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Coming Out of the Shadows: Understanding Autism in Korean Culture

Yoojin Kim

A thesis submitted to the faculty of
Brigham Young University
in partial fulfillment of the requirements for the degree of
Educational Specialist

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ABSTRACT

Coming Out of the Shadows: Understanding Autism in Korean Culture

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Culture affects how the symptoms of Autism Spectrum Disorder (ASD) are perceived and addressed, and Korean culture has been affecting how individuals with ASD are perceived, diagnosed and treated in Korea, specifically the Republic of Korea. Stigmas about individuals with ASD have historically existed in Korean culture, and those stigmas have been affecting the diagnosis and social environment of individuals with ASD. Recent changes have been made to increase acceptance for individuals with ASD in Korea, but the literature has not yet brought this information together in a way that comprehensively portrays the current status of ASD perceptions, identification, intervention efforts, and research in Korea. We conducted a systematic review of American and Korean literature, and to add popular perspective, we also searched news articles that show the recent changes of the general environment for individuals with ASD in Korea and included 12 of them. A few general characteristics of the articles and findings were made into tables and a narrative synthesis was used to summarize the key findings of the research articles and the news articles. Results show there have been some positive changes improving education, diagnosis and treatment for individuals with ASD in Korea and there are a number of ASD research studies from Korea that were not published in English. While the majority of Korean language articles focused on ASD education and treatment, the majority of English articles focused on cultural impact, social perspectives, and diagnostic or screening tools for Korean people. Even with positive efforts of the government and researchers however, social stigmas Korean people have toward individuals with ASD are still affecting individuals with ASD and their families in Korea and in Korean immigrants to the USA. More education about understanding ASD in education or community settings for Korean people may further improve lives for individuals with ASD and their families.

Keywords: autism spectrum disorder, Korea, special education, diagnosis, treatment, stigma

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CHAPTER 1

Introduction

Autism Spectrum Disorder (ASD) is a neurodevelopmental disorder, which is characterized by persistent deficits in social communication and social interaction across multiple contexts. It is also characterized by restricted, repeated patterns of behavior, interests, or activities (American Psychiatric Association [APA], 2013). The symptoms of ASD have been shown to be similar across cultures (Kang-Yi et al., 2013), but the way symptoms are interpreted can vary among different cultures (Bernier et al. 2010; Daley, 2002; Kang-Yi et al., 2013). The way ASD is interpreted could be more influenced by culture than other disabilities since its cause is not clear and its diagnosis is based on behavioral norms which can be different in different cultures (Deweerd, 2012; Ravindran & Myers, 2012). Cultural differences not only affect how social behaviors are viewed or valued, they also affect the social environment of individuals with ASD. These social environment differences include, but are not limited to, the meanings that people give to ASD, whether or not parents of children with ASD seek help, what types of help or support are available, how much stigma exists in a community for people with ASD, and interactions between caregivers of individuals with ASD and health care systems (Grinker et al., 2011; Bernier et al., 2010; Daley, 2002). Studying how each culture influences the individuals with ASD and their families can lead to culturally sensitive evaluation methods (Kang-Yi et al., 2013), which may lead to more effective treatment.

Cultural Differences and Barriers for Autism

Korean culture in the 20th and 21st centuries illustrates how culture can have an impact on the recognition and treatment of ASD. For example, one of the ways Korean children manifest symptoms of ASD is that they misuse honorific language in talking to other people

(e.g., a younger sibling; Grinker, 2008; Kang-Yi et al., 2013). Therefore, one symptom of ASD can be identified in a clinical assessment or a screening instrument with questions about proper use of honorifics (Grinker et al., 2011; Kang-Yi et al., 2013). This is an example of an element of assessment relevant to a specific culture or language that is not found in assessment measures for ASD that were first developed in English. It is critical to have culturally informed research on ASD in countries where ASD is stigmatized or misdiagnosed to increase the awareness of the need for educational services (Kang-Yi et al., 2013) for children with ASD. However, ASD research that has been done among Korean populations is considerably limited compared to the amount of research conducted in North American and European countries (Grinker et al., 2012). The general body of autism research, therefore, may not represent experiences of families and individuals with autism in Korean culture.

Purposes of the Study

The purposes of this study were to find any changes in how Korean culture affects individuals with ASD in Korea since 2012 and reduce the gap between the knowledge American ASD researchers have about individuals with ASD in Korea and what has been found about individuals with ASD in Korea since 2012.

