negative expectations and cognitions about performance and outcome in social situations are present in people with SAD (Alfano, Beidel, & Turner, 2006; Blöte, Miers,

Heyne, Clark, & Westenberg, 2014; Cody & Teachman, 2011; Kley, Tuschen-Caffier, & Heinrichs, 2012), negative evaluations and ruminations before and after social situations and performances are commonly seen in social anxiety (Alfano et al., 2006; Hodson, McManus, Clark, & Doll, 2008) and individuals with SAD demonstrate negative interpretations of social experiences and information (Blöte et al., 2014). According to Huppert and Foa, individuals with SAD display greater interpretation and judgment biases such as, people with SAD tend to expect negative consequences of positive events and they exaggerate the possibility of uncertain negative events as a more costly in social situations while they ignore the possibility of positive events (Kashdan, Weeks, & Savostyanova, 2011; Yiend & Mathews, 2004). Additionally, compared to the control group, participants with SAD interpret their symptoms of anxiety (e.g. blushing and heart racing) as an abnormal and pathological problem (Roth, Antony, & Swinson, 2001).

With regards to the memory process, according to Wenzel, Jackson, and Holt, (2002), cognitive theories suggest that individuals with SAD recall more negative experiences with social threats; nonetheless, up to now, few studies have been published on the subject of this topic. In their study, participants with SAD did not show greater differences when retrieving memories with social threat; however, they recall more specific memories that related to negative affect than non-anxious participants. In another study, the researchers point out that participants with SAD retrieve less specific memories and made more errors than non-anxious participants but cues about social threat did not affect this retrieving process. In addition, anxious participants have reported high self-attention during their social interaction and while it leads to more errors for participants with SAD, more self-attention creates a better recalling process for non-anxious participants (Hope, Heimberg, & Klein, 1990).

2.3.4. Social Anxiety and Autism Spectrum Disorder

Even though the association between ASD and anxiety symptoms has received increased attention in recent years, there are difficulties in order to measure anxiety and mood problems in ASD because of limited verbal skills and overlap symptoms (Kim et al., 2000;

Kuusikko et al., 2008). Nevertheless, the researchers have found that %48 of participants diagnosed with anxiety and depression have "ASD likely" score at least one measure of ASD traits and symptoms (Towbin, Pradella, Gorrindo, Pine, & Leibenluft, 2005; Van Steensel, Bögels, & Wood, 2013). With regard to social anxiety, anhedonia in social situations, social withdrawal, and preference for aloneness are related to both ASD and SAD (White, Bray, & Ollendick, 2012). Hence, it is difficult to decide which symptom comes from ASD or anxiety (Kim et. al., 2000). There are possible causes of the overlap between social anxiety and ASD (Kleberg et al., 2017). Firstly, the researchers point out that negative experiences of individuals with ASD in the social environment and their awareness of social difficulties increase with age that results in social anxiety over time (White, Ollendick, & Bray, 2011). Secondly, genetic factors may explain this overlap because the prevalence rate of social anxiety is high among biological parents of individuals with ASD (Piven & Palmer, 1999).

On the one hand, some individuals with ASD show symptoms of social anxiety but they do not meet the diagnostic criteria for social anxiety disorder, on the other hand, some individuals with ASD show lack of daily activities that may be related to social anxiety; thus, they cannot be diagnosed (Kreiser and White, 2014). However, it is important to examine social anxiety in ASD because social anxiety in children with HFA and AS increases with age in contrast to TD children (Kuusikko et al., 2008), and individuals with ASD have high scores on anxiety symptoms, including social anxiety compared to two groups which are individuals with specific language impairments and normally developing individuals (Gillott, Furniss, & Walter, 2001; Russell & Sofronoff, 2005). These results may relate to delay or deficit in socio-emotional development and skills of children with ASD which can lead to social anxiety (Wood & Gadow, 2010; Bellini 2004). Notably, it is important to consider that the results of the studies about anxiety might be influenced by reporters. Some studies have indicated that there are significant differences in anxiety measures between self-report and parent-report. (Bellini, 2004; Kuusikko et al., 2008; Russell & Sofronoff, 2005; van Steensel et al., 2011; White & Roberson-Nay, 2009).

Wood and Gadow (2010) proposed a theoretical model of anxiety in ASD. Even though there is an association between anxiety and ASD, the direction of the relationship is unclear. The researchers hypothesize that individuals with ASD become vulnerable to experience various ASD related stressor which may result in developing anxiety symptoms. Examples of these stressors are social confusion, peer rejection, lack of social interests, social skill deficits such as problems in empathy and so on. There are three possible explanations: (a) ASD symptoms lead to anxiety; (b) anxiety may be a mediator or moderator of ASD symptoms severity; (c) anxiety may be representative of symptoms of ASD.

To understand the components of high risk, we have to focus on some basic problems in ASD. According to Spain et. al., (2018), specific risk factors relating to core ASD characteristics contribute to the development of social anxiety in individuals with ASD such as socio- communication impairments, social motivation, and behavioural inhibition, degree of cooperativeness, social skills deficits and repetitive behaviours. Several studies have suggested that early signs of ASD in infants at 12 months who develop ASD that demonstrates reduced in eye-contact, joint attention, response to name, social responsiveness and social smiling, poor visual tracking and unusual visual exploration of objects and repetitive behaviours like rhythmic arm activity (Iverson & Wozniak, 2007; Nadig et al., 2007; Ozonoff, S., Losif, A., Baguio, 2010; Ozonoff et al., 2008; Zwaigenbaum et al., 2005). These characteristics probably contribute to social impairments in the following years as well as social adversity such as bullying or rejection that are a specific risk factor for social anxiety (Bellini, 2004; Pickard, Rijsdijk, Happé, & Mandy, 2017). Adolescents with ASD who experience anxiety have reported more social loneliness and anxiety may be a mediator in their interactions with peers. Thus, social loneliness may be associated with social anxiety in terms of ASD (White & Roberson-Nay, 2009).

According to Bellini (2006), temperament/physiological hyperarousal, social withdrawal, social skill deficits, and negative peer interaction are respectively pathways of the development of social anxiety in ASD and the researcher suggests that when physiological

hyperarousal combine with social impairments, it contributes to the development of social anxiety in ASD. Physiological hyperarousal makes people with ASD more vulnerable to social withdrawal and it leads to social skills deficits and eventually, negative peer interaction will arise. In the study by Kleinhans et al., (2010), participants with ASD who have high-level social anxiety demonstrate greater activation in the amygdala which results in hyper-arousal and it contributes to social disability and eventually social avoidance in ASD. Poor social competence or social skill deficits show a significant relationship with social anxiety in ASD which included verbal and non-verbal communication skills and degree of reciprocity (Bellini, 2004; Spain et.al., 2018).

2.3.5. Social Anxiety, Empathy, and Autism Spectrum Disorder

Identifying and understanding others' mental states and responding with appropriate emotion is essential for an adaptation to the social world (Baron-Cohen, 2001; Lane, Wellman, Olson, LaBounty, & Kerr, 2010). Deficits in cognitive empathy and affective empathy in young children lead to socio-communicative problems such as increasing non-adaptive behaviour or reducing social understanding and low level of basic cognitive empathy is related to a high level of social anxiety (Colonnesi, Nikolić, de Vente, & Bögels, 2017). Social anxiety negatively correlated with emotional knowledge (EK) which means identifying one's own and other's emotions, comprehend which emotions are fitting in various settings and recognizing the causes and outcomes of emotions. EK is one of the significant components that are related to the cognitive empathy process. Specifically, there is a strong relationship between social anxiety and intrapersonal EK. (O'Toole, Hougaard, & Mennin, 2013). People with social anxiety can detect other's emotions accurately only when they feel a social threat; nonetheless, they have impairments in judgments of intrapersonal EK (Auyeung & Alden, 2016).

In one study, the main purpose is to examine the relationship between ToM and social anxiety. The two tasks for ToM which are decoding tasks (Reading Mind in the Eyes Task) that include the emotion recognition process and the reasoning task (Movie Assessment of Cognition Task) are applied to two groups which are socially anxious and healthy control. Participants are asked to identify emotions in the eyes which are a

decoding task for ToM. Social anxious people made more mistakes when eyes depicted negative emotions on the decoding task than the control group. For reasoning tasks, socially anxious people made more over-interpretation and overusing ToM than the control group which leads to more errors (Hezel & McNally, 2014). In brief, participants with SAD show impairment compared to healthy controls and participants with the major depressive disorder on both decoding and reasoning ToM tasks. (Hezel & McNally, 2014; Washburn, Wilson, Roes, Rnic, & Harkness, 2016a).

Despite individuals with SAD performed better in social cognitive tasks including emotion recognition and empathy than individuals with ASD in general, both ASD and SAD groups show significantly lower scores on affective and cognitive empathy tasks than non-clinical groups. Hence, the results suggest that only empathy predicts anxiety and a deficit in social functioning in both SAD and ASD (Pepper et al., 2018). Some studies indicate that components of empathy have different effects on anxiety. For instance, in the one study, the researchers suggest that social anxiety has a positive relationship between affective empathy in socially anxious individuals; however, when the researchers control general anxiety, the significance of the relationship between social anxiety and affective empathy disappears. Accordingly, these results lead to a positive relationship between cognitive empathy and social anxiety (Tibi-Elhanany & Shamay-Tsoory, 2011).

A recent study reported that while cognitive empathy is negatively correlated with social anxiety and separation anxiety, affective empathy shows a positive correlation with social anxiety in inpatient adolescents (Gambin & Sharp, 2018). Furthermore, Lei and Ventola (2018) examine the relationship between ToM, social functioning, and anxiety in children with ASD. According to the study, parental reports indicate that only early ToM competence is a significant mediator between broader social skills impairment and anxiety in children with ASD. Hence, the relationship between social impairment and anxiety might not just link to general ToM deficiency, rather it may relate to a specific set of skills.

Considering the neuroscience perspective, oxytocin has significant effects on human social behaviour and it has shown the relationship with social deficits. Especially, oxytocin may be used for treatment in social disorders, including, ASD and SAD. For instance, emotion recognition which is an important component of empathy is associated with oxytocin. Both individuals with ASD and SAD who took a single dose of intranasal oxytocin have demonstrated improvement in emotion recognition task performance for ASD, and public speech performance and an overall improvement in treatment for SAD (Baron-Cohen et al., 2013).

To date, the relationship between social anxiety and empathy in ASD has still not been comprehensively studied. More study is needed to examine this connection because according to Bellini (2004), the relationship between empathy and social anxiety is complicated and not determined. In this study, the results suggest that low empathy scores lead to low social anxiety. This means that as a person's empathy increases, social anxiety also increases. In contrast to these findings, the researcher also states that empathic skills are associated with more positive social skills in general; thus, higher scores on empathic skills may result in low social anxiety scores (Bellini, 2004). In brief, although there are research that examine empathy, social impairments and social anxiety in individuals with ASD and TD, no single study exists that directly investigates the relationship between both two specific components of empathy and social anxiety in individuals with ASD. This study will try to contribute the literature on the relationship between cognitive empathy, affective empathy and social anxiety in ASD and TD groups.

2.4. The Purpose of the Current Study and Hypotheses

The main purpose of this research was to examine the relationship between cognitive empathy, affective empathy and social anxiety in ASD via self and parent-report measures comparing with TD. Besides, the relationship between anxiety and empathy will be explored with both parent-report and self-report in this study and then, the study will focus on whether cognitive empathy is negatively associated with anxiety and social anxiety, and whether affective empathy is positively associated with anxiety and social anxiety in

particular. Research on the interaction between empathy and social anxiety may provide contributions for both treatment and intervention programs in children and adolescents with ASD who have comorbidity and co-occurring symptoms with social anxiety as well as literature about ASD.

The relationship between cognitive empathy, affective empathy and social anxiety in autism spectrum disorder and typically developing children and adolescents via self and parent-report measures was examined in this study.

For this study, the following hypotheses were addressed:

H_1: Social anxiety and anxiety are negatively associated with cognitive empathy in both experimental and control groups.

H_2: Social anxiety and anxiety are positively correlated with affective empathy in both experimental and control groups.

H_3: Empathizing scores via parent-reports are negatively associated with social anxiety and anxiety in both the experimental and the control groups.

H_4: There are significant differences in cognitive empathy, anxiety, and social anxiety measures but not the affective empathy between experimental and control groups in self-report.

H_5: There are significant differences in empathizing and systemizing subscales and anxiety and social anxiety measures between experimental and control groups in parent-report.

H_6: There are significant differences between parent and self-report anxiety measures in the experimental group and the control group.

CHAPTER III

METHOD

3.1. Participants

38 participants who diagnosed with ASD and their parents (*n* = 38) were recruited from special education and rehabilitation centres, public middle schools and public high schools in İstanbul. 38 control participants (*n* = 38) and their parents (*n* = 38) were recruited from public middle schools and high schools in Istanbul. The sample of the study is children and adolescents who ranged in age from 8 to 18.5 years old and their caregivers. The criteria of lower and upper age limits are determined by the previous research by (WHO, 2015; Wimmer & Perner, 1983). Included criteria are the diagnosis of ASD (specifically, HFA, AA, Asperger's Syndrome) by psychiatrists with a medical report, the ability of reading and writing, 8 or higher scores from the Wechsler Intelligence Scale for Children Verbal Comprehension Index – Vocabulary Subtest and being inclusive students in schools. Intelligence test for ASD groups was applied as part of their medical reports approved by Guidance and Research Centres (RAM). Therefore, all children participants had 80 or above IQ scores without mental retardation. Children diagnosed with mental retardation were excluded from the study. For this study, approval from the ethical committee of Ibn Haldun University was obtained and legal permission from the Ministry of Education was taken to collect data from public schools. In addition, written informed consent to participants and their parents were provided for research and each participant and their parents have confirmed to participate. See Table 3.

Table 3.1. Demographic Information

	Self-Report (*n* = 76)		Parent-Report (*n* = 76)	
	ASD (*n* = 38)	**TD(*n* = 38)**	**ASD (*n* = 38)**	**TD(*n* = 38)**
Age	*M* = 13.83 *SD* = 2.43	*M* = 13.80 *SD* =2.37	*M* = 42.54 *SD* = 5.78	*M* = 40.78 *SD* =5.42
Gender				
Female %	10.5%(*n*=4)	10.5%(*n*=4)	86.8% (*n*=33)	%81.6 (*n*=31)
Male %	89.4% (*n*=34)	89.4% (*n*=34)	13.2% (*n*=5)	%18.4 (*n*=7)
ASSQ			*M* = 23.96 *SD* = 9.13	*M* = 1.60 *SD* = 1.77
Education %				
Primary School	5.2%(*n*=2)	5.2% (*n*=2)	26.3% (*n*=10)	10.5% (*n*=4)
Middle School	47.3% (*n*=18)	36.8% (*n*=14)	18.4% (*n* = 7)	18.4 %(*n*=7)
High School	47.3% (*n*=18)	57.8% (*n*=22)	26.3% (*n*=10)	31.6% (*n*=12)
University			15.8% (*n*=6)	31.6 % (*n*=12)
Master/PhD			5.3 % (*n*=2)	7.9% (*n*=3)
Economic Status				
Bad **%**			5.3% (*n*=2)	10.5 % (*n*=4)
Middle %			73.7% (*n*=28)	68.4 % (*n*=26)
Good %			15.8% (*n*=6)	18.4 % (*n*=7)

3.2. Measures

In this study, the Demographic Information Form was used to obtain necessary information about participants. Whereas Autism Spectrum Screening Questionnaire was used for confirmation of their diagnosis, Wechsler Intelligence Scale for Children Verbal Comprehension Index – Vocabulary Subtest were used to determine limits of participation of the study. The limit is decided as an 8 or higher scores on test based on minimum participation age. The Eyes Test is a performance task that was used to examine empathy and emotion recognition. Regarding cognitive and affective empathy, while the Basic Empathy Scale were applied for children, Child Empathizing Systemizing Quotient was used for caregivers. In order to determine the social anxiety level, The Revised Child

Anxiety Subscale -Child and Parent Version were used. More detailed information was given for each measurement in the following sections.

3.2.1. Demographic Information Form

The demographic information form consists of items about caregivers and children. For children, age, education level, and gender were asked. About caregivers, age, gender, education level, job, and income were asked to determine the socioeconomic level. It is developed by the researcher.

3.2.2. Autism Spectrum Screening Questionnaire (ASSQ)

To assess severity of ASD symptoms, Autism Spectrum Screening Questionnaire was used. It is adapted from Ehlers et. al. (1999) by Köse et.al, (2017). The questionnaire consists of 27 questions and it was answered by caregivers. Cronbach's alpha values and test-retest reliability were examined and ROC analysis was used to demonstrate concurrent validity. The Cronbach's alpha value of this scale is 0,86 and test-retest reliability is r: 0.98 (Köse et al., 2017). This is used for the ASD group to check the severity of symptoms.

3.2.3. Wechsler Intelligence Scale for Children Verbal Comprehension Index – Vocabulary Subtest.

In order to specify included criteria, Wechsler Intelligence Scale for Children Verbal Comprehension Index – Vocabulary Subtest was used. This test is adapted by Savaşır and Şahin (1995) in order to measure the verbal skills of children. This scale consists of two main dimensions which are Verbal and Performance. There are 12 subtests in total. Each main part has 6 subtests. Verbal Comprehension Index consists of Similarities, Vocabulary, Information and Comprehension subtests. The reliability of the Turkish Vocabulary Subtest is .96 (Savaşır and Şahin, 1995). In this study, the vocabulary subtest only used to determine the level of participants. It consists of a list of 34 words. The

meaning of each word is asked to the participant. The scores of each word can be given as 2, 1 and 0. The maximum score is 68 and the minimum score is 0.

3.2.4. The Eyes Test

It is a performance task for emotion recognition which related to cognitive empathy. It is adapted from Baron-Cohen et al., (2001) by Girli (2014). This form consists of 28 black and white photo and there are 4 choices (one is the target) for each item. All photos were standardized in a single dimension. 4 choices of the photos were located randomly and each question has one target answer. This test was translated by three experts who are researchers, expert instructor and experts in developmental psychology. The researcher displays the reliability of the test. The Cronbach alpha reliability values and Cronbach alpha internal consistency coefficients are 0.70. Correct response ratios were between 30.2% and 85.1% for the children (Girli, 2014).

In order to determine internal validity, the researcher examines the correlation between scores of the items and the total score of the test and the test shows internal validity in terms of both forms. In terms of gender and diagnosis, girls have significantly higher scores than boys and TD children have significantly higher scores than children with ASD. According to age, children who were the ages between 6-8 show lower performance on the test than the older children. The results of the original child scale and Turkish scale is consistent.

3.2.5. Basic Empathy Scale

To examine cognitive empathy and affective empathy in children and adolescents, Basic Empathy Scale was used. Topçu et al., (2010) adapted this scale from Jolliffe, & Farrington (2006). This scale consists of two components (Cognitive and Affective Empathy). The total number of items is 20 which are 11 items for Affective Empathy, 9 items for Cognitive Empathy. For this scale, minimum and maximum scores are 9 and 45, respectively and there are 5 choices (Strongly Agree to Strongly Disagree). Whereas minimum and the maximum score of cognitive empathy are 9 and 45, the minimum and

maximum score of affective empathy are 11 and 55 respectively. Cronbach alpha coefficients for each scale is ranging from .76 to .80.

3.2.6. Child Empathizing Systemizing Quotient

This test is adapted from Auyeung & Baron-Cohen (2009) by Girli et.al., (2017). This Likert scale consists of 55 items and there are 4 choices (Definitely Agree/Slightly Agree/Slightly Disagree/Definitely Disagree). All questions will be answered by parents. The test has two part which is Empathize and Systematization. Empathize consists of 27 questions and Systematization consists of 28 questions. The grading of the test varies according to each question. For Empathize and Systematization, the maximum score is 54 and 56, respectively. The test generally takes 15-20 minutes on average. Three academic experts translated the scale from Turkish to English. According to the findings of Girli et. al. (2017), this scale shows both reliability and validity. Kaiser-Meyer-Olkin values have found 0.821 and Cronbach's alpha value is .752 for "Empathy Sub Factor", .721 for "Cognitive Empathy Sub Factor" and .752 for "Systematizing" quotient. The inner consistency coefficient is high.

3.2.7. The Revised Child Anxiety Subscale - Child and Parent Version (RCADS-CV/PV)

The Revised Child Anxiety Subscale (RCADS) was used in order to examine anxiety and social anxiety levels of children via self-report and parent-report. Both versions of the anxiety subscale consist of 37 items. The subscales correspond to separation anxiety disorder (7 items), Social Phobia (9 items), Generalized Anxiety Disorder (6 items), Panic Disorder (9 items), Obsessive-Compulsive Disorder (6 items). They are 4-point scale (0= never, 1=sometimes, 2=often, and 3= always) (Chorpita, Moffitt, & Gray, 2005; Ebesutani et al., 2011). The child version (CV) is adapted from Chorpita, Moffitt, Gray, (2005) (Gormez, Kilincaslan, Orengul, et al., 2017). The parent version (PV) is adapted from Ebesutani, Bernstein, Nakamura, Chorpita, Weisz (2010) (Gormez, Kilincaslan, Ebesutani, et al., 2017). For child scale, inter-scale reliability was strong with Cronbach's

Alpha of .95 and coefficients for RCADS-CV subscales ranging from .75 to .86. For the parent- version of the scale, the inter-scale reliability of RCADS-P was 0.95. Cronbach's alpha coefficients for the RCADS subscales are above the .70. High scores suggest high anxiety and social anxiety level in children.