Research Questions

To achieve our goals, we answered the following research questions:

1. What recent research on policies and education for individuals with autism in Korea exists?
2. What recent research on identification of autism in Korea exists?
3. What recent research on treatment options for individuals with autism in Korea exists?

4. What are the recent changes in public perception that have occurred for individuals with ASD in Korea?

CHAPTER 2

Review of Literature and Background

Although Kang-Yi et al. (2013) argued that “early childhood development and interventions...must be understood within cultural context,” (p. 518), for “identification, description, and treatment of ASD in Korean populations,” (p. 504), there was little research on ASD in Korea until 2004. In this discussion, reference to events and research taking place in Korea will refer to the Republic of Korea specifically. Most of the Korean language literature about autism was published after 2004 in the Republic of Korea, and ASD research among Korean populations had not been developed much in the context of Korean culture until as late as 2011. The first epidemiological study of ASD in Korea was done in 2011, and its results indicated that the prevalence of children between 7 and 12 years old with ASD in Korea was 1 in 39, which was the highest ASD prevalence that had been reported across the world at the time (Y. S. Kim et al., 2011). The prevalence is still high when it is compared to the prevalence of children with ASD in the United States, which was 1 in 54 in 2020 (Maenner et al., 2020). Even though the prevalence of children with ASD was reported to be high in Korea, it was found that two-thirds of children who were between 7 and 12 years old identified in the prevalence study with ASD were not previously diagnosed, and were typically in general classrooms without any special education services. The researchers argued that it was possible that the lower diagnosis rate of ASD in Korea prior to the epidemiological study has been influenced by its culture and Korean people’s perspective on ASD (Y. S. Kim et al., 2011). The findings from this empirical research have been drawing a lot of attention (Pantelis & Kennedy, 2016), and the accuracy of the ASD prevalence rate of Korea found in the 2011 study has been questioned by other researchers. Those researchers revisited Korea and reconstructed methodology of the empirical

study of Y. S. Kim et al. (2011). They concluded that the assumptions of the original study were uncertain, and the confidence interval reported in the study was artificially narrow. The revisited study of ASD prevalence in Korea estimated an even higher rate of ASD, which was 1 in 30, but the researchers were not sure if their estimation was any more accurate than the original study (Pantelis & Kennedy, 2016). Young Shin Kim, who is the first author of the original study, also mentioned that the high prevalence of ASD in Korea may have been due to new in-depth assessment methods that have not been as common in other prevalence studies (including the United States). This makes it hard to conclude that Korea has a higher ASD prevalence than other countries, but the results indicate that the ASD prevalence in Korea was higher than what researchers may have estimated (Byeon, 2011). According to the Korea Ministry of Education, the officially recognized prevalence of children with ASD was 1 in 795 in 2015 and its number dramatically increases every year (Korea Ministry of Education, 2015; J. K. Lee & Chiang, 2018). The gap between the estimated rate of children with ASD between the epidemiological study (Y. S. Kim et al., 2011) and the Korea Ministry of Education could be due to multiple factors which may include methodology, screening instruments used, and response bias (Pantelis & Kennedy, 2016).

Current Perspectives

To gain a current perspective from clinicians in the field, we conducted an interview with Hee-Jeong Yoo, a child and adolescent psychiatrist at Seoul National University Hospital in Korea and the president of Seongnam City Pediatric Mental Health and Welfare Center, whose research includes pervasive developmental disorders, with a special interest in social deficits in high-functioning autism and Asperger's disorder and the genetics of autism-spectrum disorders. Dr. Yoo also claimed that the stigma Korean people have regarding individuals with ASD,

particularly in the past, may have influenced many parents to refuse diagnosis or to become upset about getting the diagnosis of ASD for their child, and some professionals may not have historically given children an accurate diagnosis of ASD so as not to upset the parents. For example, professionals may use ambiguous terms in diagnosing individuals with ASD such as “autistic tendency” or tell the parents that their child is “on the border” of ASD symptoms when the child actually has significant ASD or they tell the parents that the symptom severity for their child is mild when it is actually moderate or severe (H. Yoo, personal communication, November 1, 2017). The practice of giving inaccurate diagnoses to the parents of individuals with ASD appears to be an aspect of Korean culture, stigmas and stereotypes Korean people have about individuals with ASD. The inaccurate diagnosis may be more important, culturally, than accurate identification of the disorder.