3.3. Procedure

During the day, participants and their parents were asked to complete questionnaires. Questionnaires took 30 to 40 minutes. Number codes for each participant were used and they were told that we would keep data confidential and anonymous for research purposes. The participants and their parents completed questionnaires in a quiet room. The researcher accompanied children and adolescents with ASD and the control group in the room.

3.4. Data Analysis

SPSS 25.0 and PROCESS were used to analyze data. The data were normally distributed; therefore, parametric tests were used. The bivariate correlation and partial correlation were carried out to examine the relationship between age, cognitive empathy, affective empathy, anxiety, and social anxiety in particular for self-report. In terms of parent report, the bivariate correlation was performed to explore the relationship between empathizing, systemizing, age, education, economic status, anxiety, and social anxiety. A simple linear regression analysis was calculated to test whether affective empathy predicted anxiety and social anxiety, and it was used if age-predicted social anxiety. Also, mediation analysis was conducted using PROCESS whether anxiety mediates the relationship between affective empathy and social anxiety in children and adolescents with ASD. For the control group, simple linear regression analysis was performed to see that cognitive empathy predicted anxiety. To examine group differences, an independent t-test was calculated.

CHAPTER IV

RESULTS

4.1.The Results of the Self Report

4.1.1. Bivariate Correlation and Partial Correlation

Experimental Group

A Pearson correlation coefficient was carried out for the relationship between anxiety score, social anxiety score, cognitive empathy and affective empathy scores in children and adolescents with ASD. Affective empathy and social anxiety scores were moderately positively correlated, r (36) = .350, $p < .05$. A moderate positive correlation was also found between anxiety and affective empathy scores (r (36) = .355, $p < .05$). The results indicated that anxiety and social anxiety scores increased, affective empathy score also increased in children and adolescents with ASD. There was a moderate positive correlation in between age and social anxiety score (r (36) = .320, $p < .05$). Adolescence with ASD showed higher social anxiety scores. Additionally, there was a strong positive correlation between anxiety and social anxiety scores (r (36) = .834, $p < .01$) and cognitive empathy score and the Eyes Test were also moderately positively correlated, r (36) = .414, $p < .01$. See Table 4.1.

Partial correlation was performed with controlling age. Anxiety and affective empathy were moderately positive correlated, r (34) = .331, $p < .05$; however, social anxiety and affective empathy did not demonstrated significant correlation. There was a significant positive correlation between The Eyes Test and cognitive empathy (r (34) = .432, $p < .01$). Social anxiety and anxiety were strongly positively correlated, r (34) = .838, $p < .001$. See Table 4.2.

Table 4.1. Correlations between Age, The Eyes Test, Anxiety, Social Anxiety, Cognitive Empathy and Affective Empathy in Experimental Group (*n* = 38)

	1	2	3	4	5	6
1. The Eyes Test	1					
2. Anxiety	-.003	1				
3. Social Anxiety	.011	.834**	1			
4. Cognitive Empathy	.414**	-.063	-.031	1		
5. Affective Empathy	-.047	.355*	.350*	.254	1	
6. Age	.010	.206	.320*	.186	.172	1

**. Correlation is significant at the 0.01 level (2-tailed).
*. Correlation is significant at the 0.05 level (2-tailed).

Table 4.2. Partial Correlations between Variables in Experimental Group (*n* =38)

	1	2	3	4	5
1. The Eyes Test	1				
2. Anxiety	-.005	1			
3. Social Anxiety	.006	.838**	1		
4. Cognitive Empathy	.432**	-.112	-.070	1	
5. Affective Empathy	-.049	.331*	.320	.232	1

**. Correlation is significant at the 0.01 level (2-tailed).
*. Correlation is significant at the 0.05 level (2-tailed).

Control Group

A Pearson correlation coefficient was calculated to test the relationship between age, the Eyes Test, anxiety score, social anxiety score, cognitive empathy and affective empathy scores in TD children and adolescents. A moderate negative correlation was found between cognitive empathy and anxiety scores (r (36) = -.320, p < .05). Higher scores on cognitive empathy led to lower scores on anxiety score in particular. There was a moderate negative correlation between affective empathy score and age in TD children

and adolescents (r (36) = -.461, p < .01). This finding indicated that adolescents have lower affective empathy score than children. See Table 4.3.

Table 4.3. Correlations between Age, The Eyes Test, Anxiety, Social Anxiety, Cognitive Empathy and Affective Empathy in Control Group (*n* = 38)

	1	2	3	4	5	6
1. Age	1					
2. The Eyes Test	.061	1				
3. Anxiety	.056	-.288	1			
4. Social Anxiety	.055	-.132	.823**	1		
5. Cognitive Empathy	.292	.283	-.320*	-.296	1	
6. Affective Empathy	-.461**	-.039	.209	.193	-.212	1

**. Correlation is significant at the 0.01 level (2-tailed).
*. Correlation is significant at the 0.05 level (2-tailed).

According to a partial correlation with the controlling age, there is a moderately significant correlation between cognitive empathy and anxiety (r (34) = -.352 p < .05). Cognitive empathy and social anxiety scores are negatively associated (r (34) = -.327 p < .05). It means that cognitive empathy score is increasing, anxiety and social anxiety scores are decreasing without effects of age. See Table 4.4.

Table 4.4. Partial Correlations between Variables in Control Group (*n* = 38)

	1	2	3	4	5
1. The Eyes Test	1				
2. Anxiety	-.294	1			
3. Social Anxiety	-.135	.824**	1		
4. Cognitive Empathy	.145	-.352*	-.327*	1	
5. Affective Empathy	-.016	.264	.249	-.193	1

**. Correlation is significant at the 0.01 level (2-tailed).
*. Correlation is significant at the 0.05 level (2-tailed).

4.1.2. Linear Regression Analysis

Experimental Group

A simple linear regression was calculated to examine if affective empathy score significantly predicted social anxiety score. The results of the linear regression indicated that 12. 2% of the variation in social anxiety score can be explained by the model containing only affective empathy score. The model was significant, F (1,36) = 5.020, p < .05. The results showed that affective empathy score significantly predicted social anxiety score in children and adolescents with ASD (β =.350, p < .05). See Table 4.5.

Table 4.5. Simple Linear Regression Analysis Summary for Affective Empathy Predicting Social Anxiety in Experimental Group

						95% CI	
Variable		**B**	**ß**	**t**	**p**	**Lower**	**Upper**
1	**(Constant)**	-3.419		-.530	.599	-16.500	9.661
	Affective Empathy	.433	.350	2.241	.031	.041	.824

Note: R^2 = .122

Secondly, a simple linear regression was performed whether age predicted social anxiety score in children and adolescents with ASD. The model showed a significant regression (F (1,36) = 4.117, p < .05), with an R^2 of .103. Participants' age significantly predicted social anxiety score (β =.320, p < .05). Table 4.6. shows the results.

Table 4.6. Simple Linear Regression Analysis Summary for Age Predicting Social Anxiety in Experimental Group

						95% CI	
Variable		**B**	**ß**	**t**	**p**	**Lower**	**Upper**
1	**(Constant)**	-.542		-.095	.925	-12.119	11.034
	Age	.825	.320	2.029	.050	.000	1.650

Note: R^2 = .103

Thirdly, a simple linear regression was carried out to examine that affective empathy score significantly predicted anxiety score. A significant regression was found (F (1,36) = 5.182, p < .05), with an R^2 of .126. The model indicated that affective empathy score predicted anxiety score in children and adolescents with ASD (β =.355, p < .05). See Table 4.7.

Table 4.7. Simple Linear Regression Analysis Summary for Affective Empathy Predicting Anxiety in Experimental Group

						95% CI	
Variable		**B**	**ß**	**t**	**p**	**Lower**	**Upper**
1	**(Constant)**	-5.552		-.285	.777	-45.059	33.954
	Affective Empathy	1.327	.355	2.276	.029	.145	2.510

Note: R^2 = .126

Multiple regression was calculated to examine if affective empathy, anxiety score and age predict social anxiety. The model was significant, F (3, 34) = 29.17, p < .001, R^2 = .72. It was found that only anxiety score significantly predicted social anxiety score in this model and it is the mediator factor that explains the relationship between affective empathy and social anxiety. The results of the multiple linear regression indicated that 72% of the variation in social anxiety score can be explained by the model containing affective empathy score, anxiety score, and age. See Table 4.8.

Table 4.8. Multiple Regression Analysis Summary for Affective Empathy, Anxiety and Age Predicting Social Anxiety in Experimental Group

						95% CI	
Variable		**B**	**ß**	**t**	**p**	**Lower**	**Upper**
1	**(Constant)**	-6.277		-1.359	.183	-15.666	3.112
	Affective Empathy	.055	.044	.460	.649	-.190	.301
	Anxiety	.260	.787	8.010	.000	.194	.326
	Age	.387	.150	1.612	.116	-.101	.875

Note: R^2 = .720

In the mediation model, the relationship between affective empathy and social anxiety was mediated by anxiety. The model was significant, F (2, 35) = 40.59, p < .001, R^2 = .69. The standardized indirect effect of anxiety is .28 and standard error is .12. The unstandardized indirect effect of anxiety is .35 and standard error is .17. The significance of indirect effect was calculated by conducting bootstrapping procedure. For each of 5000 bootstrapped samples unstandardized indirect effects were measured. 95% confidence interval ranged from .037, .74. The results showed that anxiety significantly predicted social anxiety and the mediator for the relationship between affective empathy and social anxiety in children and adolescents with ASD, see Figure 4.1.

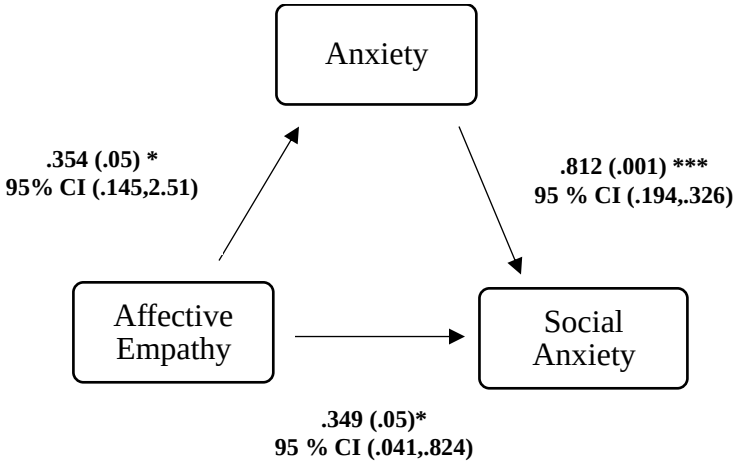


Figure 4.1. Mediation Model, standardized regression coefficients for the relationship between affective empathy and social anxiety in children and adolescents with ASD are fully mediated by anxiety in general.

Control Group

A simple linear regression was calculated to test that control participants' cognitive empathy score predicted anxiety scores. Cognitive empathy score significantly negatively predicted anxiety score of TD children and adolescents (F (1,36) = 4.110, p < .05) with R^2 of .102 (β = -.320, p < .05), see Table 4.9.

Table 4.9. Simple Linear Regression Analysis Summary for Cognitive Empathy Predicting Anxiety in Control Group

Variable		B	ß	t	p	95% CI Lower	95% CI Upper
1	(Constant)	80.894		3.705	.001	36.611	125.178
	Cognitive Empathy	-1.211	-.320	-2.027	.050	-2.423	.001

Note: $R^2 = .102$

4.1.3. Independent t-test Analysis

In order to examine differences between ASD and TD group, independent t-test was carried out on results of the Eyes Test, total anxiety score, social anxiety score, cognitive empathy scores and affective empathy scores. Comparing means scores of the two groups found a significant difference in cognitive empathy (t (74) = -3.001, p < .05) and the Eyes Test (t (74) = -6.259, p < .001). The mean scores of experimental group were significantly lower in both cognitive empathy (M =31.89, SD = 6.88) and the Eyes Test (M = 15.63, SD = 4.52) than the means for control group in cognitive empathy score (M = 36.16, SD = 5.41) and the Eyes Test (M = 20.82, SD = 2.36). However, no significant differences were found in anxiety score (t (74) = .261, p >.05), social anxiety score t (74) = .057, p >.05) and affective empathy score t (74) = -1.757, p >.05) in between ASD and TD group. See Table 4.10.

Table 4.10. Independent Samples t-test Analysis between Experimental and Control Groups

	Levene's Test for Equality of Variances	t-test for Equality of Means				
	F	t	df	p	Mean Difference	Std. Error Difference
The Eyes Test	16.075	-6.259	74	.000	-5.184	.828
Anxiety	.716	.261	74	.795	1.184	4.532
Social Anxiety	.382	.057	74	.955	.079	1.379
Cognitive Empathy	2.031	-3.001	74	.004	-4.263	1.420
Affective Empathy	.019	-1.757	74	.083	-1.974	1.124

4.2.The Results of the Parent Report

4.2.1. Bivariate Correlation and Partial Correlation

Experimental Group

A Pearson correlation coefficient was calculated to test the relationship between age, gender, economic status, anxiety score, social anxiety score, empathizing and systemizing scores in parents of the experimental group. A moderate negative correlation was found between empathizing and education of parents (r (36) = -.346, p < .05) and between systemizing and parents' age (r (36) = -.345, p < .05). As parents' education increased the empathizing scores of their children decreased and as parents' age increased, systemizing scores of children decreased. There is strong correlation between anxiety and social anxiety scores, r (36) = 859, p < .01) and between empathizing and systemizing scores (r (36) = 580, p < .01).

Control Group

Table 4.11. Correlations between Variables in Parents of Experimental Group (*n* = 38)

		1	2	3	4	5	6	7	8
1.	**Age**	1							
2.	**Gender**	-.295	1						
3.	**Economic Status**	-.094	-.078	1					
4.	**Education**	-.007	-.095	.097	1				
5.	**Anxiety**	.028	-.027	-.047	.253	1			
6.	**Social Anxiety**	.099	-.009	-.004	.149	.859**	1		
7.	**Empathizing Subscale**	-.111	.311	.221	-.346*	-.264	-.029	1	
8.	**Systemizing Subscale**	-.345*	.244	.310	-.192	.037	.167	.580**	1

*. Correlation is significant at the 0.05 level (2-tailed).
**. Correlation is significant at the 0.01 level (2-tailed).

A Pearson correlation coefficient was carried out for the relationship between age, gender, economic status, education, anxiety score, social anxiety score, empathizing and systemizing subscales in parents of the control group. Empathizing and social anxiety scores were moderately negatively correlated, r (36) = -.366, $p < .05$. A moderate negative correlation was also found between anxiety and empathizing scores (r (36) = -.369, $p < .05$). Parents' age (r (36) = .342, $p < .05$) are positively correlated with anxiety score and negatively correlated with systemizing scores (r (36) = -.367, $p < .05$). Economic status is moderately negatively correlated with anxiety score (r (36) = -.350, $p < .05$), see Table 4.12.

Table 4.12. Correlations between variables in Parents of Control Group (n = 38)

	1	2	3	4	5	6	7	8
1. Age	1							
2. Gender	-.329*	1						
3. Economic Status	-.208	.066	1					
4. Education	.127	-.027	.488**	1				
5. Anxiety	.342*	-.130	-.350*	-.259	1			
6. Social Anxiety	.359*	-.136	-.132	-.038	.901**	1		
7. Systemizing Subscale	-.367*	.236	-.007	.221	-.268	-.307	1	
8. Empathizing Subscale	-.127	.218	.198	.227	-.369*	-.366*	.542**	1

*. Correlation is significant at the 0.05 level (2-tailed).

**. Correlation is significant at the 0.01 level (2-tailed).

Partial correlation was calculated by controlling the education and economic status of parents, there is a moderate negative correlation between empathizing and social anxiety scores (r (34) = .348 $p < .05$). However, there is no correlation between empathizing and anxiety scores (r (34) = -.300 $p > .05$). The results indicate that as empathizing score increases, social anxiety score decreases in TD children and adolescents. See Table 4.13.

Table 4.13. Partial Correlation with Controlling Education and Economic Status of Parents (*n* = 38)

	1	2	3	4
1. Anxiety	1			
2. Social Anxiety	.928**	1		
3. Systemizing Subscale	-.273	-.331	1	
4. Empathizing Subscale	-.300	-.348*	.547**	1

*. Correlation is significant at the 0.05 level (2-tailed).
**. Correlation is significant at the 0.01 level (2-tailed).

4.2.2. Linear Regression Analysis

Control Group

A simple linear regression was calculated to examine if empathizing score significantly predicted social anxiety score. The results of the linear regression indicated that 13.4% of the variation in social anxiety score can be explained by the model containing only empathizing score. The model was significant, F (1,36) = 5.578, $p < .05$. The results showed that empathizing score significantly negatively predicted social anxiety score in TD children and adolescents (β =.366, $p < .05$). See Table 4.14.

Table 4.14. Simple Linear Regression Analysis Summary for Empathizing Predicting Social Anxiety in Control Group

					95% CI	
Variable	**B**	**ß**	**t**	**p**	**Lower**	**Upper**
1 (Constant)	13.416		4.688	.000	7.612	19.220
Empathizing Subscale	-.200	-.366	-2.362	.024	-.371	-.028

Note: R^2 = .134

4.2.3. Independent t-test Analysis

4.2.3.1.Differences between Self-Report and Parent-Report in Experimental Group

To investigate differences in anxiety scores and social anxiety scores between children and parents' scales, independent t-test analysis was performed. Comparing mean scores of the two groups found a significant difference in only anxiety scores (t (74) = 3.543, p < .01). However, there was no significant difference between social anxiety scores (t (76) = 1.646, p > .05). See Table 4.15. The means for self-report were significantly higher in anxiety scores (M = 38.29, SD = 19.01) than the means for parent report in anxiety (M = 24.11, SD = 15.73).

Table 4.15. Independent Samples t-test Analysis between Self-report and Parent-report in Experimental Group

	Levene's Test for Equality of Variances	t-test for Equality of Means				
	F	**t**	**df**	**p**	**Mean Difference**	**Std. Error Difference**
Anxiety	2.72	3.543	74	.001	14.184	4.004
Social Anxiety	1.61	1.646	74	.104	2.184	1.327

4.2.3.2.Differences between Self-Report and Parent-Report in Control Group

Independent t-test analysis was calculated to explore differences in both anxiety and social anxiety scores between children and parents' scales in the control group. There were significant differences between mean scores of the two groups in terms of anxiety (t (74) = 3.144, p < .01) and social anxiety scales (t (74) = 3.175, p < .01). See Table 4.16. In both anxiety (M = 37.11, SD = 20.47) and social anxiety scores (M = 10.79, SD = 5.74), the means for self-report were significantly higher than the means for parent report in anxiety score (M = 22.92, SD = 18.82) and social anxiety score (M = 6.89, SD = 4.91).

Table 4.16. Independent Samples t-test Analysis between Self-report and Parent-report in Control Group

	Levene's Test for Equality of Variances	t-test for Equality of Means				
	F	**t**	**df**	**p**	**Mean Difference**	**Std. Error Difference**
Anxiety	2.16	3.144	74	.002	14.184	4.512
Social Anxiety	1.56	3.175	74	.002	3.895	1.227

4.2.3.3.Differences between Parent Report of Experimental and Control Group

Firstly, an independent t-test was performed to investigate differences in the empathizing, systemizing, anxiety and social anxiety between parents of experimental and control groups. Comparing mean scores of the two groups found a significant difference in empathizing scores (t (74) = -4.024, $p < .05$). The mean score of experimental group were significantly lower in empathizing (M = 25.89, SD = 7.97) than the mean score of control group in empathizing (M = 33.73, SD = 8.98). However, no significant differences were found in anxiety (t (74) = 1.184, $p > .05$), social anxiety t (74) = 1.789, $p > .05$) and systemizing scores (t (74) = -1.610, $p > .05$) between ASD and TD group. See Table 4.17.

Table 4.17. Independent Samples t-test Analysis between Parent-Report in Experimental and Control Groups

	Levene's Test for Equality of Variances	t-test for Equality of Means				
	F	**t**	**df**	**p**	**Mean Difference**	**Std. Error Difference**
Empathizing	1.358	-4.024	74	.000	-7.842	1.949
Anxiety	.620	.297	74	.767	1.184	3.981
Social Anxiety	.368	1.535	74	.129	1.789	1.165
Systemizing	.320	-1.610	74	.112	-2.973	1.846

Secondly, to examine differences in anxiety and social anxiety between children and parents' scales, independent t-test analysis was calculated. Comparing means scores of the two groups found a significant difference in both anxiety (t (150) = 4.732, $p < .05$) and social anxiety scores (t (150) = 3.364, $p < .05$). See Table 4.18. The mean for self-report were significantly higher in anxiety scores (M = 37.70, SD = 19.63) and social anxiety scores (M =10.83, SD = 5.98) than the mean for parent report in anxiety (M = 23.51, SD = 17.24) and social anxiety (M =7.79, SD = 5.12).

Table 4.18. Independent Samples t-test Analysis between Self-report and Parent-report in Experimental and Control Groups

	Levene's Test for Equality of Variances	t-test for Equality of Means				
	F	**t**	**df**	**p**	**Mean Difference**	**Std. Error Difference**
Anxiety	4.69	4.732	150	.000	14.18	2.997
Social Anxiety	2.389	3.364	150	.001	3.039	.904

CHAPTER V

DISCUSSION

The primary purpose of the study was to explore the relationship between cognitive empathy, affective empathy, and social anxiety in children and adolescents with ASD by comparing control groups that were matched in age and gender via self-report and parent-report. For this purpose, the following points were examined: (i) the relationship between social anxiety, anxiety and cognitive empathy in the experimental and control group, (ii) the relationship between affective empathy, social anxiety, and anxiety in the experimental and control group, (iii) the differences of the measures between the experimental and control group, (iv) the differences in social anxiety and anxiety measures between self-report and parent-report. In this chapter, the findings of the study are discussed, and contributions to the literature, limitations, and suggestions for future studies are given, respectively.

5.1.Examining the Results of the Self-Report Measures

5.1.1. Cognitive Empathy, Social Anxiety, and Anxiety

In the current study, it was investigated whether cognitive empathy negatively associated with both anxiety and social anxiety in the experimental and control group. Although in the literature, several studies have shown that cognitive empathy, social anxiety, and anxiety are negatively correlated in TD and SAD groups (Gambin & Sharp, 2018; Hezel & McNally, 2014; Washburn, 2012), this current study demonstrates that there is no significant relationship between cognitive empathy, social anxiety and anxiety in children and adolescents with ASD. The findings in the literature are also inconsistent and limited in both individuals with ASD and the TD group.

On the one hand, the results of parent-report indicated that anxiety, social functioning, and ToM (i.e., cognitive empathy) are significantly negatively correlated in individuals with ASD and early ToM competency is the mediator of the relationship between anxiety and social impairments (Lei & Ventola, 2018); on the other hand, social anxiety, social trait, and trait anxiety show a positive relationship with both cognitive and affective empathy in socially anxious individuals, even though their mindreading task scores are low (Tibi-Elhanany & Shamay-Tsoory, 2011). Therefore, despite the efforts that individuals with SAD made on mentalizing, understanding, and interpreting the social cues which enhance their cognitive empathy scores, their social perception is impaired because of over-mentalizing (Hezel & McNally, 2014; Tibi-Elhanany & Shamay-Tsoory, 2011). It might be one explanation for understanding the link between cognitive empathy, social anxiety, and anxiety in general. In the current study, difficulties in understanding questions and less awareness of their impairments and problems might be possible explanations for the findings of cognitive empathy in children and adolescents with ASD. Hence, this relationship needs further investigations with various measures, which include both self-report scales and performance tasks and examining differences in cognitive empathy competency might be added for more comprehensive future studies in individuals with ASD and non-ASD populations.

In terms of the control group, cognitive empathy, anxiety and social anxiety are moderately negatively associated, controlling for age on partial correlation analysis. As a result of the linear regression analysis, cognitive empathy significantly predicted only anxiety score of TD children and adolescents. This finding replicates previous findings in the literature (K. W. Auyeung & Alden, 2016; Colonnesi et al., 2017; Gambin & Sharp, 2018; Hezel & McNally, 2014; O'Toole et al., 2013; Washburn, 2012). These relationships may be explained by several studies which have shown that high-level social anxiety leads to impairments in emotion recognition, understanding and interpretation of social cues, greater misinterpretation and judgment biases (Alfano et al., 2006; Blöte et al., 2014; Spence & Rapee, 2016; Yiend & Mathews, 2004) which are related processes with cognitive empathy; hence, when cognitive empathic skills are well developed,

perception, recognition, and interpretation of the world are expected to be more healthy and rational which may result in low scores on social anxiety and anxiety in general.

Furthermore, Gambin and Sharp (2018) indicate that specifically, cognitive empathy was strongly associated with social anxiety and separation/panic anxiety in inpatient adolescents. In the current study, a moderately significant relationship was found between social anxiety and cognitive empathy in TD children and adolescents only if age was controlled. The results of the current study may have influenced the age ranges of this sample (ranged from 8 to 18.5) because social anxiety is more common among adolescents than children (Beesdo et al., 2007; Burstein et al., 2011). Therefore, collecting data from both children and adolescents may affect the results.

5.1.2. Affective Empathy, Social Anxiety, Anxiety, and Demographics

It was hypothesized that affective empathy is positively correlated with social anxiety and anxiety in children and adolescents with ASD and the control group. The results supported this hypothesis for children and adolescents with ASD, not for the control group. Affective empathy is increasing in children and adolescents with ASD; their anxiety and social anxiety scores are also increasing. As a result of linear regression analysis, affective empathy significantly predicted social anxiety and anxiety scores of children and adolescents with ASD. In the literature, few studies have examined this topic, and these findings are in line with the previous studies (Bellini, 2004; Gambin & Sharp, 2018; Tibi-Elhanany & Shamay-Tsoory, 2011). A possible explanation for this result might be that when individuals with ASD share, respond to and are aware of the others' emotions, they become more sensitive and alert to what other people feel about them. In addition, individuals with ASD might have been already sensitive and alert; therefore, their awareness of others' emotions was affected by their sensitiveness and alertness. Eventually, their sensitiveness and alertness may lead to anxiety and social anxiety. Other possible explanations are that they can become aware of how people evaluate them that may create anxiety (Bellini, 2004), and they start to experience different negative emotions including shame or guilt which might be devastating (Gambin

& Sharp, 2018) and result in anxiety and social anxiety in children and adolescents with ASD.

Tibi-Elhanany and Shamay-Tsoory (2011) suggest that affective empathy and social anxiety are positively associated only if the general anxiety is not controlled in individuals with SAD. The current study confirms this finding that if general anxiety, age, and gender are controlled in children and adolescents with ASD, the significance of the relationship between affective empathy and social anxiety disappears. As a result of multiple regression analysis which was conducted to explore whether anxiety and age mediate the relationship between social anxiety and affective empathy. The findings indicate that anxiety is a significant mediator for the relationship between social anxiety and affective empathy in children and adolescents with ASD.

However, while controlling age affects the link between social anxiety and affective empathy, the relationship between anxiety and affective empathy was not affected. Hence, social anxiety and its relationship with affective empathy are related to the age of children and adolescents with ASD. These results might be interpreted to mean that age is positively correlated with social anxiety in children and adolescents with ASD. This finding is consistent with the literature that adolescents are more likely to experience social anxiety than children (Burstein et al., 2011) and age significantly predicted social anxiety in the experimental group. It was expected that when the age of the children is increasing, their social perception is changing and friendship/peer groups are becoming more important (Larson & Richards, 1991; Leigh & Clark, 2018).

In terms of the control group, this study has been unable to demonstrate the relationship between affective empathy, anxiety, and social anxiety, contrary to the previous research (Gambin & Sharp, 2018). This contradictory result may exist since age and social anxiety are not positively associated with TD group contrary to the previous studies (Burstein et al., 2011; Kessler et al., 1994) and surprisingly affective empathy demonstrates a negative relationship with age in the current study; it means that as age is increasing in the TD group, their affective empathy is decreasing. In the literature, several studies indicate that

empathy rises with age (Dadds et al., 2008; Knafo et al., 2008; Wimmer & Perner, 1983). Yet the development of empathy with age demonstrates sex differences. In the one study, it was found that dispositional empathy which the researcher defines as affective empathy score of female increases with age; however, dispositional empathy scores of the male participants decreases with age even though there are no different activations in the brain (Michalska, Kinzler, & Decety, 2013). And it may be explained by males might not prefer to share their emotions on the scale even though they show similar brain activation with females.

Another possible explanation can be that the literature suggests that males show low empathy scores in contrast to females (Baron-Cohen, 2002; Michalska et al., 2013), and females are more likely to experience anxiety disorders than males (Kessler et al., 1994). Therefore, gender may be an important factor that affects the relationship between age, affective empathy, anxiety, and social anxiety. In the current study, the majority of the sample is male, and the sample size is small. Consequently, the relationship between age, affective empathy, anxiety, and social anxiety might be interfered with by the effect of gender and sample size. However, the literature has been limited; therefore, more study is needed to examine the link between affective empathy, social anxiety, and anxiety in typically developing children.

5.2. Examining the Results of the Parent-Report Measures

This current study hypothesizes that empathizing scores via parent-report are negatively associated with social anxiety and anxiety in both the experimental and control groups. Empathizing subscale consists of cognitive and affective components of empathy. In the literature, several studies indicate that empathy negatively correlated with anxiety and social anxiety in particular (Colonnesi et al., 2017; Pepper et al., 2018); however, Bellini (2004) suggests that there is a positive relationship between social anxiety and empathy in individuals with ASD. In the current study, it was found that there is no link between empathizing, anxiety, and social anxiety scores in the ASD group; hence, this finding does not support the previous research. One of the possible explanations is that the differences in perspectives and communications between parent and child might result in

contradictions with the previous research because the results significantly differ from the self-report. Another possible explanation is the small sample size used in the current study that may influence the statistical significance of the results and leads to differences with the literature.

On the other hand, the findings of the control group confirm some studies in the literature (Colonnesi et al., 2017; Pepper et al., 2018). Empathizing scores of the control group are negatively moderately correlated with only social anxiety controlling the education and economic status of parents in the current study. As a result of the linear regression analysis, empathizing scores negatively predicted the social anxiety scores of the control group. It might be expected that if empathic skills are high, social anxiety and anxiety scores should be low because high empathy may be related to effective emotional coping strategies (Bellini, 2004), better perspective-taking, proper expression of emotions and responding and high prosocial behaviour that enhance the positive social relationship. However, each dimension of empathy should be examined via parent-report as they are investigated in the self-report; hence it can provide more detailed information about the relationship between cognitive empathy, affective empathy, social anxiety, and anxiety in general.

Moreover, parents' level of education is negatively associated with empathizing scores of ASD children, and adolescents, and economic status are negatively associated with empathizing scores in the control group. These findings are also contradictory with the previous research that demonstrates that the parents' levels of socioeconomic status (SES) and education are positively associated (Sirin, 2005) and the SES is positively linked with empathy scores of children (Jolliffe & Farrington, 2006; Sánchez-Pérez, Fuentes, Jolliffe, & González-Salinas, 2014). Besides, highly educated parents demonstrate higher information about their children's situation and higher involvement in children's education (Baker & Stevenson, 1986).

These effects might be explained by parents with highly educated and high economic status can be more concerned about their children's conditions and their expectations

might affect their perception of the condition of the children. Thus, they may evaluate their children carefully and respond to the questionnaire by focusing on the impairments of the children. Another possible explanation is the lack of communication with their children. Parents might be less sensitive about their children's skills.

5.3. Examining Differences between Groups

5.3.1. Cognitive Empathy, Affective Empathy, Empathizing and Systemizing

In the current study, it was hypothesized that there are significant differences between the experimental and control groups in the self-report of cognitive empathy, not the affective empathy measure. The results support this hypothesis that means for the control group are significantly higher than the experimental group on the cognitive empathy subscale and the Eyes Test. However, there are no significant differences in an affective empathy measure. In terms of parent report, the hypothesis was that there are significant differences in empathizing and systemizing subscales between experimental and control groups. The findings demonstrate that the two groups significantly differed in the only empathizing subscale; however, there is no significant difference between the two groups in the systemizing subscale.

According to Empathizing and Systemizing theory (Baron-Cohen, 2002), autistic individuals show impairments in empathizing which is considered as a total score of cognitive and affective empathy; however, they illustrate higher scores on systemizing subscales than TD. Impairments in empathizing were explained by that ASD is a neurodevelopmental disorder, and they also have social cognition deficits in many areas that related to empathy such as autistic individuals have smaller brain regions (e.g., the anterior cingulate cortex, superior temporal gyrus, prefrontal cortex, and thalamus than TD (Baron-Cohen, 1990, 2010). However, this theory does not investigate empathy as two distinct components. Examining components of empathy is essential because several studies indicate that although autistic children show lower scores in cognitive empathy scales such as The Eyes Test (Baron-Cohen, 2002; Girli, 2017) and Basic Empathy Scale – Cognitive Empathy subscale (Mazza et al., 2014), there is no significant difference in

affective empathy (Mazza et al., 2014; Mul et al., 2018; Rueda et al., 2015). Therefore, the findings of the self-report in the current study are in line with existing literature about cognitive and affective empathy (Dziobek et al., 2008; Mazza et al., 2014; Mul et al., 2018; Rueda et al., 2015).

Although parent-report has confirmed the theory with low scores on empathizing in the ASD group, consistent with the literature (Auyeung et al., 2009; Girli, 2017), systemizing scores were not significantly different between the two groups which are consistent with the previous study (Johnson, Filliter, & Murphy, 2009). Interestingly, parents' age and systemizing scores are negatively associated with the current study and the mean of the parents' age in the ASD group is higher than the mean of the control group's age. This means that children and adolescents who have younger parents are more likely to engage with systemizing tasks such as block design and this study demonstrates that TD group is more likely to engage with these tasks; therefore, this inconsistency with the literature may be due to age of the parent. It is possible that younger parents may be more likely to encourage their children to participate and engage with systemizing activities and they can provide opportunities for them. In addition, in Turkey, a contrast to previous research, TD females illustrate higher scores on systemizing than TD males and the ASD group. The researcher has suggested that Turkish culture may affect the results of systemizing scores. Questions including organizing and collecting things in the house may be mostly related to the role of females in this culture (Girli, 2017) and it might result in that mothers have already performed these kinds of things for their children. Therefore, children and adolescents might not have opportunities to engage these kinds of systemizing activities that influence the parent-report. The contradictory results of the theory are limited. These results, therefore, need to be interpreted with caution.

5.3.2. Self-Report Measures of Social Anxiety and Anxiety

In terms of anxiety and social anxiety measures, it was also hypothesized that anxiety and social anxiety measures significantly differ between self-reports of the two groups. The hypothesis was not supported by the results. Several studies have indicated that individuals with ASD and ASD-traits are associated with higher anxiety and social anxiety

scores than TD group (Bellini, 2004; Gillott et al., 2001; Kuusikko et al., 2008; Van Steensel et al., 2013). According to the theoretical model of Wood and Gadow (2010), anxiety is positively associated with ASD because of ASD symptoms, the severity of ASD symptoms, consequences of ASD symptoms. However, it was found that there are no significant differences between ASD and TD groups in social anxiety and anxiety measures. It might be interpreted that ASD symptoms of the sample may not be severe; thus, these symptoms do not lead to negative consequences in their lives. Besides, the control group can have high scores on the social anxiety and anxiety scales that are similar to the ASD group. Other possible explanations are that the majority of the sample is male and the sample size is small. Anxiety-related issues are more common in females (Kessler et al., 1994) that may affect the results of the study and the small sample size may not be enough to show statistical significance; therefore, the current study might not show significant differences for these possible explanations.

5.3.3. Self-Report and Parent-Report Measures of Social Anxiety and Anxiety

Comparison of the self-report and parent-report measures of anxiety and social anxiety in the experimental group, significant differences were found in the anxiety scores, not the social anxiety scores. Children and adolescents demonstrate low scores on the parent-report measure of anxiety; however, their scores higher on self-report measures of anxiety. In terms of the control group, there are significant differences between self-report and parent-report in both social anxiety and anxiety scores. Children and adolescents have reported higher anxiety and social anxiety scores than parent-reports. When comparing the all participants' self-report and parent-report measures of anxiety and social anxiety in total, significant differences were found in both anxiety and social anxiety measures which result in the self-report is higher than the parent-report. Hence, children with ASD and TD have reported high scores on anxiety and social anxiety than their parents. These results support the hypothesis of the current study; only social anxiety score in the ASD group does not differ for the self-report and parent-report. In the literature, differences between self-report and parent-report are present (Bellini, 2004; Kuusikko et al., 2008; Russell & Sofronoff, 2005; van Steensel et al., 2011; White & Roberson-Nay, 2009). Possible explanations of this problem are less communication and differences in

perspectives between parents and child, more/less concerned parents for children, lack of insight of ASD children and adolescents and social desirability. Therefore, collecting data from different informants may be needed to reach more valid results.

5.4. Conclusion

The main goal of the present research to examine the relationship between cognitive empathy, affective empathy, social anxiety and anxiety in ASD. This study has shown that affective empathy, social anxiety and anxiety are positively related with ASD and affective empathy positively predicted social anxiety and anxiety in ASD. It might be interpreted that high awareness of emotions and sharing others' emotions results in the development of anxiety and social anxiety in children and adolescents with ASD. Contrast to these findings, the negative relationship between cognitive empathy, social anxiety and anxiety was found only in the control group after controlling for age. It was expected that high cognitive empathic skills lead to more proper emotion recognition skills and less misinterpretation and misunderstanding of social cues and daily life events which decreases anxiety and social anxiety level of the individuals. Besides, affective empathy in TD children is decreasing while the age of the children is increasing. It might be explained by that male participant which are the majority of the sample did not want to share their emotions on the scale.

According to parent-report, the findings indicate that there is no link between empathy, anxiety and social anxiety in ASD group, in contrast to literature; however, the negative association between empathy and anxiety was found in the TD group which explained that better empathic skills strategies are associated low anxiety scores in general. The differences between self-report and parent-report may be related to different perspectives and communication styles between parent and children. The findings in systemizing scale are also different from literature. Children and adolescent with ASD do not significantly differ from the TD group in terms of systemizing activities which can be influenced by cultural roles and age of the parents in the current study. Overall, children and adolescent with ASD demonstrate lower scores on empathy scales than the TD group; however, there is no significant difference in systemizing activities and levels of anxiety and social

anxiety. It is important to note that there is a significant difference between self-report and parent-report; thus data from different sources is needed due to consideration of multiple perspectives as considered in the current study

In conclusion, these findings suggested that cognitive empathy and affective empathy are a significant factor that may influence the level of anxiety and social anxiety in both ASD and non-ASD participants. Although anxiety and social anxiety make worse core symptoms of ASD, empathy can be a critical element that helps individuals to improve their social life. In terms of clinical implications, focusing on processes that are related to two components of empathy seems to be effective treatment and intervention ways for reducing social impairments in individuals with ASD and non-ASD as well as levels of social anxiety and anxiety. However, it is important to note that affective empathy and cognitive empathy have different effects on social impairments that clinicians need to pay attention. This study suggests that enhancement of affective empathy in individuals with ASD might not be effective treatment and intervention way for anxiety and social anxiety but enhancing cognitive empathic skills including joint attention (Goods, Ishijima, Chang, & Kasari, 2013), perspective taking, emotion recognition (Didehbani et al., 2016) may be a beneficial strategy in order to reduce anxiety and social anxiety in TD and ASD groups.

5.5. Contributions and Strengths of the Study to the Literature

In this study, differs from the previous research in the literature, two core components of the empathy (i.e., cognitive empathy and affective empathy) are examined together with social anxiety and anxiety in children and adolescents with ASD. This is the first study in terms of examining the link between two distinct components of empathy, social anxiety and anxiety in ASD sample. Besides, the literature is limited in the non-clinical population as well; therefore, the current study provides contributions for both ASD and non-ASD populations. Specifically, the existing literature in terms of ASD is limited in Turkey. It is expected that this study contributes to awareness of the research on ASD.

In addition to the strengths of the study, firstly, more than 25 different public schools and 7 special education and rehabilitation centres were contacted in order to recruit

participants with ASD. These schools were from different regions of İstanbul and were mixed in terms of SES. Thus, these differences led to the normal distribution in terms of the ASD population in İstanbul. Secondly, collecting data from multiple perspectives such as both children and parents is important to evaluate the results reliably because information about children should rely on different data sources including self-report and parent-report as well as teacher report. This study included multiple perspectives which are self-report and parent-report.

5.6. Limitations of the Study

One of the most important limitations is the sample size. Although the sample size is mostly small in the literature on ASD (Lei & Ventola, 2018; Mazza et al., 2014; Rueda et al., 2015), there are some studies that collected data from large sample (Auyeung et al., 2009; Baron-Cohen & Wheelwright, 2004). Hence, larger sample size may lead to more significant results. Another limitation of the current study is gender differences. As the gender was ratio 3:1 (boys to girls) (Loomes et al., 2017), the majority of the current sample was male (n = 34) and it is known that females show high anxiety and anxiety-related symptoms than males (Kessler et al., 1994). This could affect the empathy and anxiety measures; therefore, gender ratio must be considered in order to recruit participants. Besides, social desirability is a significant point that might influence the results of the study. For example, Mortel (2008) has reviewed 14.275 studies and has concluded that half of the studies that used social desirability scales have found the effects of social desirability in their research (van de Mortel, 2008). Therefore, social desirability scales could be used to prevent possible bias. Furthermore, despite using the performance task (i.e., The Eyes Test), computer-based performance task such as Multifaceted Empathy Task (Dziobek et al., 2008) might be more useful and provide more information to evaluate components of the empathy.

5.7. Suggestions for Future Research

Firstly, as mentioned previously (see section 5.6 above), gender ratio and the sample size is significant factors that affect the results of the research; therefore, future studies should consider these two issues. Secondly, it is recommended that future studies should examine the relationship between empathy and anxiety with including other variables

such as, anxiety level (Burstein, Ginsburg, & Tein, 2010) and empathy skills (Richaud De Minzi, 2013) of the parent, parental expectation and parental pressure (Ringeisen & Raufelder, 2015) that may be related with empathizing skills and anxiety level of children. Thirdly, children and adolescents were recruited together in the current study; however, the age differences may affect the findings. Thus, future studies should examine children and adolescents separately to see whether cognitive empathy, affective empathy, social anxiety and anxiety are associated or not. Fourthly, further research with including computer-based performance task (e.g. MET and MASC, Dziobek et al., 2008; Hezel & McNally, 2014) in both affective empathy and cognitive empathy and different scales such as social desirability scale, scales including different competencies of cognitive empathy in this field would be of great help in more comprehensive literature on ASD. Lastly, in terms of practical application, clinicians should consider different effects of cognitive empathy and affective empathy in order to examine and develop treatment and intervention program for both clinical and non-clinical groups.