Stigmas About Children with ASD in Korea

According to Dr. Yoo, many Korean people tend to have stigmas toward children with ASD, and they tend to think a disability is something that makes a family suffer. There may be a tendency to imagine a sad mom and unhelpful dad when they think about a family with a child with disabilities. Since many people do not have an opportunity to observe or interact with individuals with ASD in person, they tend to have preconceptions about individuals with ASD based on depictions in TV dramas or movies. However, the media portrayals may include only individuals with low functioning ASD or individuals with ASD who have an extraordinary skill, so many people in Korea tend to believe that individuals with ASD are either those who cannot function daily without the caregiver’s help or oddly genius people (H. Yoo, personal communication, November 1, 2017). For example, there was a popular Korean movie, “Marathon” (2012), whose main character was a male adult with ASD and the movie depicted

that the main character was so dependent that it caused family conflicts between the mother and a younger sibling of the main character and the mother got in trouble because of the main character's misbehavior related to his disability in public. There were other popular movies in Korea having a character with ASD, and they all portray ASD as having low intelligence, being dependent and making troubles for the family (H. Yoo, personal communication, November 1, 2017). Influenced by these stigmas or preconceptions, many Korean parents who have a child with ASD do not want others to know about their child's abnormal development. Dr. Yoo believes that Korean parents with children who have ASD tend to think that revealing the fact that their child has ASD to other people will cause more discrimination and exclusion for their child caused by the cultural stigma (H. Yoo, personal communication, November 1, 2017) and there will be limitations in their child's future as a result (Grinker et al., 2012).

False Beliefs About Causes of ASD

The word "*Ja pye*," which means ASD in Korean, literally means "someone who is closed to oneself" or "someone who cannot take care of oneself," and the impression this word gives to people cannot be ignored as a factor in the cultural perceptions of ASD (H. Yoo, personal communication, November 1, 2017). One of the stigmas or false beliefs about individuals with ASD is that some people believe that ASD is somehow caused by parents or the environment. Even though parents in Korea have access to information that ASD is a disorder just like other physical disorders and it is not caused by parents' fault or environment, some of them do not seem to accept it fully and still perceive that having a child with a disability is a shame on the family (H. Yoo, personal communication, Nov 1, 2017) There is a stigma about mothers of individuals with ASD which is the misconception that the mother's prenatal care or postnatal nutrition can also cause ASD (Grinker et al., 2012).

Education

Education for children with ASD is also an area of concern in Korea. Even though there are special schools and special classes in some mainstream schools, they are mostly not specialized for individuals with ASD or developmental disabilities. In many cases, individuals with ASD share the same special classroom with individuals with other disabilities such as individuals with visual or hearing impairment and they do not receive specialized education or treatment for their disability (H. Yoo, personal communication, November 1, 2017). Moreover, special schools usually do not accept moderately affected or children with ASD who have age-appropriate cognitive and language abilities. Education in special schools is usually limited to children more severely affected with ASD (H. Yoo, personal communication, November 1, 2017).

Religious Beliefs

In addition, Korean culture is strongly influenced by Buddhism and Confucianism, which also engenders stigma about children with ASD. One of the beliefs of Buddhism is that the way someone is born is the result of what they did in their previous lives (Chen et al., 2004; Yoo & Palley, 2014), so children with a disability can be judged as being punished for the sins of their previous lives. Confucianism also affects people's beliefs, viewing individuals with ASD as having something that brings disharmony to the family, and having a child with a disability is a shame on the family (Chen et al., 2004; Yoo & Palley, 2014), which can cause more concerns and stigma about having a child with ASD.

Fears for the Future

There is also a stigma about children with ASD that affects the child throughout their lifetime. Korean parents may believe that their child with ASD cannot get into a good university,

get a job or be married if their child is known to have ASD, so many of them do not want their child to be diagnosed with ASD even though they may suspect or even know that they have it. Grinker et al. (2012) conducted a focus group with parents of individuals with ASD and found out that many of the parents wanted to keep their child's condition confidential. Participants also told the researchers that they would rather have their child evaluated and diagnosed by the study researchers than by the Korean national health care system. Their reasoning was because they believe that getting a diagnosis from the Korean national health care system would create a record that their child has ASD, but that researchers can keep the results confidential (Grinker et al., 2012). This may also explain the discrepancy between the government-reported prevalence and the number of children identified in the independent prevalence research study.

Labeling

As the Grinker et al. (2012) data show, Korean parents who have children with ASD often wish to avoid their children being labeled as having ASD and many of them want to put their child in a different category other than ASD such as "border[line] children." As long as the child can perform at or near their grade level at school, the parents want to categorize their individuals as "border[line] children." In this way, they can prevent their children from being labeled as having ASD, which is a lifelong disability, preferring that others perceive them as having a mere deficit in social and communication skills which can be improved and cured (Grinker et al., 2012). Moreover, children with ASD are sometimes misdiagnosed with reactive attachment disorder (RAD), but the parents prefer this diagnosis to ASD even though this diagnosis may blame the mother as the cause of the disorder (Kang-Yi et al., 2013). The reasons why they prefer getting diagnosed as RAD vs. ASD include that RAD is not a permanent disorder so it is curable and it is not a genetic condition, which can stigmatize the whole family

and “negatively influence the marriage prospects of an autistic person’s relatives” (Kang-Yi et al., 2013, p. 517). Both the stigmas about the individuals with ASD and the concept of “border[line] children” and preferring a diagnosis of RAD to avoid the diagnosis of ASD may explain the historically lower diagnosis rate of individuals with ASD in Korea. The stigmas even make the parents upset when a teacher from an educational institution tells the parents that their child may have ASD and refers them to go see a psychiatrist (H. Yoo, personal communication, November 1, 2017). Stigmas toward children with ASD may not only affect the accuracy of the diagnosis rate of children with ASD in Korea, but also may affect families with a child with ASD, prompting them to leave the country for a better environment for education (Kang-Yi et al., 2013).

Immigration of Individuals with ASD and Their Families

With the difficulties that the individuals with ASD and their families are facing in Korea, there are some parents of children with ASD who decide to move to Europe or North America hoping to receive better education and care for their children (Kang-Yi et al., 2013). Korea does not have enough formal support systems for children with disabilities, so it is hard for the families with a child who has a disability to receive appropriate resources even after their child is diagnosed with ASD (Kang-Yi et al., 2013). On the other hand, North America, especially the United States, is a country that is recognized as a relative “paradise” for individuals with disabilities, with well-structured special education programs, so parents of children with disabilities in Korea may immigrate to the States. These parents expect that they can avoid the stigmatization Korean people have about their children with disabilities and receive a more advanced educational environment and societal support living in the States (K. Han et al., 2014; Moon & Kang, 2006).

There was one study that compared the experience of Korean mothers of children with disabilities living in Korea with Korean mothers who immigrated to the United States, and it was found that Korean mothers in Korea experience more distress and more frequent shame in public related to their child's problematic behaviors than Korean mothers in the United States (S. Cho et al., 2003). One of the factors that made the difference between the two groups was that members of the general public in the United States have better knowledge and understanding of individuals with disabilities than members of the general public in Korea (S. Cho et al., 2003). Moreover, the education system in the States is guided by legislation such as the Individuals with Disabilities Education Act (IDEA, 2004) to provide individuals with disabilities free and appropriate public education in the least restrictive environment, along with the Americans with Disabilities Act (ADA, 1990) to prevent individuals with disabilities from being discriminated against (S. Cho et al., 2003). The Special Education Promotion Act was made into law in Korea in 1977 (Korea Ministry of Government Legislation, 1977) and was discontinued as legislation entitled Special Education Laws for Persons with Disabilities and Others was made in 2007 (Korea Ministry of Government Legislation, 2007) as the first special education law, and this law was created to provide free public education. In 2012, free public education was expanded to kindergartens and high schools (H. U. Kim, 2012). In 2009, the Koreans with Disabilities Act, which resembles the Americans Disabilities Act (ADA), was enacted. However, more than 50% of people with disabilities answered in a survey that they did not know about this law and about half of people in Korea without disabilities answered that they were not aware of this law (H. U. Kim, 2012; M. Kang, 2010). The results of the survey indicate that the law (enacted to protect people with disabilities) needs to be promoted more to the public to make it more practical and useful.

Parents (mothers) immigrating from Korea to the US were also able to receive support and advice from multiple sources such as special educators, school psychologists, and home-based service providers, whereas mothers in Korea receive support only from special education teachers (S. Cho et al., 2003). Overall, Korean mothers of children with disabilities in the US have more positive experiences related to their child's disabilities from the public than those living in Korea (S. Cho et al., 2003). The results of the study indicate that some improvements need to be made in the Korean society and educational system in order to better support families who have a child with ASD.