In future studies, separately examining the effects of cognitive and affective empathy on anxiety and anxiety-related issues might be beneficial to see how cognitive empathy and affective empathy are helpful to cope with these issues.

REFERENCES

Acarturk, C., Smit, F., De Graaf, R., Van Straten, A., Ten Have, M., & Cuijpers, P. (2009). Incidence of social phobia and identification of its risk indicators: A model for prevention. *Acta Psychiatrica Scandinavica*, *119*(1), 62–70. https://doi.org/10.1111/j.1600-0447.2008.01275.x

Alfano, C. A., Beidel, D. C., & Turner, S. M. (2006). Cognitive correlates of social phobia among children and adolescents. *Journal of Abnormal Child Psychology*, *34*(2), 189–201. https://doi.org/10.1007/s10802-005-9012-9

Allemand, M., Steiger, A. E., & Fend, H. A. (2015). Empathy Development in Adolescence Predicts Social Competencies in Adulthood. *Journal of Personality*, *83*(2), 229–241. https://doi.org/10.1111/jopy.12098

Altschuler, M., Sideridis, G., Kala, S., Warshawsky, M., Gilbert, R., Carroll, D., … Faja, S. (2018). Measuring Individual Differences in Cognitive, Affective, and Spontaneous Theory of Mind Among School-Aged Children with Autism Spectrum Disorder. *Journal of Autism and Developmental Disorders*, *48*(11), 3945–3957. https://doi.org/10.1007/s10803-018-3663-1

American Psychiatric Association. (2013). *Diagnostic and Statistical Manual of Mental Disorders (5th Edition)*. *American Journal of Psychiatry*. https://doi.org/10.1176/appi.books.9780890425596.744053

APA. (1980). *DSM-III: Diagnostic and statistical manual of mental disorders*. *American Psychiatric Association*. https://doi.org/10.1017/CBO9781107415324.004

Auyeung, B., Wheelwright, S., Allison, C., Atkinson, M., Samarawickrema, N., & Baron-Cohen, S. (2009). The children's empathy quotient and systemizing quotient: Sex differences in typical development and in autism spectrum conditions. *Journal of Autism and Developmental Disorders*, *39*(11), 1509–1521. https://doi.org/10.1007/s10803-009-0772-x

Auyeung, K. W., & Alden, L. E. (2016). Social Anxiety and Empathy for Social Pain. *Cognitive Therapy and Research*, *40*(1), 38–45. https://doi.org/10.1007/s10608-015-9718-0

Aydın, D., & Özgen, Z. E. (2018). Çocuklarda Otizm Spektrum Bozukluğu ve Erken Tanılamada Hemşirenin Rolü. *Gümüşhane Üniversitesi Sağlık Bilimleri Dergisi*, *7*(3), 93–101.

Baillargeon, R., Scott, R. M., & He, Z. (2010). False-belief understanding in infants. *Trends in Cognitive Sciences*, *14*(3), 110–118. https://doi.org/10.1016/j.tics.2009.12.006

Baio J, Wiggins L, Christensen DL, Maenner MJ, Daniels J, Warren Z, Kurzius-Spencer M, Zahorodny W, Robinson Rosenberg C, White T, Durkin MS, Imm P, Nikolaou L, Yeargin-Allsopp M, Lee LC, Harrington R, Lopez M, Fitzgerald RT, Hewitt A, Pettygrove S, Const, D. N. (2018). ss6706a1-H. *Surveillance Summaries*, *67*(6). https://doi.org/10.15585/mmwr.ss6706a1

Baker, D. P., & Stevenson, D. L. (1986). Mothers ' Strategies for Children ' s School Achievement : Managing the Transition to High School. *Sociology of Education*, *59*(3), 156–166.

Bandstra, N. F., Chambers, C. T., McGrath, P. J., & Moore, C. (2011). The behavioural expression of empathy to others' pain versus others' sadness in young children. *Pain*, *152*(5), 1074–1082. https://doi.org/10.1016/j.pain.2011.01.024

Barahona-Corrêa, J. B., & Filipe, C. N. (2016). A concise history of asperger syndrome: The short reign of a troublesome diagnosis. *Frontiers in Psychology*, *6*(JAN), 1–7. https://doi.org/10.3389/fpsyg.2015.02024

Baron-cohen, S. (2001). Theory of mind in normal development and autism. Prisme.

Baron-Cohen, S. (1989). The Autistic Child's Theory of Mind: a Case of Specific Developmental Delay. *Journal Child Psychology Psychiatry*, *30*(2), 285–297.

Baron-Cohen, S. (1990). Autism: s specific cognitive disorder of “mind-blindness.” *International Review of Psychiatry*, *2*, 81–90.

Baron-Cohen, S. (2002). The extreme male brain theory of autism. *TRENDS in Cognitive Sciences*, *6*(6), 248–254. https://doi.org/10.1016/S1364-6613(02)01904-6

Baron-Cohen, S. (2010). *Empathizing, systemizing, and the extreme male brain theory of autism*. *Progress in Brain Research* (Vol. 186). Elsevier B.V. https://doi.org/10.1016/B978-0-444-53630-3.00011-7

Baron-Cohen, S., Allen, J., & Gillberg, C. (1992). Can Autism be Detected at 18 Months? *British Journal of Psychiatry*, *161*(6), 839–843. https://doi.org/10.1192/bjp.161.6.839

Baron-Cohen, S., Tager-Flusberg, H., & Lomardo, M. V. (Eds.). (2013). *Understanding Other Minds: Perspectives from developmental social neuroscience*. *Oxford University Press*. https://doi.org/10.1093/acprof:oso/9780199692972.001.0001

Baron-Cohen, S., & Wheelwright, S. (2004). The Empathy Quotient: An Investigation of Adults with Asperger Syndrome or High Functioning Autism, and Normal Sex Differences. *Journal of Autism and Developmental Disorders*, *34*(2), 163–175. https://doi.org/10.1023/B:JADD.0000022607.19833.00

Baron-Cohen, S., Wheelwright, S., Spong, A., & Lawson, J. (2001). Studies of Theory of Mind: Are Intuitive Physics and Intuitive Psychology Independent? *Journal of Developmental and Learning Disorders*, *5*(1), 47–78.

Beesdo-Baum, K., Knappe, S., Fehm, L., Höfler, M., Lieb, R., Hofmann, S. G., & Wittchen, H. U. (2012). The natural course of social anxiety disorder among adolescents and young adults. *Acta Psychiatrica Scandinavica*, *126*(6), 411–425. https://doi.org/10.1111/j.1600-0447.2012.01886.x

Beesdo, K., Bittner, A., Pine, D. S., Stein, M. B., Höfler, M., & Wittchen, H.-U. (2007). Incidence of social anxiety disorder and the consistent risk for secondary depression in the first three decades of life. *Archives of General Psychiatry*, *64*(8), 903–912.

https://doi.org/http://dx.doi.org/10.1001/archpsyc.64.8.903

Beesdo, K., Knappe, S., & Pine, D. S. (2009). Anxiety and Anxiety Disorders in Children and Adolescents: Developmental Issues and Implications for DSM-V. *Psychiatric Clinics of North America*, *32*(3), 483–524. https://doi.org/10.1016/j.psc.2009.06.002

Belacchi, C., & Farina, E. (2012). Feeling and Thinking of Others: Affective and Cognitive Empathy and Emotion Comprehension in Prosocial/Hostile Preschoolers. *Aggressive Behavior*, *38*(2), 150–165. https://doi.org/10.1002/ab.21415

Bellini, S. (2004). Social Skill Deficits and Anxiety in High-Functioning Adolescents With Autism Spectrum Disorders. *Focus on Autism and Other Developmental Disabilities*, *19*(2), 78–86. https://doi.org/10.1177/10883576040190020201

Bellini, S. (2006). The Development of Social Anxiety in Adolescents With Autism Spectrum Disorders. *Focus on Autism and Other Developmental Disabilities*, *21*(3), 138–145. https://doi.org/10.1177/10883576060210030201

Bellini, S., Peters, J. K., Benner, L., & Hopf, A. (2007). A meta-analysis of school-based social skills interventions for children with autism spectrum disorders. *Remedial and Special Education*, *28*(3), 153–162. https://doi.org/10.1177/07419325070280030401

Berenguer, C., Miranda, A., Colomer, C., Baixauli, I., & Roselló, B. (2017). Contribution of Theory of Mind, Executive Functioning, and Pragmatics to Socialization Behaviors of Children with High-Functioning Autism. *Journal of Autism and Developmental Disorders*, *48*(2), 430–441. https://doi.org/10.1007/s10803-017-3349-0

Bergen, D. (2002). The Role of Pretend Play in Children's Cognitive Development. *Early Childhood Research and Practice*, *4*(1), 1–12.

Beversdorf, D. Q., Manning, S. E., Hillier, A., Anderson, S. L., Nordgren, R. E., Walters, S. E., … Bauman, M. L. (2005). Timing of prenatal stressors and autism. *Journal of Autism and Developmental Disorders*, *35*(4), 471–478.

https://doi.org/10.1007/s10803-005-5037-8

Blair, R. J. R. (2005). Responding to the emotions of others: Dissociating forms of empathy through the study of typical and psychiatric populations. *Consciousness and Cognition*, *14*(4), 698–718. https://doi.org/10.1016/j.concog.2005.06.004

Blair, R. J. R., Frith, U., Smith, N., Abell, F., & Cipolotti, L. (2002). Fractionation of visual memory: Agency detection and its impairment in autism. *Neuropsychologia*, *40*(1), 108–118. https://doi.org/10.1016/S0028-3932(01)00069-0

Blöte, A. W., Miers, A. C., Heyne, D. A., Clark, D. M., & Westenberg, P. M. (2014). The relation between social anxiety and audience perception: Examining clark and wells' (1995) model among adolescents. *Behavioural and Cognitive Psychotherapy*, *42*(5), 555–567. https://doi.org/10.1017/S1352465813000271

Blöte, A. W., Miers, A. C., Heyne, D. A., & Westenberg, P. M. (2015). *Social Anxiety and the School Environment of Adolescents*. *Social Anxiety and Phobia in Adolescents: Development, Manifestation and Intervention Strategies*. https://doi.org/10.1007/978-3-319-16703-9

Bos, J., & Stokes, M. A. (2018). Cognitive empathy moderates the relationship between affective empathy and wellbeing in adolescents with autism spectrum disorder. *European Journal of Developmental Psychology*, *5629*, 1–14. https://doi.org/10.1080/17405629.2018.1444987

Bumiller, K. (2009). The Geneticization of Autism: From New Reproductive Technologies to the Conception of Genetic Normalcy. *Signs: Journal of Women in Culture and Society*, *34*(4), 875–899. https://doi.org/10.1086/597130

Burstein, M., Ginsburg, G. S., & Tein, J. Y. (2010). Parental anxiety and child symptomatology: An examinzation of additive and interactive effects of parent psychopathology. *Journal of Abnormal Child Psychology*, *38*(7), 897–909. https://doi.org/10.1007/s10802-010-9415-0

Burstein, M., He, J. P., Kattan, G., Albano, A. M., Avenevoli, S., & Merikangas, K. R. (2011). Social phobia and subtypes in the National Comorbidity Survey-Adolescent Supplement: Prevalence, correlates, and comorbidity. *Journal of the American Academy of Child and Adolescent Psychiatry*, *50*(9), 870–880. https://doi.org/10.1016/j.jaac.2011.06.005

Capps, L., Yirmiya, N., & Sigman, M. (1992). Understanding of Simple and Complex Emotions in Non-retarded Children with Autism. *Journal of Child Psychology and Psychiatry*, *33*(7), 1169–1182. https://doi.org/10.1111/j.1469-7610.1992.tb00936.x

Cascia, J. A., & Barr, J. J. (2017). Associations Among Vocabulary, Executive Function Skills and Empathy in Individuals with Autism Spectrum Disorder. *Journal of Applied Research in Intellectual Disabilities*, *30*(4), 627–637. https://doi.org/10.1111/jar.12257

Charman, T., & Baron-Cohen, S. (1994). Another look at imitation in autism. *Development and Psychopathology*, *6*(3), 403–413. https://doi.org/10.1017/S0954579400006015

Charman, T., Swettenham, J., Baron-Cohen, S., Cox, A., Baird, G., & Drew, A. (1997). Infants with autism: an investigation of empathy, pretend play, joint attention, and imitation. *Developmental Psychology*, *33*(5), 781–789. https://doi.org/10.1037/0012-1649.33.5.781

Cheng, Y., Chen, C., & Decety, J. (2014). An EEG/ERP investigation of the development of empathy in early and middle childhood. *Developmental Cognitive Neuroscience*, *10*, 160–169. https://doi.org/10.1016/j.dcn.2014.08.012

Chorpita, B. F., Moffitt, C. E., & Gray, J. (2005). Psychometric properties of the Revised Child Anxiety and Depression Scale in a clinical sample. *Behaviour Research and Therapy*, *43*(3), 309–322. https://doi.org/10.1016/j.brat.2004.02.004

Church, C., Alisanski, S., & Amanullah, S. (2000). The Social, Behavioral, and Academic Experiences of Children with Asperger Syndrome. *Focus on Autism and Other Developmental Disabilities*, *15*(1), 12–20. https://doi.org/10.1177/108835760001500102

Clark, D. B., Feske, U., Masia, C. L., Spaulding, S. A., Brown, C., Mammen, O., & Shear, M. K. (1997). Systematic assessment of social phobia in clinical practice. *Depression and Anxiety*, *6*(2), 47–61. https://doi.org/10.1002/(SICI)1520-6394(1997)6:2<47::AID-DA1>3.0.CO;2-2

Clark, S. E., & Symons, D. K. (2009). Representations of attachment relationships, the self, and significant others in middle childhood. *Journal of the Canadian Academy of Child and Adolescent Psychiatry*, *18*(4), 316–321.

Cody, M. W., & Teachman, B. A. (2011). Global and Local Evaluations of Public Speaking Performance in Social Anxiety. *Behavior Therapy*, *42*(4), 601–611. https://doi.org/10.1016/j.beth.2011.01.004

Colonnesi, C., Nikolić, M., de Vente, W., & Bögels, S. M. (2017). Social Anxiety Symptoms in Young Children: Investigating the Interplay of Theory of Mind and Expressions of Shyness. *Journal of Abnormal Child Psychology*, *45*(5), 997–1011. https://doi.org/10.1007/s10802-016-0206-0

Czermainski, F. R., Bosa, C. A., Mina, C. S., Meimes, M. A., Miranda, M. C., Carim, D., & de Salles, J. F. (2015). Performance of children/adolescents with autism spectrum disorders in executive function: Study of case series. *Psychology and Neuroscience*, *8*(3), 305–320. https://doi.org/10.1037/h0101279

Dadds, M. R., Hunter, K., Hawes, D. J., Frost, A. D. J., Vassallo, S., Bunn, P., … Masry, Y. El. (2008). A measure of cognitive and affective empathy in children using parent ratings. *Child Psychiatry and Human Development*, *39*(2), 111–122. https://doi.org/10.1007/s10578-007-0075-4

Dadgar, H., Rad, J. A., Soleymani, Z., Khorammi, A., McCleery, J., & Maroufizadeh, S. (2017). The relationship between motor, imitation, and early social communication skills in children with autism. *Iranian Journal of Psychiatry*, *12*(4), 233–237.

Davidson, J. R. T., Potts, N. L. S., Richichi, E. A., Ford, S. M., Krishnan, K. R. R., Smith, R. D., & Wilson, W. (1991). The brief social phobia scale. In *Journal of Clinical Psychiatry*.

Davis, M. H. (1983). Measuring individual differences in empathy: Evidence for a multidimensional approach. *Journal of Personality and Social Psychology*, *44*(1), 113–126. https://doi.org/10.1037/0022-3514.44.1.113

Dawson, G., Meltzoff, A. N., Osterling, J., Rinaldi, J., & Brown, E. (1998). Children with autism fail to orient to naturally occurring social stimuli. *Journal of Autism and Developmental Disorders*, *28*(6), 479–485. https://doi.org/10.1023/A:1026043926488

Dawson, G., Munson, J., Estes, A., Osterling, J., Dawson, G., Munson, J., … Abbott, R. (2002). Neurocognitive Function and Joint Attention Ability in Young Children with Autism Spectrum Disorder Versus Developmental Delay, *73*(2), 345–358.

Dean, M., Harwood, R., & Kasari, C. (2017). The art of camouflage: Gender differences in the social behaviors of girls and boys with autism spectrum disorder. *Autism*, *21*(6), 678–689. https://doi.org/10.1177/1362361316671845

Detweiler, M. F., Comer, J. S., Crum, K. I., & Albano, A. M. (2014). *Social Anxiety in Children and Adolescents: Biological, Developmental, and Social Considerations*. *Social Anxiety: Clinical, Developmental, and Social Perspectives: Third Edition* (Third Edit). Elsevier Inc. https://doi.org/10.1016/B978-0-12-394427-6.00010-8

Diamond, A. (2013). Executive Function. *Annual Review of Psychology*, 135–168. https://doi.org/10.1016/B978-0-12-385157-4.01147-7

Didehbani, N., Allen, T., Kandalaft, M., Krawczyk, D., & Chapman, S. (2016). Virtual Reality Social Cognition Training for children with high functioning autism. *Computers in Human Behavior*, *62*, 703–711. https://doi.org/10.1016/j.chb.2016.04.033

Duvekot, J., van der Ende, J., Verhulst, F. C., & Greaves-Lord, K. (2018). Examining bidirectional effects between the autism spectrum disorder (ASD) core symptom domains and anxiety in children with ASD. *Journal of Child Psychology and Psychiatry and Allied Disciplines*, *59*(3), 277–284. https://doi.org/10.1111/jcpp.12829

Dziobek, I., Rogers, K., Fleck, S., Bahnemann, M., Heekeren, H. R., Wolf, O. T., & Convit, A. (2008). Dissociation of cognitive and emotional empathy in adults with Asperger syndrome using the Multifaceted Empathy Test (MET). *Journal of Autism and Developmental Disorders*, *38*(3), 464–473. https://doi.org/10.1007/s10803-007-0486-x

Ebesutani, C., Chorpita, B. F., Higa-Mcmillan, C. K., Nakamura, B. J., Regan, J., & Lynch, R. E. (2011). A psychometric analysis of the revised child anxiety and depression scales-parent version in a school sample. *Journal of Abnormal Child Psychology*, *39*(2), 173–185. https://doi.org/10.1007/s10802-010-9460-8

Ehlers, S., Gillberg, C., & Wing, L. (1999). A screening questionnaire for Asperger syndrome and other high- functioning autism spectrum disorders in school age children. *Journal of Autism and Developmental Disorders*, *29*(2), 129–141. https://doi.org/10.1023/A:1023040610384

Eisenberg, N., & Strayer, J. (1987). *Empathy and Its Development*. New York: Cambridge University Press. Retrieved from https://books.google.com.tr/books?hl=tr&lr=&id=PVQ4AAAAIAAJ&oi=fnd&pg=PR9&dq=empathy+and+its+development&ots=Km2M9sloxq&sig=pHgEQsKshdYyrY5hSTgmNH7cpYE&redir_esc=y#v=onepage&q=empathy and its development&f=false

Elizabeth, J., King, N., Ollendick, T. H., Gullone, E., Tonge, B., Watson, S., & Macdermott, S. (2006). Social anxiety disorder in children and youth: A research update on aetiological factors. *Counselling Psychology Quarterly*, *19*(2), 151–163. https://doi.org/10.1080/09515070600811790

Elsabbagh, M., Divan, G., Koh, Y. J., Kim, Y. S., Kauchali, S., Marcín, C., … Fombonne, E. (2012). Global Prevalence of Autism and Other Pervasive Developmental Disorders. *Autism Research*, *5*(3), 160–179. https://doi.org/10.1002/aur.239

Fernandes, J. M., Cajão, R., Lopes, R., Jerónimo, R., & Barahona-Corrêa, J. B. (2018). Social Cognition in Schizophrenia and Autism Spectrum Disorders: A Systematic Review and Meta-Analysis of Direct Comparisons. *Frontiers in Psychiatry*, *9*(October). https://doi.org/10.3389/fpsyt.2018.00504

Fletcher-Watson, S., & Happé, F. (2019). *Autism: a new introduction to psychological theory and current debates* (2nd ed.). New York: Routledge.

Fox, A. S., & Kalin, N. H. (2014). A translational neuroscience approach to understanding the development of social anxiety disorder and its pathophysiology. *American Journal of Psychiatry*, *171*(11), 1162–1173. https://doi.org/10.1176/appi.ajp.2014.14040449

Freeman, D., & Freeman, J. (Jason R. (2012). *Anxiety : a very short introduction*. Oxford: Oxford University Press. Retrieved from https://books.google.com.tr/books/about/Anxiety_A_Very_Short_Introduction.html?id=au3cD1ck2kwC&redir_esc=y

Frith, U. (2003). *Autism: Explaining the Enigma (2nd edition)*. *Blackwell; Oxford*.

Frith, U. (2008). *Autism: A Very Short Introduction*. *Very Short Introduction*.