Prevalence of Non-Evidence Based Treatments

Improvements are needed not only in societal and educational systems, but also in the way parents choose treatments for their children with ASD. Dr. Yoo expressed her concern about non-evidence-based treatments that are commercialized and are prevalent in Korea. For example, oriental medical treatments and acupuncture are not evidence-based treatments for ASD yet, but there are some treatment centers in Korea that claim that they can treat children with ASD by balancing left and right hemispheres in the brain of children with ASD. Some even assert that they can completely heal ASD. Even though those treatments are not evidence-based, parents of children with ASD try out their treatments since their claim seems so strong and hopeful and the parents are desperate for help (H. Yoo, personal communication, November 1, 2017). Dr. Yoo believes that the general public needs better information about what an evidence-based treatment is, and it is the job of the professionals to inform the parents of the importance of receiving evidence-based treatment (H. Yoo, personal communication, November 1, 2017).

According to Dr. Yoo, there has been a positive change in the attitude of young parents of a child with ASD towards their child's disability these days compared attitudes of parents in the

past, but no comprehensive research has been conducted on the recent changes of the environment for the child with ASD in Korea since 2012. Kang-Yi et al. (2013), reviewed more than 1,000 abstracts and 27 full articles in English and Korean literature about Korean culture and ASD published between 1994 and 2011, finding how Korean culture has influenced children with ASD in Korea. Since the most recent systematic review published in 2013 by Kang-Yi et al., there may be changes in the way individuals with autism are perceived and treated in Korean culture. In addition, Dr. Yoo mentioned that more research has been done in Korea about Korean individuals with Autism, but this research may not be accessible by American researchers since these studies are published in Korean or are not published in international journals (H. Yoo, personal communication, November 1, 2017). Having little research published internationally makes it difficult for American researchers to understand that Korea does not have well-developed diagnosis systems and treatment, and Dr. Yoo has called for more studies to help American researchers work together with Korean populations to break the misunderstanding about Korean research on ASD (H. Yoo, personal communication, January 14, 2018). We intend this research to provide information that can be used to promote a better environment and societal system for children with ASD in Korea and in helping American researchers understand the current status of Korean research on individuals with ASD with the aim of potentially collaborating with Korean researchers, clinicians and educators.

CHAPTER 3

Method

Search Strategy

PsycInfo and Google Scholar databases were used for English literature and some Korean databases such as DBPia (DataBase Periodical Information Academic), Koreanstudies Information Service System (KISS) and Research Information Sharing Service (RISS) were searched for Korean language literature. The search terms were: “(Korea* or Korean*) AND (ASD or Autis* or “autism spectrum disorder”* or “developmental disability” or “developmental disorder”).

Inclusion and Exclusion Criteria for Scientific Literature Review

We included articles based on following criteria:

- The article must be about Autism in the Korean population.
- The article was published between 2012 and 2019.
- The article reflects the current status of the societal influence on children with Autism.
- Scientific articles need to be peer-reviewed (see below for explanation of news articles).

Data Extraction and Analysis

Two data extraction tables summarize the scientific literature data. One includes findings from the U.S. databases, and the other shows findings from Korean databases. The general characteristics of each study and findings is recorded in the tables. The characteristics of interest include: (a) author(s), (b) year of publication, (c) study topic, (d) number of participants, (e) gender of participants, (f) age of participants, (g) study methods, (h) outcomes measured and (i)

key findings. A narrative synthesis was used to summarize the key findings of eligible studies and news articles. All results (including studies published only in Korean) were analyzed and reported on in English. The author is a native Korean speaker who currently lives in the United States and is fluent in both languages.

News Articles

To supplement and contextualize the scientific findings, analysis of current events is also included. News articles published between 2012 and 2019 were also included in research to show changes in perception and culture in recent years for individuals with ASD in Korea. The news articles were searched using Korean websites, Naver.com and Nate.com. The keywords for searching for news articles were the Korean language equivalents for “ASD,” “Developmental disability,” “ASD law,” and “Special Schools.” The news articles were examined for themes and seminal events. All seminal events (e.g., legislation) are reported in summary form. Key information and keywords emerging from new articles were reported. Results are reported in English.