Frye, R. E. (2018). Social Skills Deficits in Autism Spectrum Disorder: Potential Biological Origins and Progress in Developing Therapeutic Agents. *CNS Drugs*, *32*(8), 713–734. https://doi.org/10.1007/s40263-018-0556-y

Gambin, M., & Sharp, C. (2018). Relations between empathy and anxiety dimensions in inpatient adolescents. *Anxiety, Stress and Coping*, *31*(4), 447–458. https://doi.org/10.1080/10615806.2018.1475868

Geangu, E., Benga, O., Stahl, D., & Striano, T. (2010). Contagious crying beyond the first days of life. *Infant Behavior and Development*. https://doi.org/10.1016/j.infbeh.2010.03.004

Geurts, H. M., Corbett, B., & Solomon, M. (2009). The paradox of cognitive flexibility in autism. *Trends in Cognitive Sciences*, *13*(2), 74–82. https://doi.org/10.1016/j.tics.2008.11.006

Gillott, A., Furniss, F., & Walter, A. (2001). Anxiety in high-functioning children with autism. *Autism*, *5*(3), 277–286. https://doi.org/10.1177/1362361301005003005

Gilotty, L., Kenworthy, L., Sirian, L., Black, D. O., & Wagner, A. E. (2002). Adaptive Skills and Executive Function in Autism Spectrum Disorders. *Child Neuropsychology*, *8*(4), 241–248.

Girli, A. (2014). Psychometric Properties of the Turkish Child and Adult Form of "Reading the Mind in the Eyes Test." *Psychology*, *05*(11), 1321–1337. https://doi.org/10.4236/psych.2014.511143

Girli, A. (2017). Comparison of the Advanced Theory of Mind Skills in Turkish Children with Autism and Typically Developing Children. *International Journal of Learning and Teaching*, *9*(2), 305–316. https://doi.org/10.18844/ijlt.v9i2.1156

Gökçen, E., Frederickson, N., & Petrides, K. V. (2016). Theory of Mind and Executive Control Deficits in Typically Developing Adults and Adolescents with High Levels of Autism Traits. *Journal of Autism and Developmental Disorders*, *46*(6), 2072–2087. https://doi.org/10.1007/s10803-016-2735-3

Golan, O., Baron-Cohen, S., & Golan, Y. (2008). The “reading the mind in films” task [child version]: Complex emotion and mental state recognition in children with and without autism spectrum conditions. *Journal of Autism and Developmental Disorders*, *38*(8), 1534–1541. https://doi.org/10.1007/s10803-007-0533-7

Goods, K. S., Ishijima, E., Chang, Y. C., & Kasari, C. (2013). Preschool based JASPER intervention in minimally verbal children with Autism: Pilot RCT. *Journal of Autism and Developmental Disorders*, *43*(5), 1050–1056. https://doi.org/10.1007/s10803-012-1644-3

Gormez, V., Kilincaslan, A., Ebesutani, C., Orengul, A. C., Kaya, I., Ceri, V., … Chorpita, B. F. (2017). Psychometric Properties of the Parent Version of the Revised Child Anxiety and Depression Scale in a Clinical Sample of Turkish Children and Adolescents. *Child Psychiatry and Human Development*, *48*(6), 922–933. https://doi.org/10.1007/s10578-017-0716-1

Gormez, V., Kilincaslan, A., Orengul, A. C., Ebesutani, C., Kaya, I., Ceri, V., … Chorpita, B. (2017). Psychometric properties of the Turkish version of the Revised Child Anxiety and Depression Scale – Child Version in a clinical sample. *Psychiatry and Clinical Psychopharmacology*, *27*(1), 84–92. https://doi.org/10.1080/24750573.2017.1297494

Grabrucker, A. M. (2013). Environmental factors in autism. *Frontiers in Psychiatry*, *3*(JAN), 1–13. https://doi.org/10.3389/fpsyt.2012.00118

Graham, S., Bellmore, A. D., & Mize, J. (2006). Peer Victimization, Aggression, and Their Co-Occurrence in Middle School: Pathways to Adjustment Problems. *Journal of Abnormal Child Psychology*, *34*(3), 363–378. https://doi.org/10.1007/s10802-006-9030-2

Griffith, E. M., Pennington, B. F., Wehner, E. A., Sally, J., Griffith, E. M., Pennington, B. F., … Rogers, S. J. (1999). Executive Functions in Young Children with Autism Published by : Wiley on behalf of the Society for Research in Child Development Stable URL : http://www.jstor.org/stable/1132244 REFERENCES Linked references are available on JSTOR for this article : You m, *70*(4), 817–832.

Grove, R., Baillie, A., Allison, C., Baron-Cohen, S., & Hoekstra, R. A. (2014). The latent structure of cognitive and emotional empathy in individuals with autism, first-degree relatives and typical individuals. *Molecular Autism*, *5*(42), 1–10. https://doi.org/10.1186/2040-2392-5-42

Gültekin, B. K., & Dereboy, F. (2011). Üniversite Öğrencilerinde Sosyal Fobinin Yaygınlığı ve Sosyal Fobinin Yaşam Kalitesi , Akademik Başarı ve. *Türk Psikiyatri Dergisi*, *22*(3), 150–158.

Gutstein, S. E., & Whitney, T. (2002). Asperger Syndrome and the Development of Social Competence. *Focus on Autism and Other Developmental Disabilities*, *17*(3), 161–171. https://doi.org/10.1177/10883576020170030601

Hale, C. M., & Tager-Flusberg, H. (2005). Social communication in chidren with autism: The relationship between theory of mind and discourse development. *Autism*, *9*(2), 157–178. https://doi.org/10.1177/1362361305051395

Hanika, L., & Boyer, W. (2019). Imitation and Social Communication in Infants. *Early Childhood Education Journal*, *47*(5), 615–626. https://doi.org/10.1007/s10643-019-00943-7

Happe, F. (1995). The Role of Age and Verbal Ability in the Theory of Mind Task Performance of Subjects with Autism. *Child Development*, *66*(3), 843–855.

Happe, F., Booth, R., Charlton, R., & Hughes, C. (2006). Executive function deficits in autism spectrum disorders and attention-deficit/hyperactivity disorder: Examining profiles across domains and ages. *Brain and Cognition*, *61*(1), 25–39. https://doi.org/10.1016/j.bandc.2006.03.004

Happé, F. G. E. (1994). An advanced test of theory of mind: Understanding of story characters' thoughts and feelings by able autistic, mentally handicapped, and normal children and adults. *Journal of Autism and Developmental Disorders*, *24*(2), 129–154. https://doi.org/10.1007/BF02172093

Harmsen, I. E. (2019). Empathy in Autism Spectrum Disorder. *Journal of Autism and Developmental Disorders*, *1*(0123456789). https://doi.org/10.1007/s10803-019-04087-w

Hezel, D. M., & McNally, R. J. (2014). Theory of mind impairments in social anxiety disorder. *Behavior Therapy*, *45*(4), 530–540. https://doi.org/10.1016/j.beth.2014.02.010

Hillier, A. J., Fish, T., Siegel, J. H., & Beversdorf, D. Q. (2011). Social and Vocational Skills Training Reduces Self-reported Anxiety and Depression Among Young Adults on the Autism Spectrum. *Journal of Developmental and Physical Disabilities*, *23*(3), 267–276. https://doi.org/10.1007/s10882-011-9226-4

Hirstein, W., Iversen, P., & Ramachandran, V. S. (2001). Autonomic responses of autistic children to people and objects. *Proceedings of the Royal Society B: Biological Sciences*, *268*(1479), 1883–1888. https://doi.org/10.1098/rspb.2001.1724

Hodson, K. J., McManus, F. V., Clark, D. M., & Doll, H. (2008). Can Clark and Wells' (1995) cognitive model of social phobia be applied to young people? *Behavioural and Cognitive Psychotherapy*, *36*(4), 449–461. https://doi.org/10.1017/S1352465808004487

Hogan, R. (1969). Development of an empathy scale. *Journal of Consulting and Clinical Psychology*, *33*(3), 307–316. https://doi.org/10.1037/h0027580

Hope, D. A., Heimberg, R. G., & Klein, J. F. (1990). Social anxiety and the recall of interpersonal information. *Journal of Cognitive Psychotherapy: An International Quarterly*, *4*(2), 185–195.

Hultman, C. M., Sandin, S., Levine, S. Z., Lichtenstein, P., & Reichenberg, A. (2011). Advancing paternal age and risk of autism: New evidence from a population-based study and a meta-analysis of epidemiological studies. *Molecular Psychiatry*, *16*(12), 1203–1212. https://doi.org/10.1038/mp.2010.121

Irons, C., & Gilbert, P. (2005). Evolved mechanisms in adolescent anxiety and depression symptoms: The role of the attachment and social rank systems. *Journal of Adolescence*, *28*(3), 325–341. https://doi.org/10.1016/j.adolescence.2004.07.004

Iverson, J. M., & Wozniak, R. H. (2007). Variation in vocal-motor development in infant siblings of children with autism. *Journal of Autism and Developmental Disorders*, *37*(1), 158–170. https://doi.org/10.1007/s10803-006-0339-z

Jang, J., Matson, J. L., Williams, L. W., Tureck, K., Goldin, R. L., & Cervantes, P. E. (2013). Rates of comorbid symptoms in children with ASD, ADHD, and comorbid ASD and ADHD. *Research in Developmental Disabilities*, *34*(8), 2369–2378. https://doi.org/10.1016/j.ridd.2013.04.021

Johnson, S. A., Filliter, J. H., & Murphy, R. R. (2009). Discrepancies between self- and parent-perceptions of Autistic traits and empathy in high functioning children and adolescents on the Autism spectrum. *Journal of Autism and Developmental Disorders*, *39*(12), 1706–1714. https://doi.org/10.1007/s10803-009-0809-1

Jolliffe, D., & Farrington, D. P. (2006). Development and validation of the Basic Empathy Scale. *Journal of Adolescence*, *29*(4), 589–611. https://doi.org/10.1016/j.adolescence.2005.08.010

Jones, A. P., Happé, F. G. E., 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*(11), 1188–1197. https://doi.org/10.1111/j.1469-7610.2010.02280.x

Jones, Pickles, A., Falcaro, M., Marsden, A. J. S., Happé, F., Scott, S. K., … Charman, T. (2011). A multimodal approach to emotion recognition ability in autism spectrum disorders. *Journal of Child Psychology and Psychiatry and Allied Disciplines*, *52*(3), 275–285. https://doi.org/10.1111/j.1469-7610.2010.02328.x

Kandalaft, M. R., Didehbani, N., Krawczyk, D. C., Allen, T. T., & Chapman, S. B. (2013). Virtual reality social cognition training for young adults with high-functioning autism. *Journal of Autism and Developmental Disorders*, *43*(1), 34–44. https://doi.org/10.1007/s10803-012-1544-6

Kanner, L. (1943). Autistic Disturbances of Affective Contact. *Nervous Child*. https://doi.org/10.1111/fwb.12896

Kasari, C., Chamberlain, B., & Bauminger, N. (2001). Social emotions and social relationships: Can children with autism compensate? In *The development of autism: Perspectives from theory and research*.

Kashdan, T. B., Weeks, J. W., & Savostyanova, A. A. (2011). Whether, how, and when social anxiety shapes positive experiences and events: A self-regulatory framework and treatment implications. *Clinical Psychology Review*, *31*(5), 786–799. https://doi.org/10.1016/j.cpr.2011.03.012

KAYSILI, K., & Bahar, B. (2013). Zihin kuramı: otizm spektrum bozukluğu olan ve normal gelişen çocukların performanslarının karşılaştırılması. *Ankara Universitesi Egitim Bilimleri Fakultesi Ozel Egitim Dergisi*, *14*(1), 83–103. https://doi.org/10.1501/Ozlegt_0000000177

Kerem, E., Fishman, N., & Josselson, R. (2001). The experience of empathy in everyday relationships: Cognitive and affective elements. *Journal of Social and Personal Relationships*, *18*(2), 709–729. https://doi.org/10.1177/07399863870092005

Kessler, R. C., Demler, O., Jin, R., Merikangas, K. R., & Walters, Ellen, E. (2005). Lifetime Prevalence and Age-of-Onset Distributions of DSM-IV Disorders in the National Comorbidity Survey Replication. *ARCH GEN PSYCHIATRY*, *62*(June 2005), 134–147. https://doi.org/10.7312/atwo91826-016

Kessler, R. C., McGonagle, K. A., Zhao, S., Nelson, C. B., Hughes, M., Eshleman, S., … Kendler, K. S. (1994). Lifetime and 12-Month Prevalence of DSM-III-R Psychiatric Disorders in the United States. *Arch Gen Psychiatry*, *51*, 8–19.

Khalil, R., Tindle, R., Boraud, T., Moustafa, A. A., & Karim, A. A. (2018). Social decision making in autism: On the impact of mirror neurons, motor control, and imitative behaviors. *CNS Neuroscience and Therapeutics*, *24*(8), 669–676. https://doi.org/10.1111/cns.13001

Kilinçaslan, A., Motavallı Mukaddes, N., Sözen Küçükyazici, G., & Gürvit, H. (2010). Asperger Bozukluğu Olgularında Yürütücü İşlevler ve Dikkatin Değerlendirilmesi. *Türk Psikiyatri Dergisi*, *21*(4), 289–299.

Kim, J. A., Szatmari, P., Bryson, S. E., Streiner, D. L., & Wilson, F. J. (2000). The Prevalence of Anxiety and Mood Problems among Children with Autism and Asperger Syndrome. *Autism*, *4*(2), 117–132. https://doi.org/10.1177/1362361300004002002

Kılıç, C. (1997). Türkiye'nin ruh sağlığı profili: ruh sağlığı hizmeti kullanımı. In M. E. Önder (Ed.) (pp. 38–39). Antalya: Ankara Psikiyatri Derneği Yayınları.

Kleberg, J. L., Högström, J., Nord, M., Bölte, S., Serlachius, E., & Falck-Ytter, T. (2017). Autistic Traits and Symptoms of Social Anxiety are Differentially Related to Attention to Others' Eyes in Social Anxiety Disorder. *Journal of Autism and Developmental Disorders*, *47*(12), 3814–3821. https://doi.org/10.1007/s10803-016-2978-z

Kleinhans, N. M., Richards, T., Weaver, K., Johnson, L. C., Greenson, J., Dawson, G., & Aylward, E. (2010). Association between amygdala response to emotional faces and social anxiety in autism spectrum disorders. *Neuropsychologia*, *48*(12), 3665–3670. https://doi.org/10.1016/j.neuropsychologia.2010.07.022

Kley, H., Tuschen-Caffier, B., & Heinrichs, N. (2012). Safety behaviors, self-focused attention and negative thinking in children with social anxiety disorder, socially anxious and non-anxious children. *Journal of Behavior Therapy and Experimental Psychiatry*, *43*(1), 548–555. https://doi.org/10.1016/j.jbtep.2011.07.008

Klin A, Jones W, Schultz R, Volkmar F, & Cohen D. (2002). VIsual fixation patterns during viewing of naturalistic social situations as predictors of social competence in individuals with autism. *Archives of General Psychiatry*, *59*(9), 809–816. https://doi.org/10.1001/archpsyc.59.9.809

Knafo, A., Zahn-Waxler, C., Van Hulle, C., Robinson, J. A. L., & Rhee, S. H. (2008). The Developmental Origins of a Disposition Toward Empathy: Genetic and Environmental Contributions. *Emotion*, *8*(6), 737–752. https://doi.org/10.1037/a0014179

Köse, S., Özbaran, B., Yazgan, Y., Baytunca, M. B., Bildik, T., Erermis, S., & Aydin, C. (2017). The psychometric properties of Turkish version of Autism Spectrum Screening Questionnaire in children aged 6-18 years. *Turk Psikiyatri Dergisi*, *28*(4), 268–277. https://doi.org/10.5080/u14903

Krug, D. A., Arick, J., & Almond, P. (1980). Behavior Checklist for Identifying Severely Handicapped Individuals With High Levels of Autistic Behavior. *Journal of Child Psychology and Psychiatry*, *21*(3), 221–229. https://doi.org/10.1111/j.1469-7610.1980.tb01797.x

Kuusikko, S., Haapsamo, H., Jansson-Verkasalo, E., Hurtig, T., Mattila, M. L., Ebeling, H., … Moilanen, I. (2009). Emotion recognition in children and adolescents with autism spectrum disorders. *Journal of Autism and Developmental Disorders*, *39*(6), 938–945. https://doi.org/10.1007/s10803-009-0700-0

Kuusikko, S., Pollock-Wurman, R., Jussila, K., Carter, A. S., Mattila, M. L., Ebeling, H., … Moilanen, I. (2008). Social anxiety in high-functioning children and adolescents with autism and Asperger syndrome. *Journal of Autism and Developmental Disorders*, *38*(9), 1697–1709. https://doi.org/10.1007/s10803-008-0555-9

Lai, M. C., Lombardo, M. V., Ruigrok, A. N. V., Chakrabarti, B., Auyeung, B., Szatmari, P., … Baron-Cohen, S. (2017). Quantifying and exploring camouflaging in men and women with autism. *Autism*, *21*(6), 690–702. https://doi.org/10.1177/1362361316671012

Landa, R., & Garrett-Mayer, E. (2006). Development in infants with autism spectrum disorders: A prospective study. *Journal of Child Psychology and Psychiatry and Allied Disciplines*, *47*(6), 629–638. https://doi.org/10.1111/j.1469-7610.2006.01531.x

Lane, J. D., Wellman, H. M., Olson, S. L., LaBounty, J., & Kerr, D. C. R. (2010). Theory of Mind and Emotion Understanding Predict Moral Development in Early Childhood. *British Journal of Developmental Psychology*, *28*(4), 871–889. https://doi.org/10.1037/a0013262.Open

Larson, R., & Richards, M. H. (1991). Daily companionship in late childhood and early adolescence: changing developmental contexts. *Child Developmentevelopment*, *62*(2), 284–300. Retrieved from http://ovidsp.ovid.com/ovidweb.cgi?T=JS&PAGE=reference&D=emed2&NEWS=N&AN=2055123

Leekam, S. (2016). Social cognitive impairment and autism: What are we trying to explain? *Philosophical Transactions of the Royal Society B: Biological Sciences*, *371*(1686). https://doi.org/10.1098/rstb.2015.0082

Lei, J., Sukhodolsky, D. G., Abdullahi, S. M., Braconnier, M. L., & Ventola, P. (2017). Reduced anxiety following pivotal response treatment in young children with autism spectrum disorder. *Research in Autism Spectrum Disorders*, *43–44*(September), 1–7. https://doi.org/10.1016/j.rasd.2017.09.002

Lei, J., & Ventola, P. (2018). Characterising the relationship between theory of mind and anxiety in children with Autism Spectrum Disorder and typically developing children. *Research in Autism Spectrum Disorders*, *49*(January), 1–12. https://doi.org/10.1016/j.rasd.2018.01.005

Leigh, E., & Clark, D. M. (2018). Understanding Social Anxiety Disorder in Adolescents and Improving Treatment Outcomes: Applying the Cognitive Model of Clark and Wells (1995). *Clinical Child and Family Psychology Review*, *21*(3), 388–414. https://doi.org/10.1007/s10567-018-0258-5

Liebowitz, M. R. (1987). Liebowitz Social Anxiety Scale. *Modern Problems of Pharmapsychiatry*.

Loomes, R., Hull, L., & Mandy, W. P. L. (2017). What Is the Male-to-Female Ratio in Autism Spectrum Disorder? A Systematic Review and Meta-Analysis. *Journal of the American Academy of Child and Adolescent Psychiatry*, *56*(6), 466–474. https://doi.org/10.1016/j.jaac.2017.03.013

Lord, C., Rutter, M., Goode, S., Heemsbergen, J., Jordan, H., Mawhood, L., & Schopler, E. (1989). Austism diagnostic observation schedule: A standardized observation of communicative and social behavior. *Journal of Autism and Developmental Disorders*, *19*(2), 185–212. https://doi.org/10.1007/BF02211841

Lord, C., Rutter, M., & Le Couteur, A. (1994). Autism Diagnostic Interview-Revised: A revised version of a diagnostic interview for caregivers of individuals with possible pervasive developmental disorders. *Journal of Autism and Developmental Disorders*. https://doi.org/10.1007/BF02172145

Luna, B., Doll, S. K., Hegedus, S. J., Minshew, N. J., & Sweeney, J. A. (2007). Maturation of Executive Function in Autism. *Biological Psychiatry*, *61*(4), 474–481. https://doi.org/10.1016/j.biopsych.2006.02.030

Mahy, C. E. V., Moses, L. J., & Pfeifer, J. H. (2014). How and where: Theory-of-mind in the brain. *Developmental Cognitive Neuroscience*, *9*, 68–81. https://doi.org/10.1016/j.dcn.2014.01.002

Mathers, J. C., Strathdee, G., & Relton, C. L. (2010). *Induction of Epigenetic Alterations by Dietary and Other Environmental Factors*. *Advances in Genetics* (1st ed., Vol. 71). Elsevier Inc. https://doi.org/10.1016/B978-0-12-380864-6.00001-8

Matson, J. L., & Boisjoli, J. A. (2008). Autism spectrum disorders in adults with intellectual disability and comorbid psychopathology: Scale development and reliability of the ASD-CA. *Research in Autism Spectrum Disorders*, *2*, 276–287. https://doi.org/10.1080/19315864.2011.595535

Matson, J. L., & Wilkins, J. (2007). A critical review of assessment targets and methods for social skills excesses and deficits for children with autism spectrum disorders. *Research in Autism Spectrum Disorders*, *1*(1), 28–37. https://doi.org/10.1016/j.rasd.2006.07.003

Mattick, R. P., & Clarke, J. C. (1998). Development and validation of measures of social phobia scrutiny fear and social interaction anxiety. *Behaviour Research and Therapy*, *36*(4), 455–470. https://doi.org/10.1016/s0005-7967(97)10031-6

Mazza, M., Pino, M. C., Mariano, M., Tempesta, D., Ferrara, M., De Berardis, D., … Valenti, M. (2014). Affective and cognitive empathy in adolescents with autism spectrum disorder. *Frontiers in Human Neuroscience*, *8*(October), 1–6. https://doi.org/10.3389/fnhum.2014.00791

McDonald, N. M., Baker, J. K., & Messinger, D. S. (2016). Oxytocin and parent-child interaction in the development of empathy among children at risk for autism. *Developmental Psychology*, *52*(5), 735–745. https://doi.org/10.1037/dev0000104

McIntosh, D. N., Reichmann-Decker, A., Winkielman, P., & Wilbarger, J. L. (2006). When the social mirror breaks: Deficits in automatic, but not voluntary, mimicry of emotional facial expressions in autism. *Developmental Science*, *9*(3), 295–302. https://doi.org/10.1111/j.1467-7687.2006.00492.x

Mehrabian, A., & Epstein, N. (1972). A measure of emotional empathy. *Journal of Personality*, *40*(4), 525–543. https://doi.org/10.1111/j.1467-6494.1972.tb00078.x

Meltzoff, A. N., & Gopnik, A. (1993). The role of imitation in understanding person and developing a theory of mind.