CHAPTER 4

Results

There were 22 English and 24 Korean research articles selected and analyzed (See Tables 1, 2, & 3). Of the 22 articles in English, most were about cultural impact/social perspectives on ASD, and diagnosis/screening tools for Korean people, with some about treatment/interventions, and only one about ASD education. In contrast, of the 24 articles in Korean, some were about cultural impact/social perspective on ASD, one was about diagnosis/screening tools for Korean people, most were about treatment/interventions and ASD education.

Education for Children with ASD in Korea

In Korea it is mandatory that all children are educated in mainstream schools unless they have severe disabilities, since a law for integrated education was passed in 1994 (Kang-Yi et al, 2013). Children with ASD who are moderately affected or who have age appropriate cognitive and language abilities usually get their education in mainstream schools, and most of those schools do not have special education services (Kang-Yi et al., 2013). Although the purpose of integrated education between students with and without disabilities was to protect educational rights of students with and without disabilities, lack of manpower and measures necessary for embracing various types of disability have proven to be obstacles to ideal implementation (H. Lee, 2016). Lack of specialized training for education professionals regarding individuals with ASD is also a problem. There are about 18,000 special education teachers for about 88,000 students with disabilities, meaning that one special education teacher takes care of 4.8 students with disabilities on average. Even though special education teachers have received education for individuals with ASD, the amount of knowledge about ASD may differ among teachers (H. Yoo, personal communication, November 1, 2017).

Table 1*Comparison of Topics in Scientific Literature Review, n (%)*

Topic	In English	In Korean
Cultural impacts or social perspectives	8 (36)	4 (17)
Diagnostic and screening instrument for Korean people	8 (36)	1 (4)
Treatments and interventions	5 (23)	9 (38)
Autism education	1 (5)	10 (42)
Total articles reviewed	22 (100)	24 (100)

Inclusive Education

Recently, the Korean education system has been adopting more inclusive education policies and practices (K. H. Kim, 2014). Special education laws for persons with disabilities and others issued in 2007 provide a more specific way of supporting inclusive education, with the general education classroom as the priority for students with disabilities when assigning their placement in school (S.-O. Kwon, 2018). The number of students with a disability who receive education in general education settings has increased each year since then (S.-O. Kwon, 2018). In inclusive education, parents with disabilities and teachers have historically needed to work cooperatively to make education successful for children with ASD. However, the cooperative system between parents with children with disabilities and teachers may still be deficient (Ha & Seo, 2010; K. H. Kim, 2014), and some mothers of children with ASD reported in research that inclusive education tends to have less resources and systematic support than special schools.

Table 2*Description of Studies Included in the Review of English Literature*

Authors	Topic & Type	n, Site	Female %, Age	Study Methods	Outcome measures	Findings
K.-M. Chung et al. (2012)	Cross cultural differences in challenging behaviors of children with ASD between Israel, South Korea, United Kingdom (UK), and USA	285 Israel, South Korea (n=54) UK and USA	NS 2-16 years old	Cross-cultural validity study	<i>Autism Spectrum Disorders-Behavior Problems for Children (ASD-BPC; Matson & González, 2007)</i> was given to participants. The ASD-PBC contains 18 items assessing challenging behaviors in children with autistic disorder.	Very few differences between the US and both South Korea and Israel in the presence and severity of challenging behaviors. When differences did exist, the US had higher endorsement of both presence and severity. These behaviors typically fell along the externalizing behaviors factor.
Grinker et al. (2012)	Description of process used to engage diverse communities in ASD research in two community-based research projects: epidemiologic investigation in South Korea and the early Autism project in South Africa (So. Afr.)	36,866 So. Afr. & South Korea So. Afr. n=NS	NS 7-12 years old (Korea) 18 - 36 months old (So. Afr.)	Empirical epidemiology study (Korea)	Autism Spectrum Screening Questionnaire (ASSQ), Autism Diagnostic Interview—Revised (ADI-R), and Autism Diagnostic Observation Schedule (ADOS) for Korean children were administered, and then a team of American and Korean diagnosticians validated all final clinical diagnoses	ASD is underdiagnosed in South Korea and South Africa and generally not reported in clinical or educational records and there is low availability of services. In both cases, local knowledge helped researchers to address both ethnographic and practical problems.
J. L. Matson et al. (2012)	Cross cultural differences of parents reported social skills in	147 South Korea (49)	20.4% (Korea) 23.5% (US)	Cross-Cultural Comparison Study	Scores on the three subscales of the Matson Evaluation of Social Skills with Youngsters, Second Edition (MESSY-II) were compared between	Children and adolescents from the USA had significantly more reported inappropriate social skills but they also had