Meltzoff, A. N., & Moore, M. K. (1977). Imitation of Facial and Manual Gestures by Human Neonates Published by : American Association for the Advancement of Science Stable URL : http://www.jstor.org/stable/1744187. *Science*, *198*(4312), 75–78.

Metcalfe, D., McKenzie, K., McCarty, K., & Pollet, T. V. (2019). Emotion recognition from body movement and gesture in children with Autism Spectrum Disorder is improved by situational cues. *Research in Developmental Disabilities*, *86*(December 2018), 1–10. https://doi.org/10.1016/j.ridd.2018.12.008

Meyer-Lindenberg, A., Kolachana, B., Gold, B., Olsh, A., Nicodemus, K. K., Mattay, V., … Weinberger, D. R. (2009). Genetic variants in AVPR1A linked to autism predict amygdala activation and personality traits in healthy humans. *Molecular Psychiatry*. https://doi.org/10.1038/mp.2008.54

Michalska, K. J., Kinzler, K. D., & Decety, J. (2013). Age-related sex differences in explicit measures of empathy do not predict brain responses across childhood and adolescence. *Developmental Cognitive Neuroscience*, *3*(1), 22–32. https://doi.org/10.1016/j.dcn.2012.08.001

Milligan, K., Astington, J. W., & Dack, L. A. (2007). Language and theory of mind: Meta-analysis of the relation between language ability and false-belief understanding. *Child Development*, *78*(2), 622–646. https://doi.org/10.1111/j.1467-8624.2007.01018.x

Montgomery, C. B., Allison, C., Lai, M. C., Cassidy, S., Langdon, P. E., & Baron-Cohen, S. (2016). Do Adults with High Functioning Autism or Asperger Syndrome Differ in Empathy and Emotion Recognition? *Journal of Autism and Developmental Disorders*, *46*(6), 1931–1940. https://doi.org/10.1007/s10803-016-2698-4

Moseley, D. S., Tonge, B. J., Brereton, A. V., & Einfeld, S. L. (2011). Psychiatric Comorbidity in Adolescents and Young Adults With Autism. *Journal of Mental Health Research in Intellectual Disabilities*, *4*(4), 229–243. https://doi.org/10.1080/19315864.2011.595535

Mul, C. lène, Stagg, S. D., Herbelin, B., & Aspell, J. E. (2018). The Feeling of Me Feeling for You: Interoception, Alexithymia and Empathy in Autism. *Journal of Autism and Developmental Disorders*, *48*(9), 2953–2967. https://doi.org/10.1007/s10803-018-3564-3

Muris, P., Merckelbach, H., Schmidt, H., Gadet, B., & Bogie, N. (2001). Anxiety and depression as correlates of self-reported behavioural inhibition in normal adolescents. *Behaviour Research and Therapy*, *39*(9), 1051–1061. https://doi.org/10.1016/S0005-7967(00)00081-4

Nadig, A. S., Ozonoff, S., Young, G. S., Rozga, A., Sigman, M., & Rogers, S. J. (2007). A prospective study of response to name in infants at risk for autism. *Archives of Pediatrics and Adolescent Medicine*, *161*(4), 378–383. https://doi.org/10.1001/archpedi.161.4.378

Niditch, L. A., Varela, R. E., Kamps, J. L., & Hill, T. (2012). Exploring the Association Between Cognitive Functioning and Anxiety in Children With Autism Spectrum Disorders: The Role of Social Understanding and Aggression. *Journal of Clinical Child and Adolescent Psychology*, *41*(2), 127–137. https://doi.org/10.1080/15374416.2012.651994

O'Toole, M. S., Hougaard, E., & Mennin, D. S. (2013). Social anxiety and emotion knowledge: A meta-analysis. *Journal of Anxiety Disorders*, *27*(1), 98–108. https://doi.org/10.1016/j.janxdis.2012.09.005

Olde Dubbelink, L. M. E., & Geurts, H. M. (2017). Planning Skills in Autism Spectrum Disorder Across the Lifespan: A Meta-analysis and Meta-regression. *Journal of Autism and Developmental Disorders*, *47*(4), 1148–1165. https://doi.org/10.1007/s10803-016-3013-0

Otero, T. L., Schatz, R. B., Merrill, A. C., & Bellini, S. (2015). Social Skills Training for Youth with Autism Spectrum Disorders: A Follow-Up. *Child and Adolescent Psychiatric Clinics of North America*, *24*(1), 99–115. https://doi.org/10.1016/j.chc.2014.09.002

Ozonoff, S., Losif, A., Baguio, F. (2010). A prospective study of the emergence of early behavioral signs of autism. *J Am Acad Child Adolesc Psychiatry*, *49*(3), 256–266. https://doi.org/10.1016/j.pestbp.2011.02.012.Investigations

Ozonoff, S., Cook, I., Coon, H., Dawson, G., Joseph, R. M., Klin, A., … Wrathall, D. (2004). Performance on Cambridge Neuropsychological Test Automated Battery subtests sensitive to frontal lobe function in people with autistic disorder : evidence from the Collaborative Pro ... Performance on Cambridge Neuropsychological Test Automated Battery Su. *Journal of Autism and Developmental Disorders*, *34*(2), 139–150. https://doi.org/10.1023/B

Ozonoff, S., Goodlin-Jones, Beth, L., & Solomon, M. (2005). Evidence-Based Assessment of Autism Spectrum Disorders in Children & Adolescents. *Joumal of Clinical Child and Adolescent Psychology*, *34*(3), 523–540.

Ozonoff, S., Macari, S., Young, G. S., Goldring, S., Thompson, M., & Rogers, S. J. (2008). Atypical object exploration at 12 months of age is associated with autism in a prospective sample. *Autism*, *12*(5), 457–472. https://doi.org/10.1177/1362361308096402

Patriquin, M. A. (2019). Evidence-based treatment and conceptualization of autism spectrum disorder: Emotion regulation, social impairment, and anxiety as targets. *Bulletin of the Menninger Clinic*, *83*(3), 199–204. https://doi.org/10.1521/bumc.2019.83.3.199

Pepper, K. L., Demetriou, E. A., Park, S. H., Song, Y. C., Hickie, I. B., Cacciotti-Saija, C., … Guastella, A. J. (2018). Autism, early psychosis, and social anxiety disorder: understanding the role of social cognition and its relationship to disability in young adults with disorders characterized by social impairments. *Translational Psychiatry*, *8*(1). https://doi.org/10.1038/s41398-018-0282-8

Peterson, C. (2014). Theory of mind understanding and empathic behavior in children with autism spectrum disorders. *International Journal of Developmental Neuroscience*, *39*(C), 16–21. https://doi.org/10.1016/j.ijdevneu.2014.05.002

Phan, K. L., Fitzgerald, D. A., Nathan, P. J., & Tancer, M. E. (2006). Association between amygdala hyperactivity to harsh faces and severity of social anxiety in generalized social phobia. *Biological Psychiatry*, *59*(5), 424–429. https://doi.org/10.1016/j.biopsych.2005.08.012

Pickard, H., Rijsdijk, F., Happé, F., & Mandy, W. (2017). Are Social and Communication Difficulties a Risk Factor for the Development of Social Anxiety? *Journal of the American Academy of Child and Adolescent Psychiatry*, *56*(4), 344-351.e3. https://doi.org/10.1016/j.jaac.2017.01.007

Piven, J., & Palmer, P. (1999). Psychiatric disorder and the broad autism phenotype: Evidence from a family study of multiple-incidence autism families. *American Journal of Psychiatry*, *156*(4), 557–563. https://doi.org/10.1176/ajp.156.4.557

Raikes, H. A., & Thompson, R. A. (2008). Attachment security and parenting quality predict children's problem-solving, attributions, and loneliness with peers. *Attachment and Human Development*, *10*(3), 319–344. https://doi.org/10.1080/14616730802113620

Rao, P. A., Beidel, D. C., & Murray, M. J. (2008). Social skills interventions for children with Asperger's syndrome or high-functioning autism: A review and recommendations. *Journal of Autism and Developmental Disorders*, *38*(2), 353–361. https://doi.org/10.1007/s10803-007-0402-4

Richaud De Minzi, M. C. (2013). Children's perception of parental empathy as a precursor of children's empathy in middle and late childhood. *Journal of Psychology: Interdisciplinary and Applied*, *147*(6), 563–576. https://doi.org/10.1080/00223980.2012.721811

Ringeisen, T., & Raufelder, D. (2015). The interplay of parental support, parental pressure and test anxiety - Gender differences in adolescents. *Journal of Adolescence*, *45*, 67–79. https://doi.org/10.1016/j.adolescence.2015.08.018

Roberts, W., & Strayer, J. (1996). Empathy, Emotional Expressiveness, and Prosocial Behavior. *Child Development*, *67*(2), 449–470. https://doi.org/10.1111/j.1467-8624.1996.tb01745.x

Robinson, S., Goddard, L., Dritschel, B., Wisley, M., & Howlin, P. (2009). Executive functions in children with Autism Spectrum Disorders. *Brain and Cognition*, *71*(3), 362–368. https://doi.org/10.1016/j.bandc.2009.06.007

Rogers, K., Dziobek, I., Hassenstab, J., Wolf, O. T., & Convit, A. (2007). Who cares? Revisiting empathy in Asperger syndrome. *Journal of Autism and Developmental Disorders*, *37*(4), 709–715. https://doi.org/10.1007/s10803-006-0197-8

Roth, D., Antony, M. M., & Swinson, R. P. (2001). Interpretations for anxiety symptoms in social phobia. *Behaviour Research and Therapy*, *39*(2), 129–138. https://doi.org/10.1016/S0005-7967(99)00159-X

Rueda, P., Fernández-Berrocal, P., & Baron-Cohen, S. (2015). Dissociation between cognitive and affective empathy in youth with Asperger Syndrome. *European Journal of Developmental Psychology*, *12*(1), 85–98. https://doi.org/10.1080/17405629.2014.950221

Russell, E., & Sofronoff, K. (2005). Anxiety and social worries in children with Asperger syndrome. *Australian and New Zealand Journal of Psychiatry*, *39*(7), 633–638. https://doi.org/10.1111/j.1440-1614.2005.01637.x

Sabbagh, M. A. (2004). Understanding orbitofrontal contributions to theory-of-mind reasoning: Implications for autism. *Brain and Cognition*, *55*(1), 209–219. https://doi.org/10.1016/j.bandc.2003.04.002

Sánchez-Pérez, N., Fuentes, L. J., Jolliffe, D., & González-Salinas, C. (2014). Assessing children's empathy through a Spanish adaptation of the Basic Empathy Scale: Parent's and child's report forms. *Frontiers in Psychology*, *5*(DEC), 1–13. https://doi.org/10.3389/fpsyg.2014.01438

Sauer, C., Montag, C., Wörner, C., Kirsch, P., & Reuter, M. (2012). Effects of a common variant in the CD38 gene on social processing in an oxytocin challenge study: Possible links to autism. *Neuropsychopharmacology*. https://doi.org/10.1038/npp.2011.333

Scheeren, A. M., De Rosnay, M., Koot, H. M., & Begeer, S. (2013). Rethinking theory of mind in high-functioning autism spectrum disorder. *Journal of Child Psychology and Psychiatry and Allied Disciplines*, *54*(6), 628–635. https://doi.org/10.1111/jcpp.12007

Schopler, E., Reichler, R. J., DeVellis, R. F., & Daly, K. (1980). Toward objective classification of childhood autism: Childhood Autism Rating Scale (CARS). *Journal of Autism and Developmental Disorders*, *10*(1), 91–103. https://doi.org/10.1007/BF02408436

Scott-Van Zeeland, A. A., Abrahams, B. S., Alvarez-Retuerto, A. I., Sonnenblick, L. I., Rudie, J. D., Ghahremani, D., … Bookheimer, S. Y. (2010). Altered functional connectivity in frontal lobe circuits is associated with variation in the autism risk gene CNTNAP. *Science Translational Medicine*, *2*(56). https://doi.org/10.1126/scitranslmed.3001344

Sirin, S. R. (2005). Socioeconomic status and academic achievement: A meta-analytic review of research. *Review of Educational Research*, *75*(3), 417–453. https://doi.org/10.3102/00346543075003417

Spence, S. H., & Rapee, R. M. (2016). The etiology of social anxiety disorder: An evidence-based model. *Behaviour Research and Therapy*, *86*, 50–67. https://doi.org/10.1016/j.brat.2016.06.007

Stein, D. J., Lim, C. C. W., Roest, A. M., de Jonge, P., Aguilar-Gaxiola, S., Al-Hamzawi, A., … Williams, D. R. (2017). The cross-national epidemiology of social anxiety disorder: Data from the World Mental Health Survey Initiative. *BMC Medicine*, *15*(1), 1–21. https://doi.org/10.1186/s12916-017-0889-2

Stiff, J. B., Dillard, J. P., Somera, L., Kim, H., & Sleight, C. (1988). Empathy, Communication, And Prosocial Behavior. *Communication Monographs*. https://doi.org/10.1080/03637758809376166

Sutherland, R., Hodge, A., Bruck, S., Costley, D., & Klieve, H. (2017). Parent-reported differences between school-aged girls and boys on the autism spectrum. *Autism*, *21*(6), 785–794. https://doi.org/10.1177/1362361316668653

Tager-Flusberg, H. (2007). *Evaluating the Theory-of-Mind Hypothesis of Autism*. *Psychological Science* (Vol. 16). Retrieved from https://offcampus.ihu.edu.tr:2234/stable/pdf/20183226.pdf?refreqid=search%3Aec26118b5280eafd5f4d612423820503

Tanaka, J. W., & Sung, A. (2016). The “Eye Avoidance” Hypothesis of Autism Face Processing. *Journal of Autism and Developmental Disorders*, *46*(5), 1538–1552. https://doi.org/10.1007/s10803-013-1976-7

Tantam, D. (2000). Psychological disorder in adolescents and adults with Asperger syndrome. *Autism*, *4*(1), 47–62. https://doi.org/10.1177/1362361300004001004

Tibi-Elhanany, Y., & Shamay-Tsoory, S. G. (2011). Social cognition in social anxiety: First evidence for increased empathic abilities. *Israel Journal of Psychiatry and Related Sciences*, *48*(2), 98–106.

Topçu, Ç., Erdur-Baker, Ö., & Çapa-Aydın, Y. (2010). Temel Empati Ölçeği Türkçe Uyarlaması: Geçerlik ve Güvenirlik Çalışması, *4*(34), 174–182.

Töret, G., Özdemir, S., Selimoğlu, Ö. G., & Özkubat, U. (2014). Otizmli çocuğa sahip olan ebeveynlerin görüşleri: otizm tanımlamaları ve otizmin nedenleri. *Ankara Universitesi Egitim Bilimleri Fakultesi Ozel Egitim Dergisi*, *15*(1), 1–14. https://doi.org/10.1501/ozlegt_0000000189

Towbin, K. E., Pradella, A., Gorrindo, T., Pine, D. S., & Leibenluft, E. (2005). Autism Spectrum Traits in Children with Mood and Anxiety Disorders. *Journal of Child and Adolescent Psychopharmacology*, *15*(3), 452–464.

Turner, S, M., Beidel, D. C., Dancu, C. V, & Stanley, M. A. (1989). An empirically derived inventory to measure social fears and anxiety: The social phobia and anxiety inventory. Psychological Assessment, 1, 35–40. *Psychological Assessment*, *1*(1), 35–40. https://doi.org/10.1037//1040-3590.1.1.35

van de Mortel, T. F. (2008). Faking it : social desirability response bias in self- report research. *Australian Journal of Advanced Nursing*, *25*(4), 40–48. Retrieved from http://www.ajan.com.au/ajan_25.4.html

Van Eylen, L., Boets, B., Steyaert, J., Evers, K., Wagemans, J., & Noens, I. (2011). Cognitive flexibility in autism spectrum disorder: Explaining the inconsistencies? *Research in Autism Spectrum Disorders*, *5*(4), 1390–1401. https://doi.org/10.1016/j.rasd.2011.01.025

van Steensel, F. J. A., Bögels, S. M., & Perrin, S. (2011). Anxiety Disorders in Children and Adolescents with Autistic Spectrum Disorders: A Meta-Analysis. *Clinical Child and Family Psychology Review*, *14*(3), 302–317. https://doi.org/10.1007/s10567-011-0097-0

Van Steensel, F. J. A., Bögels, S. M., & Wood, J. J. (2013). Autism spectrum traits in children with anxiety disorders. *Journal of Autism and Developmental Disorders*, *43*(2), 361–370. https://doi.org/10.1007/s10803-012-1575-z

Washburn, D. (2012). Theory of Mind Decoding and Reasoning Abilities in Depression, Social Phobia, and Comorbid Conditions. *ProQuest Dissertations and Theses*, 112. Retrieved from http://search.proquest.com/docview/1514410487?accountid=14553%5Cnhttp://openurl.library.uiuc.edu/sfxlcl3?url_ver=Z39.88 2004&rft_val_fmt=info:ofi/fmt:kev:mtx:dissertation&genre=dissertations+&+theses&sid=ProQ:ProQuest+Dissertations+&+Theses+Full+Text&ati

Washburn, D., Wilson, G., Roes, M., Rnic, K., & Harkness, K. L. (2016a). Theory of mind in social anxiety disorder, depression, and comorbid conditions. *Journal of Anxiety Disorders*, *37*, 71–77. https://doi.org/10.1016/j.janxdis.2015.11.004

Washburn, D., Wilson, G., Roes, M., Rnic, K., & Harkness, K. L. (2016b). Theory of mind in social anxiety disorder, depression, and comorbid conditions. *Journal of Anxiety Disorders*, *37*, 71–77. https://doi.org/10.1016/j.janxdis.2015.11.004

Watson, D., & Friend, R. (1969). Measurement of Social-Evaluative Anxiety. *Journal of Consulting and Clinical Psychology*, *33*(4), 443–457. https://doi.org/10.1037/a0022000

Weiss, M. J., & Harris, S. L. (2001). Teaching social skills to people with autism. *Behavior Modification*, *25*(5), 785–802. https://doi.org/10.1177/0145445501255007

Wellman, H. M., & Liu, D. (2004). Scaling of Theory-of-Mind Tasks. *Child Development*, *75*(2), 523–541. https://doi.org/10.1111/j.1467-8624.2004.00691.x

Welsh, M., Parke, R. D., Widaman, K., & O'Neil, R. (2001). Linkages Between Children's Social and Academic Competence. *Journal of School Psychology*, *39*(6), 463–482. https://doi.org/10.1016/s0022-4405(01)00084-x

Wenzel, A., Jackson, L. C., & Holt, C. S. (2002). Social phobia and the recall of autobiographical memories. *Depression and Anxiety*, *15*(4), 186–189. https://doi.org/10.1002/da.10053

White, S. W., Bray, B. C., & Ollendick, T. H. (2012). Examining shared and unique aspects of social anxiety disorder and autism spectrum disorder using factor analysis. *Journal of Autism and Developmental Disorders*, *42*(5), 874–884. https://doi.org/10.1007/s10803-011-1325-7

White, S. W., Ollendick, T. H., & Bray, B. C. (2011). College students on the autism spectrum: Prevalence and associated problems. *Autism*, *15*(6), 683–701. https://doi.org/10.1177/1362361310393363

White, S. W., & Roberson-Nay, R. (2009). Anxiety, social deficits, and loneliness in youth with autism spectrum disorders. *Journal of Autism and Developmental Disorders*, *39*(7), 1006–1013. https://doi.org/10.1007/s10803-009-0713-8

WHO. (2015). Maternal, newborn, child and adolescent health. *World Health Organization*.

Williams, S., Leader, G., Mannion, A., & Chen, J. (2015). An investigation of anxiety in children and adolescents with autism spectrum disorder. *Research in Autism Spectrum Disorders*, *10*, 30–40. https://doi.org/10.1016/j.rasd.2014.10.017

Williams White, S., Keonig, K., & Scahill, L. (2007). Social skills development in children with autism spectrum disorders: A review of the intervention research. *Journal of Autism and Developmental Disorders*, *37*(10), 1858–1868. https://doi.org/10.1007/s10803-006-0320-x

Wimmer, H., & Perner, J. (1983). Beliefs about beliefs: Representation and constraining function of wrong beliefs in young children's understanding of deception. *Cognition*, *13*(1), 103–128. https://doi.org/10.1016/0010-0277(83)90004-5

Wing, L., & Gould, J. (1979). Severe impairments of social interaction and associated abnormalities in children: Epidemiology and classification. *Journal of Autism and Developmental Disorders*, *9*(1), 11–29. https://doi.org/10.1007/BF01531288

Wolff, S. (2004). The history of autism. *European Child and Adolescent Psychiatry*, *13*(4), 201–208. https://doi.org/10.1007/s00787-004-0363-5

Wong, C. C. Y., Meaburn, E. L., Ronald, A., Price, T. S., Jeffries, A. R., Schalkwyk, L. C., … Mill, J. (2014). Methylomic analysis of monozygotic twins discordant for autism spectrum disorder and related behavioural traits. *Molecular Psychiatry*, *19*(4), 495–503. https://doi.org/10.1038/mp.2013.41

Wood, J. J., & Gadow, K. D. (2010). Exploring the Nature and Function of Anxiety in Youth with Autism Spectrum Disorders. *Clinical Psychology: Science and Practice*, *17*(4), 281–292. https://doi.org/10.1111/j.1468-2850.2010.01220.x

Wozniak, R. H., Leezenbaum, N. B., Northrup, J. B., West, K. L., & Iverson, J. M. (2016). The development of autism spectrum disorder:variability and causal complexity. *WIREs Cognitive Science*, *8*(1–2). https://doi.org/10.1002/wcs.1426

Wright, B., Clarke, N., Jordan, J., Young, A. W., Clarke, P., Miles, J., … Williams, C. (2008). Emotion recognition in faces and the use of visual context Vo in young people with high-functioning autism spectrum disorders. *Autism*, *12*(6), 607–626. https://doi.org/10.1177/1362361308097118

Yagmurlu, B., & Sanson, A. (2009). Parenting and temperament as predictors of prosocial behaviour in Australian and Turkish Australian children. *Australian Journal of Psychology*, *61*(2), 77–88. https://doi.org/10.1080/00049530802001338

Yiend, J., & Mathews, A. M. (Eds.). (2004). *Cognition, Emotion and Psychopathology: Theoretical, emprical and clinical directions*. *Cognition, Emotion and Psychopathology*. Cambridge University Press. https://doi.org/10.1017/cbo9780511521263

Yoon, S. H. (2008). *Mind and Autism Spectrum Disorders : A Theory-of-Mind Continuum Model and Typology Developed from Theory-of-Mind as Subjectively Experienced and Objectively Understood AUTHOR ' S DECLARATION*. The University of Sydney. Retrieved from https://sydney.edu.au/education_social_work/doctoral_studies/completed_theses/Hwang.shtml

Zahn-Waxler, C., & Radke-Yarrow, M. (1990). The origins of empathic concern. *Motivation and Emotion*, *14*(2), 107–130. https://doi.org/10.1007/BF00991639

Zehr, J. L., Culbert, K. M., Sisk, C. L., & Klump, K. L. (2007). An association of early puberty with disordered eating and anxiety in a population of undergraduate women and men. *Hormones and Behavior*, *52*(4), 427–435. https://doi.org/10.1016/j.yhbeh.2007.06.005

Ziermans, T., de Bruijn, Y., Dijkhuis, R., Staal, W., & Swaab, H. (2019). Impairments in cognitive empathy and alexithymia occur independently of executive functioning in college students with autism. *Autism*, *23*(6), 1519–1530. https://doi.org/10.1177/1362361318817716

Zwaigenbaum, L., Bryson, S., Rogers, T., Roberts, W., Brian, J., & Szatmari, P. (2005). Behavioral manifestations of autism in the first year of life. *International Journal of Developmental Neuroscience*, *23*(2-3 SPEC. ISS.), 143–152. https://doi.org/10.1016/j.ijdevneu.2004.05.001

APPENDICES

APPENDIX A

T.C.

İBN HALDUN ÜNİVERSİTESİ

SOSYAL VE BEŞERİ BİLİMLER BİLİMSEL ARAŞTIRMALAR VE YAYIN ETİĞİ KURULU BAŞKANLIĞI KARAR FORMU

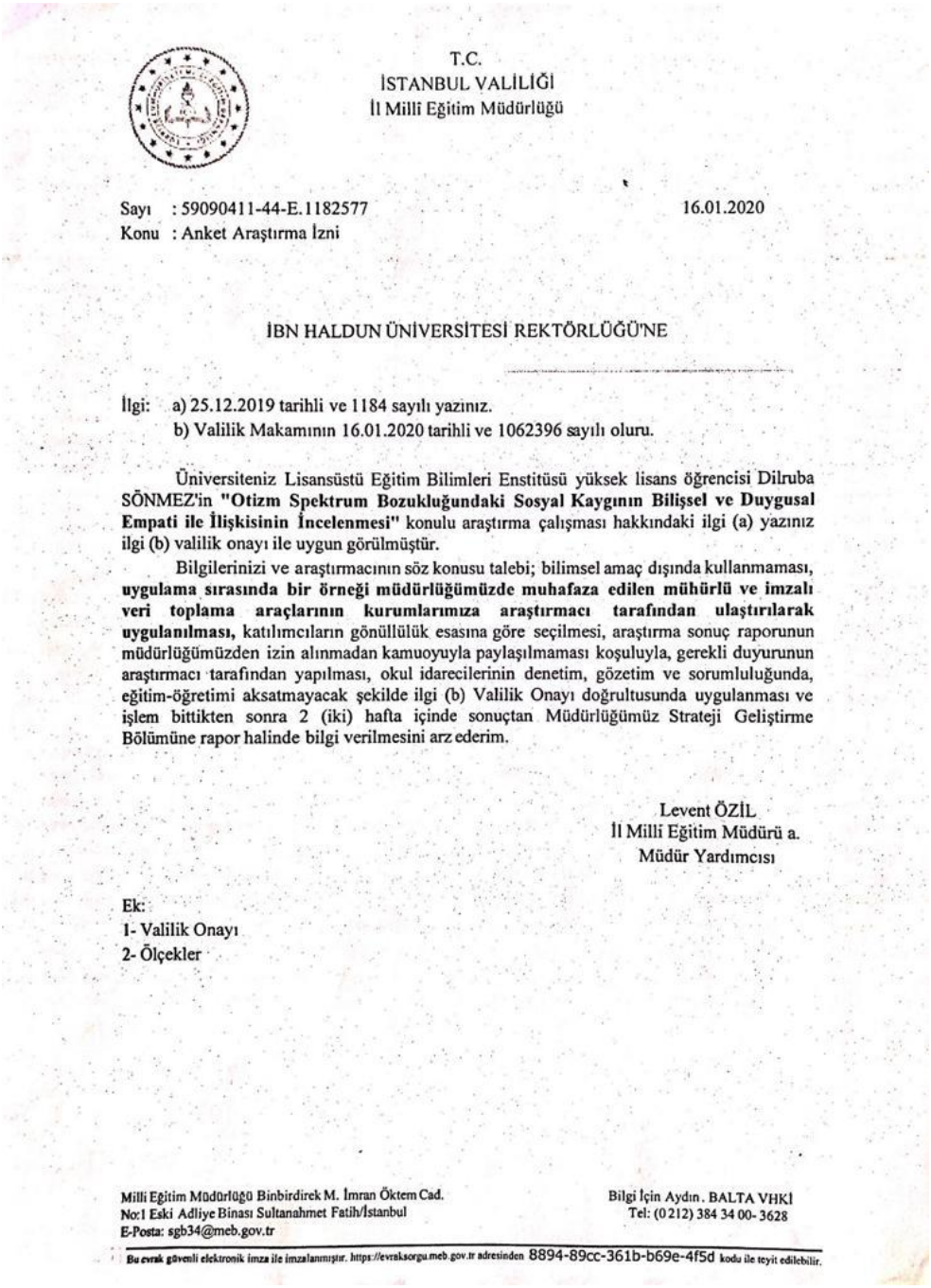
BAŞVURU BİLGİLERİ	ARAŞTIRMANIN AÇIK ADI	Examining the Relationship between Cognitive Empathy, Affective Empathy and Social Anxiety in Autism Spectrum Disorder			
	KOORDİNATÖR/SORUMLU ARAŞTIRMACI UNVANI/ADI/SOYADI	Dilruba Sönmez			
	KOORDİNATÖR/SORUMLU ARAŞTIRMACININ UZMANLIK ALANI	Klinik Psikoloji			
	KOORDİNATÖR/SORUMLU ARAŞTIRMACININ BULUNDUĞU MERKEZ	İstanbul			
	ARAŞTIRMAYA KATILAN MERKEZLER	TEK MERKEZ ☒	ÇOK MERKEZLİ ☐	ULUSAL ☐	ULUSLARARASI ☐

	Belge Adı	Tarihi	Versiyon Numarası	Dil
Değerlendirilen Belgeler	ETİK KURUL BAŞVURU FORMU	12.11.2019		Türkçe☒ İngilizce☐ Diğer☐
	BİLGİLENDİRİLMİŞ GÖNÜLLÜ OLUR FORMU	12.11.2019		Türkçe ☒ İngilizce ☐ Diğer ☐
	SOSYODEMOGRAFİK FORM	12.11.2019		Türkçe ☒ İngilizce ☐ Diğer ☐
	KARAR NO: 2019/23-2	TARİH: 18.11.2019		
Karar Bilgileri	KARAR: Kurulumuza başvuran Sn.Dilruba Sönmez "Examining the Relationship between Cognitive Empathy, Affective Empathy and Social Anxiety in Autism Spectrum Disorder" isimli proje; amaç, araştırma türü ve örneklem, veri toplama araçları, süreç ve işlemler, veri analizleri dikkate alınmak suretiyle değerlendirilerek aşağıdaki sonuca ulaşılmıştır:			
	Proje etik açıdan uygun bulunmuştur ☒ Projenin etik açıdan geliştirilmesi gerekmektedir ☐ Proje etik açıdan uygun bulunmamıştır ☐			

ETİK KURULDAKİ GÖREVİ	ADI SOYADI	İMZA
Etik Kurul Başkanı	Prof. Dr. Ali Yeşilırmak	
Üye	Prof. Dr. Yüksel Özden	
Üye	Prof. Dr. Fuat Erdal	
Üye	Prof. Dr. Halil Berktay	
Üye	Prof. Dr. Bilal Aybakan	
Üye	Prof. Dr. Yusuf Çalışkan	
Üye	Prof. Dr. Üzeyir Ok	İZİNLİ

18.11.19

APPENDIX B



T.C.
İSTANBUL VALİLİĞİ
İl Milli Eğitim Müdürlüğü

Sayı : 59090411-44-E.1182577 16.01.2020
Konu : Anket Araştırma İzni

İBN HALDUN ÜNİVERSİTESİ REKTÖRLÜĞÜ'NE

İlgi: a) 25.12.2019 tarihli ve 1184 sayılı yazınız.
b) Valilik Makamının 16.01.2020 tarihli ve 1062396 sayılı oluru.

Üniversiteniz Lisansüstü Eğitim Bilimleri Enstitüsü yüksek lisans öğrencisi Dilruba SÖNMEZ'in **"Otizm Spektrum Bozukluğundaki Sosyal Kaygının Bilişsel ve Duygusal Empati ile İlişkisinin İncelenmesi"** konulu araştırma çalışması hakkındaki ilgi (a) yazınız ilgi (b) valilik onayı ile uygun görülmüştür.

Bilgilerinizi ve araştırmacının söz konusu talebi; bilimsel amaç dışında kullanmaması, **uygulama sırasında bir örneği müdürlüğümüzde muhafaza edilen mühürlü ve imzalı veri toplama araçlarının kurumlarımıza araştırmacı tarafından ulaştırılarak uygulanılması,** katılımcıların gönüllülük esasına göre seçilmesi, araştırma sonuç raporunun müdürlüğümüzden izin alınmadan kamuoyuyla paylaşılmaması koşuluyla, gerekli duyurunun araştırmacı tarafından yapılması, okul idarecilerinin denetim, gözetim ve sorumluluğunda, eğitim-öğretimi aksatmayacak şekilde ilgi (b) Valilik Onayı doğrultusunda uygulanması ve işlem bittikten sonra 2 (iki) hafta içinde sonuçtan Müdürlüğümüz Strateji Geliştirme Bölümüne rapor halinde bilgi verilmesini arz ederim.

Levent ÖZİL
İl Milli Eğitim Müdürü a.
Müdür Yardımcısı

Ek:
1- Valilik Onayı
2- Ölçekler

Milli Eğitim Müdürlüğü Binbirdirek M. İmran Öktem Cad.
No:1 Eski Adliye Binası Sultanahmet Fatih/İstanbul
E-Posta: sgb34@meb.gov.tr

Bilgi İçin Aydın. BALTA VHKİ
Tel: (0212) 384 34 00- 3628

Bu evrak güvenli elektronik imza ile imzalanmıştır. https://evraksorgu.meb.gov.tr adresinden 8894-89cc-361b-b69e-4f5d kodu ile teyit edilebilir.

APPENDIX C

Informed Consent Form

Değerli Katılımcı,

Otizmli Çocuk ve Ergenlerdeki Sosyal Kaygının Bilişsel ve Duygusal Empati ile İlişkisinin İncelenmesi adlı, Dilruba Sönmez tarafından İbn Haldun Üniversitesi Klinik Psikoloji Yüksek Lisans tez çalışması olarak Prof. Timothy Jordan danışmanlığında yürütülmekte olan bu çalışmaya davet edilmektesiniz. Aşağıdaki bilgileri dikkatlice okuyunuz. Sorularınız varsa lütfen araştırmacıya danışınız. Araştırmacıya bu e-posta adresinden dilruba.sonmez@ibnhaldun.edu.tr ulaşabilirsiniz.

Bu araştırmanın amacı, otizm tanısı almış ve almamış çocuk ve ergenlerdeki sosyal kaygı ile empati arasındaki ilişkiyi incelemektir. Sosyal kaygının empati ile ilişkisini incelemek, otizm tanısı almış ve almamış çocuk ve ergenlerdeki sosyal kaygı bozukluğunun daha iyi anlaşılmasına ve ayrıca otizmli çocuklardaki sosyal kaygının tedavisine bilimsel katkı sağlamayı hedeflemektedir.

Bu çalışmada sizden ve çocuğunuzdan verilen formları cevaplamanız beklenmektedir. Yaklaşık 30 ile 40 dakika arası sürmesi tahmin edilmektedir. Çalışmaya katılımınız zorunlu değildir ve katılmama hakkına sahipsiniz. Araştırmaya katılımın öngörülebilen fiziksel, psikolojik, sosyal ya da duygusal riski bulunmamaktadır. Yine de istediğiniz zaman çalışmaya katılmaktan vazgeçebilirsiniz. Araştırmadaki soruları yanıtlamayı bırakmanız durumunda, yanıtlarınız araştırmada kullanılmayacaktır. Araştırmaya katılma durumunuzda ise, cevaplarınız gizlilikle korunacak ve sadece araştırmacı tarafından değerlendirilecektir. Verilerin analizinden sonra, araştırma ile ilgili

yüksek lisans tezi yazılacaktır. Araştırmaya katılmanın size hemen dönecek bir faydası bulunmamakla beraber, araştırma sonuçlarımızın otizm çalışma alanına, topluma veya bilime faydalarının olacağı umulmaktadır. Bu araştırmaya katıldığınız için şimdiden teşekkür ederiz.

Yukarıda katılımcıya verilmesi gereken bilgileri okudum ve araştırmanın amacını anladım. Bu araştırmayla ilgili bilgilendirme yapıldı. Bu araştırmaya gönüllü olarak katılmayı kabul ediyorum.

Tarih:

Veli veya Vasisi:

İmzası:

Araştırmacı: Dilruba Sönmez

E-posta Adresi: dilruba.sonmez@ibnhaldun.edu.tr

İmza:

APPENDIX D

Demographic Information Form

Katılımcı No:

Tarih:

ÇOCUK DEMOGRAFİK BİLGİLERİ

Yaş : .....

Cinsiyet : Kadın - Erkek **(Daire içine alınız.)**

Eğitim Durumu: İlkokul - Ortaokul - Lise **(Daire içine alınız.)**

VELİ DEMOGRAFİK BİLGİLERİ

Yaş : .....

Cinsiyet : Kadın - Erkek **(Daire içine alınız.)**

Medeni Durum: Evli – Bekar **(Daire içine alınız.)**

Eğitim Durumu: İlkokul - Ortaokul - Lise – Üniversite – Yüksek Lisans/Doktora **(Daire içine alınız.)**

Çalışıyor musunuz? Evet - Hayır (**Evet ise, Mesleğiniz**: .....)

Gelir düzeyinizi nasıl tanımlarsınız? Düşük – Orta - İyi **(Daire içine alınız.)**

APPENDIX E

ASSQ

Bu çocuk yaşıtlarına göre aşağıdaki nedenlerden dolayı farklı olarak ayrılır;

	Hayır	Biraz	Evet
1. Büyümüş de küçülmüş veya eski kafalı gibidir	[ ]	[ ]	[ ]
2. Diğer çocuklar tarafından "Garip (eksantrik) profesör" olarak görülür	[ ]	[ ]	[ ]
3. Kendine özgü sınırlı entelektüel ilgilerle kendi dünyasındaymış gibi yaşar	[ ]	[ ]	[ ]
4. Belirli konulardaki somut gerçekleri zihninde biriktirebilir (ezbere dayalı hafızası iyi) fakat manasını pek anlamaz	[ ]	[ ]	[ ]
5. Dilin mecazi ve muğlak kullanımını somut hali ile anlar	[ ]	[ ]	[ ]
6. Eski moda, huysuz, resmi ya da robot gibi bir dil kullanan farklı bir iletişim biçimi vardır	[ ]	[ ]	[ ]
7. Kendine özgü kelimeler ve ifadeler icat eder	[ ]	[ ]	[ ]
8. Farklı bir sesi ve konuşması vardır	[ ]	[ ]	[ ]
9. İstemsiz sesler çıkartır; boğaz temizler, homurdanır, ağız şıpırdatır, ağlar ve ya çığlık atar.	[ ]	[ ]	[ ]
10. Şaşırtıcı bir şekilde bazı şeylerde çok iyi ve bazı şeylerde çok zayıftır	[ ]	[ ]	[ ]
11. Dili özgürce kullanır fakat sosyal içerik/şartlara ya da farklı dinleyicilerin ihtiyaçlarına uyum sağlamakta başarısızdır	[ ]	[ ]	[ ]
12. Empati becerisi yetersizdir	[ ]	[ ]	[ ]
13. Safça ve mahcup edici yorumlarda bulunur	[ ]	[ ]	[ ]
14. Normalden farklı bir bakış biçimi vardır	[ ]	[ ]	[ ]
15. Sosyal olmayı ister ancak akranlarıyla ilişki kurmada başarısızdır	[ ]	[ ]	[ ]
16. Diğer çocuklarla birlikte olabilir ancak sadece kendi şartlarıyla	[ ]	[ ]	[ ]
17. En iyi diyebileceği bir arkadaşı yoktur	[ ]	[ ]	[ ]
18. Sağduyu eksikliği vardır	[ ]	[ ]	[ ]
19. Oyunlarda kötüdür; bir takım ile işbirliği hakkında hiçbir fikri yoktur, "kendi gollerinin" hesabını tutar	[ ]	[ ]	[ ]
20. Sakar, koordinasyonu bozuk, hantal ve garip hareketleri ve ya jestleri vardır	[ ]	[ ]	[ ]
21. İstemsiz yüz ve beden hareketleri vardır	[ ]	[ ]	[ ]
22. Bazı hareket ve düşüncelerin zorunlu tekrarlarından dolayı günlük basit bir aktiviteyi tamamlamakta zorlanır	[ ]	[ ]	[ ]
23. Özel rutinleri vardır; değişiklik olmaması üzerinde ısrar eder	[ ]	[ ]	[ ]
24. Nesnelere kendine özgü bir bağlılık gösterir	[ ]	[ ]	[ ]
25. Diğer çocuklar tarafından zorbalığa uğrar	[ ]	[ ]	[ ]
26. Belirgin şekilde alışılmadık bir yüz ifadesi vardır	[ ]	[ ]	[ ]
27. Belirgin şekilde alışılmadık bir duruşa sahiptir	[ ]	[ ]	[ ]

Yukarıdakiler dışındaki gerekçeleri belirtiniz

APPENDIX F

WISC-R Verbal Comprehension Subtest

"Sana bazı kelimeler söyleyeceğim, dikkatle dinle ve bana her kelimenin anlamını söyle"

(6-7) Yaş

1. Kalem
2. Top
3. Uçurtma

(8-10) Yaş

4. Fener
5. Tavşan

(11-13) Yaş

6. Mektup
7. Çalmak

(14) Yaş

8. Saat
9. Göçmek
10. Becerikli
11. Düzenlemek
12. Mutlu
13. Kumar
14. Uyarmak
15. Mağara
16. Hasret
17. Anı
18. Çaba
19. Endişe
20. Tasarlamak
21. Yüceltmek
22. Sözcük
23. Hain
24. Varlık
25. Kurnaz
26. Masum
27. Uysal
28. Nimet
29. Adak
30. Yöneltmek
31. Yadigar
32. İnsaf
33. Onur
34. Rekabet

APPENDIX G

RCADS –Child Version

		ASLA	BAZEN	SIK SIK	HER ZAMAN
1.	Bazı konularda endişe/kaygı duyarım	(0)	(1)	(2)	(3)
2.	Bir sorunum olduğunda midemde tuhaf bir his olur	(0)	(1)	(2)	(3)
3.	Bir işte başarısız olduğumu veya işi iyi yapmadığımı düşündüğüm zaman endişelenirim/kaygılanırım	(0)	(1)	(2)	(3)
4.	Evde yalnız kalmaktan korkarım	(0)	(1)	(2)	(3)
5.	Sınava gireceğim zaman korkarım/ endişelenirim	(0)	(1)	(2)	(3)
6.	Birinin bana kızgın olduğunu düşündüğümde endişelenirim	(0)	(1)	(2)	(3)
7.	Ailemden uzakta olmak beni endişelendirir	(0)	(1)	(2)	(3)
8.	Aklımdaki kötü ya da aptalca düşünceler veya görüntüler beni rahatsız eder	(0)	(1)	(2)	(3)
9.	Okulda başarısız olacağımdan korkarım/ endişelenirim	(0)	(1)	(2)	(3)
10.	Ailemden birinin başına çok kötü bir şey geleceğinden endişelenirim	(0)	(1)	(2)	(3)
11.	Hiçbir neden yokken aniden sanki nefes alamıyorum gibi hissederim	(0)	(1)	(2)	(3)

12.	Yaptığım şeyleri tam veya doğru yapıp yapmadığımı tekrar tekrar kontrol ederim (lambaların kapatıldığından, kapının kilitlendiğinden emin olmak gibi)	(0)	(1)	(2)	(3)
13.	Kendi başıma uyumam gerekirse bundan korkarım	(0)	(1)	(2)	(3)
14.	Sabahları gergin veya endişeli hissettiğimden okula gitmek istemem	(0)	(1)	(2)	(3)
15.	Aptalca göründüğümden endişelenirim	(0)	(1)	(2)	(3)
16.	Başıma kötü şeyler geleceğinden endişe ederim	(0)	(1)	(2)	(3)
17.	Kötü ve saçma düşünceleri kafamdan atamıyorum	(0)	(1)	(2)	(3)
18.	Bir sorunum olduğunda kalbim çok hızlı atar	(0)	(1)	(2)	(3)
19.	Hiçbir nedeni yokken aniden titreme ve ürperme hissederim	(0)	(1)	(2)	(3)
20.	Başıma kötü bir şey geleceğinden endişe ediyorum	(0)	(1)	(2)	(3)
21.	Bir sorunum olduğunda titrediğimi hissederim	(0)	(1)	(2)	(3)
22.	Yanlış yapmaktan kaygılanırım/endişe ederim	(0)	(1)	(2)	(3)
23.	Kötü şeylerin olmasını engellemek için özel bazı düşünceleri (sayılar, kelimeler gibi) aklımdan geçirmem gerekir	(0)	(1)	(2)	(3)
24.	Diğer insanların benim hakkında ne düşündükleri beni endişelendirir	(0)	(1)	(2)	(3)
25.	Kalabalık yerlerde (alışveriş merkezi, sinema, otobüsler, yoğun oyun alanları gibi) bulunmaktan korkarım	(0)	(1)	(2)	(3)
26.	Hiçbir nedeni yokken birden yoğun korku duyarım	(0)	(1)	(2)	(3)
27.	Gelecek hakkında endişelenirim	(0)	(1)	(2)	(3)

28.	Hiçbir nedeni yokken aniden başım döner ve bayılacak gibi olurum	(0)	(1)	(2)	(3)
29.	Ölüm hakkında düşünürüm	(0)	(1)	(2)	(3)
30.	Sınıfımın önünde konuşma yapmak beni korkutur	(0)	(1)	(2)	(3)
31.	Kalbim sebepsiz yere aniden çok hızlı çarpmaya başlar	(0)	(1)	(2)	(3)
32.	Ortada korkulacak bir şey yokken aniden korkutucu bir his yaşamaktan endişelenirim	(0)	(1)	(2)	(3)
33.	Aynı şeyi tekrar tekrar yapmak zorunda hissederim (ellerimi yıkamak, temizlik yapmak veya bir şeyleri belli bir sıraya koymak gibi)	(0)	(1)	(2)	(3)
34.	İnsanların önünde aptal durumuna düşmekten korkarım	(0)	(1)	(2)	(3)
35.	Kötü şeylerin olmasını engellemek için bazı şeyleri “tam olması gereken biçimde” yapmak zorunda hissederim	(0)	(1)	(2)	(3)
36.	Geceleri yatağa gittiğimde endişelenirim	(0)	(1)	(2)	(3)
37.	Gece evden uzakta kalmaktan (başkasının evinde uyumak gibi) korkarım	(0)	(1)	(2)	(3)

APPENDIX H

RCADS - Parent-Version

		ASLA	BAZEN	SIK SIK	HERZAMAN
1.	Çocuğum bazı konularda endişe/kaygı duyar	(0)	(1)	(2)	(3)
2.	Çocuğumun bir sorunu olduğunda midesinde tuhaf bir his olur	(0)	(1)	(2)	(3)
3.	Çocuğum bir işte başarısız olduğunu veya işi iyi yapmadığını düşündüğü zaman endişelenir/kaygılanır	(0)	(1)	(2)	(3)
4.	Çocuğum evde yalnız kalmaktan korkar	(0)	(1)	(2)	(3)
5.	Çocuğum sınava gireceği zaman korkar/ endişelenir	(0)	(1)	(2)	(3)
6.	Çocuğum birinin ona kızgın olduğunu düşündüğünde endişelenir	(0)	(1)	(2)	(3)
7.	Çocuğumu ailesinden uzakta olmak endişelendirir	(0)	(1)	(2)	(3)
8.	Çocuğumu aklındaki kötü ya da aptalca düşünceler veya görüntüler rahatsız eder	(0)	(1)	(2)	(3)
9.	Çocuğum okulda başarısız olacağından korkar/ endişelenir	(0)	(1)	(2)	(3)
10.	Çocuğum aileden birinin başına çok kötü bir şey geleceğinden endişelenir	(0)	(1)	(2)	(3)
11.	Çocuğum hiçbir neden yokken aniden sanki nefes alamıyormuş gibi hisseder	(0)	(1)	(2)	(3)
12.	Çocuğum yaptığı şeyleri tam veya doğru yapıp yapmadığını tekrar tekrar kontrol eder (lambaların kapatıldığından, kapının kilitlendiğinden emin olmak gibi)	(0)	(1)	(2)	(3)
13.	Çocuğum kendi başına uyuması gerektiğinde bundan korkar	(0)	(1)	(2)	(3)
14	Çocuğum sabahları gergin veya endişeli hissettiğinden okula	(0)	(1)	(2)	(3)

	gitmek istemez				
15.	Çocuğum aptalca görünmekten endişelenir	(0)	(1)	(2)	(3)
16.	Çocuğum başına kötü şeyler geleceğinden endişe eder	(0)	(1)	(2)	(3)
17.	Çocuğum kötü ve saçma düşünceleri kafasından atamıyor	(0)	(1)	(2)	(3)

		ASLA	BAZEN	SIK SIK	HER ZAMAN
18.	Çocuğum bir sorunu olduğunda kalbi çok hızlı atar	(0)	(1)	(2)	(3)
19.	Çocuğum hiçbir nedeni yokken aniden titreme ve ürperme hisseder	(0)	(1)	(2)	(3)
20.	Çocuğum başına kötü bir şey geleceğinden endişe eder	(0)	(1)	(2)	(3)
21.	Çocuğum bir sorunu olduğunda titrer	(0)	(1)	(2)	(3)
22.	Çocuğum yanlış yapmaktan kaygılanır/endişe eder	(0)	(1)	(2)	(3)
23.	Çocuğum kötü şeylerin olmasını engellemek için özel bazı düşünceleri(sayılar, kelimeler gibi) aklından geçirir	(0)	(1)	(2)	(3)
24.	Çocuğumu diğer insanların onun hakkında ne düşündükleri endişelendirir	(0)	(1)	(2)	(3)
25.	Çocuğum kalabalık yerlerde (alışveriş merkezi, sinema, otobüsler, yoğun oyun alanları gibi) bulunmaktan korkar	(0)	(1)	(2)	(3)
26.	Çocuğum hiçbir nedeni yokken birden yoğun korku duyar	(0)	(1)	(2)	(3)
27.	Çocuğum gelecek hakkında endişelenir	(0)	(1)	(2)	(3)
28.	Çocuğum hiçbir nedeni yokken aniden başı döner ve bayılacak gibi olur	(0)	(1)	(2)	(3)
29.	Çocuğum ölüm hakkında düşünür	(0)	(1)	(2)	(3)
30.	Çocuğumu sınıfın önünde konuşma yapmak korkutur	(0)	(1)	(2)	(3)

31.	Çocuğumun kalbi sebepsiz yere aniden çok hızlı çarpmaya başlar	(0)	(1)	(2)	(3)
32.	Çocuğum ortada korkulacak bir şey yokken aniden korkutucu bir his yaşamaktan endişe eder	(0)	(1)	(2)	(3)
33.	Çocuğum aynı şeyi tekrar tekrar yapmak zorunda hisseder (ellerini yıkamak, temizlik yapmak veya bir şeyleri belli bir sıraya koymak gibi)	(0)	(1)	(2)	(3)
34.	Çocuğum İnsanların önünde aptal durumuna düşmekten korkar	(0)	(1)	(2)	(3)
35.	Çocuğum kötü şeylerin olmasını engellemek için bazı şeyleri “tam olması gereken biçimde” yapmak zorunda hisseder	(0)	(1)	(2)	(3)
36.	Çocuğum geceleri yatağa gittiğinde endişelenir	(0)	(1)	(2)	(3)
37.	Çocuğum gece evden uzakta kalmaktan (başkasının evinde uyumak gibi) korkar	(0)	(1)	(2)	(3)

APPENDIX I

Empathizing Systemizing Quotient (EQ-SQ)

		Kesinlikle katılıyorum	Biraz katılıyorum	Biraz katılmıyorum	Kesinlikle katılmıyorum
1.	Çocuğum başka insanlar ile ilgilenmekten hoşlanır.				
2.	Çocuğum genellikle, bazı şeylerin neden diğer insanları bu kadar üzdüğünü anlayamaz.				
3.	Çocuğum evdeki eşyaların yerli yerinde olup olmadığını umursamaz.				
4.	Çocuğum bir film karakteri öldüğünde ağlamaz veya üzülmez.				
5.	Çocuğum bazı şeyleri düzenlemekten keyif alır (Örn. Çiçekler, kitaplar, koleksiyonlar)				
6.	Çocuğum insanlar şaka yaptığında, bunu hemen anlar.				
7.	Çocuğum kurtçukları kesmek veya böceklerin bacaklarını çekmekten hoşlanır.				
8.	Çocuğum spesifik hayvan kategorilerinin farklı üyeleri ile ilgilidir (Örn. Dinazor türleri, böcekler gibi)				
9.	Çocuğumun kardeşinden veya arkadaşından istediği bir şeyi çaldığı oldu.				
10.	Çocuğum değişik araç türlerinden hoşlanır (Örn. Araba markaları, uçaklar, trenler gibi)				

11.	Çocuğum düzenli şekilde birşeyleri sıralamak için uzun zaman harcamaz (oyuncak askerler, hayvanlar, arabalar gibi)				
12.	Eğer bir lego ya da Meccano modeli inşa edilecekse, çocuğum oyuncaklara dalmak yerine nasıl yapıldığının anlatıldığı kılavuza bakmayı tercih eder				
13.	Çocuğumun arkadaşlık etmek konusunda sorunları var.				
14.	Diğer çocuklar ile oynarken çocuğum spontan biçimde sıra alır ve oyuncaklarını paylaşır.				
15.	Çocuğum kurgu öyküler, kitaplar, filmler vb. tercih eder.				
16.	Çocuğumun odası derli toplu olmaktan çok danığınık haldedir.				
17.	Çocuğum, bu başkasını üzecek olsa bile, düşüncelerini ifade etme konusunda açık sözlüdür.				
18.	Çocuğum bir ev hayvanına bakmaktan hoşlanır				
19.	Çocuğum birşeyler biriktirmekten hoşlanır (Örn. çıkartmalar, kartlar, tasolar vs.)				
20.	Çocuğum sık sık farkında olmadan kabalık eder.				
21.	Çocuğum değişik renkler elde etmek için renkleri nasıl karıştırması gerektiğini bilir.				
22.	Çocuğum evde birşey değiştiyse veya yeri değiştirildiyse bunu fark etmez				
23.	Çocuğumun okulda diğer çocukların tartaklamalarına maruz kaldığı oldu.				

24.	Çocuğum kuralları belirgin fiziksel aktivitelerden hoşlanır (savaş sanatları, jimnastik, bale gibi)				
25.	Çocuğum video veya DVD oynatıcı gibi aletlerin nasıl çalıştığını ve özelliklerini kolayca öğrenir				
26.	Çocuğum okulda bir konuyu anladığında bunu kolayca başkalarına aktarabilir.				
27.	Çocuğum en sevdiği 5 şarkı veya filmi sıralı şekilde söylemekte zorlanır.				
28.	Çocuğumun bir çok arkadaşı olmasının yanında bir iki tane de yakın arkadaşı vardır.				
29.	Çocuğum matematikte sayıların bir örüntü oluşturduğunu kolayca anlayabilir				
30.	Çocuğum kendisininkilerden farklı olsalar bile diğerlerinin düşüncelerini dinler				
31.	Başkaları üzüldüğünde çocuğum onlara ilgi gösterir				
32.	Çocuğum makinelerin nasıl çalıştığı anlamakla ilgilenmez (ör. Kamera, trafik lambaları, tv vb.)				
33.	Çocuğum kendi düşünceleri ile o kadar meşguldür ki diğerlerinin sıkıldığını fark etmez				
34.	Çocuğum değişmez kuralları olan oyunları oynamaktan hoşlanır (Satranç, domino gibi)				
35.	Çocuğum bazı şeyler zamanında yapılmadığında rahatsız olur				
36.	Çocuğum bazen kendi yaptığı şeyler için diğer çocukları suçlar				
37.	Çocuğum bir hayvanın acı çektiğini görürse çok üzülür				

38.	Çocuğum bilgisayar oyunlarının en son modellerini bilir (Örn. X-box, playstation gibi)				
39.	Çocuğum ilgilendiği konular ile ilgili geniş bilgiye sahiptir (Örn. Ülkeler, bayraklar, futbol takımları, müzik grupları gibi)				
40.	Çocuğum biri onu rahatsız ediyorsa bazen onu çimdikler veya iter				

		Kesinlikle katılıyorum	Biraz katılıyorum	Biraz katılmıyorum	Kesinlikle katılmıyorum
41.	Çocuğum bir gezide haritadaki belilenmiş rotayı takip etmekten hoşlanır				
42.	Çocuğum kolaylıkla diğer insanların kendisi ile bir konuşmaya girmeyi isteyip istemediği anlar				
43.	Çocuğum istediği birşey için iyi pazarlık eder				
44.	Çocuğum birşeylerin listesini yapmaktan hoşlanır (en sevdiği oyuncaklar, TV programları gibi)				
45.	Çocuğum bir oyuna veya doğum gününe çağırılmadıklarında diğer çocukların nasıl hissedecekleri hakkında endişelenir				
46.	Çocuğum sevdiği aktivitelerin belli alanlarında ustalaşmak için zaman harcamaktan keyif alır (Örn. Yoyo numarası, futbol ya da bale figure gibi)				

47.	Çocuğum bilgilsayar kullanmakta zorlanır				
48.	Çocuğum diğerlerini ağlarken ya da acı çekerken görürse üzülür				
49.	Çocuğumun bir yapıştırma albümü varsa tamamlayana kadar rahat etmez				
50.	Çocuğum organize rutinleri olan aktivitelerden hoşlanır				
51.	Çocuğum, güne ait planlanmış saatleri bilmez veya bunu bilmeye gayret etmez				
52.	Çocuğum sınıfa yeni gelmiş çocukların sınıfa alışmasına yardımcı olur				
53.	Çocuğuma isim takıldığı ya da alay edildiği için sorun yaşadığı oldu				
54.	Çocuğum bulmaca tamamlamaktan hoşlanmaz (kare, çengel, sözcük bulma vs.)				
55.	Çocuğum istediği şeyi elde etmek için fiziksel saldırganlık göstermeye eğilimlidir.				

APPENDIX J

The Eyes Test

First Page

alıştırma

kıskanmış

korkmuş

rahatlamış

nefret ediyor

APPENDIX K

Basic Empathy Scale

1= Kesinlikle katılmıyorum
2= Katılmıyorum
3= Ne katılıyorum ne katılmıyorum
4= Katılıyorum
5= Kesinlikle katılıyorum

	1	2	3	4	5
1) Arkadaşımın duyguları beni pek etkilemez.					
2) Üzgün olan bir arkadaşımla vakit geçirdikten sonra genellikle üzgün hissederim.					
3) Arkadaşım başarılı olduğunda onun ne kadar mutlu olduğunu anlayabilirim.					
4) İyi bir korku filmindeki karakterleri izleyince korkarım.					
5) Başkalarının duygularından hemen etkilenirim.					
6) Arkadaşlarımın korktuğunu anlamakta güçlük çekerim.					
7) Başka insanları ağlarken gördüğümde üzülmem.					
8) Başka insanların ne hissettikleri beni çok fazla ilgilendirmez.					
9) Birisi kendini kötü hissettiğinde onun neler hissettiğini genellikle anlayabilirim.					
10) Arkadaşlarımın korktuğunu genellikle anlarım.					
11) Televizyonda ya da filmlerde üzüntülü bir şeyler izlerken çoğunlukla ben de üzülürüm.					
12) İnsanların ne hissettiğini çoğunlukla onlar bana söylemeden anlayabilirim.					
13) Kızgın birini görmek hislerimi etkilemez.					
14) İnsanların neşeli olduğunu genellikle anlarım.					
15) Bir şeylerden korkmuş arkadaşlarımla birlikteyken ben de korkarım.					
16) Arkadaşımın kızgın olduğunu genellikle hemen fark ederim.					
17) Arkadaşlarımın hissettiklerine çoğunlukla kendimi kaptırırım.					
18) Arkadaşımın mutsuzluğu bana hiçbir şey hissettirmez.					
19) Arkadaşımın hissettiklerinin genellikle farkında değilimdir.					
20) Arkadaşlarımın mutlu oldukları anları anlamakta zorlanırım.					

CURRICULUM VITAE

Personal Information:

Name - Surname: Dilruba Sönmez

E-mail (1): dilruba.sonmez@ibnhaldun.edu.tr

E-mail (2): dilrubasonmez@gmail.com

Education:

2013-2018 BA in Psychology, Istanbul Sehir University, Turkey

2018-Present MA in Clinical Psychology, Ibn Haldun University, Turkey

Experience:

2019 Ibn Haldun University and ONDER, Istanbul Turkey

Project Assistant: Psychoeducation Project of Test Anxiety in Senior Year Student in High School.

Principle Investigator: Burcu Uysal, PhD., Vahdet Gormez, MD., Hasan Turan Karatepe, MD.

2019 Ibn Haldun University and Turkish Red Crescent, Istanbul Turkey

Project Assistant, Turkish Red Crescent

Principle Investigator: Vahdet Gormez, MD., Burcu Uysal, PhD., Alperen Bikmazer, MD.

2019 Ibn Haldun University, Istanbul, Turkey.

Clinical Psychology Internship, Psychotherapy and Research Center of Ibn Haldun University

---

2018 Istanbul Şehir University, İstanbul, Turkey.

Undergraduate Teaching Assistant, Introduction to Psychology

Professor: Reyyan Bilge, PhD.

2017-2018 Istanbul Şehir University, İstanbul, Turkey.

Undergraduate Teaching Assistant, Adolescent Psychology

Professor: Fatima Tuba Yaylaci, PhD.

2017-2018 Istabul Şehir University, İstanbul, Turkey.
Mentorship Program, Mentor

2017 -2018 Boğaziçi University and Istanbul Şehir University, Istanbul, Turkey.
Undergraduate Research Assistant, Cognitive Psychology Laboratory
Principle Investigator: Ali Tekcan, PhD., Aysecan Boduroğlu, PhD. & Reyyan Bilge, PhD.

2017 Istanbul University School of Medicine, İstanbul, Turkey.
Clinical Intern
Supervisor: Vehbi Alp Üçok, MD.

2016-2017 Istanbul Şehir University, Istanbul, Turkey.
Undergraduate Research Assistant, Cognitive and Developmental Psychology Laboratory.
Principle Investigator: Reyyan Bilge, PhD. & Fatıma Tuba Yaylacı, PhD.

2015-2016 Istanbul Şehir University, Istanbul, Turkey.
Undergraduate Research Assistant, Cognitive Psychology Laboratory
Principle Investigator: Reyyan Bilge, PhD.

2015 Istanbul University, Istanbul, Turkey.
Volunteer Assistant, Child's University Project.
Director: Yaşar Bülbül, PhD.