Authors	Topic & Type	<i>n</i> , Site	Female %, Age	Study Methods	Outcome measures	Findings
	children with ASD between South Korea and the USA	USA (98)	2-16 (Korea) 3-16 (US)		participants from South Korea or the USA	significantly more reported appropriate and adaptive social skills when compared to those from South Korea.
K.-M. Chung & Park (2013).	Validity and reliability of the Korean Version of ASD-Diagnostic for Children (ASD-DC).	556 South Korea	100% NS Children were 2-16 years old	Validation study	Mothers of children with Autism spectrum disorders ($N = 333$) and mothers of typically developing children ($N = 223$) ages from 2 to 16 years completed the ASD-DC (Matson et al., 2008).	The ASD-DC was found to have high internal consistency and test-retest reliability. Discriminant validity was demonstrated by mean differences between ASD and control group. High correlations between several subscales of ASD-DC and Social Communication Questionnaire (SCQ) were found, showing concurrent validity.
H. Yoo et al. (2014)	To examine the feasibility and treatment efficacy of a Korean version of PEERS® for enhancing social skills of Korean adolescents with ASD.	47 South Korea	6% 12-18 years old	Empirical study	Randomized controlled trial (RCT) with 14 weeks of treatment using Korean version of the PEERS® for Target group (TG) and Control Group (CG). Primary outcome measures (self-report and caregiver-rated questionnaires) quantifying social ability and problems directly related to ASD were used, and direct observation of teens using the ADOS, scales for depressive symptoms, anxiety, and other behavioral problems were also measured before the first and last treatments of the sessions and three months after the intervention.	The PEERS® social skills intervention appears to be efficacious for teens with ASD in Korea with modest cultural adjustment. In the study, participants receiving the PEERS® treatment showed significant improvement in social skills knowledge, interpersonal skills, and play/leisure skills, and their depressive symptoms and ASD symptoms were decreased.

Authors	Topic & Type	<i>n</i> , Site	Female %, Age	Study Methods	Outcome measures	Findings
Grinker et al. (2015)	Methodology for future cross-cultural adaptations and translations of outreach materials on ASD, using the Autism Speaks First 100 Days Kit as an exemplar	42 USA	NS NS	Qualitative Interview	Unstructured individual and group interviews were given to 19 Korean child health and education professionals (psychologists, pediatricians, teachers, and social workers) who worked in Queens, NY and had experience working with the Korean population, and 23 Korean mothers with and without children with ASD were interviewed.	The results suggest that the method can be highly efficient if employed with coherent segments of a relatively homogeneous target population and focused on a single condition such as ASD.
Seung et al. (2015)	The clinical utility and psychometric properties of the Korean Modified Checklist of Autism in Toddlers (K-M-CHAT-2).	2300 South Korea	48.3% 16 - 36 months old	Validation study	The K-M-CHAT-2 was distributed to parents and collected forms were scored by a trained research assistant with a graduate degree in Communicative Disorders in South Korea. To decrease the false-positive rate, a follow-up interview was conducted with parents of children whose initial screen results were positive for ASD.	Results show that the screen positive rate at initial screening was much higher than other studies, but the rate after follow-up was similar to the rate found in previous research utilizing the M-CHAT. It was concluded that the K-M-CHAT-2 is a useful ASD screening test when implemented with a follow-up.
Cheon et al. (2016)	To evaluate psychometric properties and cross-cultural aspects of the Social Responsiveness Scale-Korean version (K-SRS)	General sample=790 Clinical sample=154 Epidemiological sample=151 South Korea	General Sample: 48%; Clinical Sample: 23%; Epi-demiological sample:	Validity Study	The Korean version of SRS [Constantino & Gruber, 2005] (K-SRS) was completed by parents, teachers and adult caregivers. ASSQ [Ehlers, Gillberg, & Wing, 1999] were given to parents from all three study samples. The Korean-Wechsler Intelligence Scale for Children-III (K-WISC-III) was used for verbal children and Leiter International Performance Scale-	The K-SRS exhibits adequate reliability and validity for measuring ASD symptoms in Korean children with DSM-IV PDD and DSM-5 ASD.

Authors	Topic & Type	<i>n</i> , Site	Female %, Age	Study Methods	Outcome measures	Findings
			21% 7 to 12 years old		Revised was used for those children with difficulty understanding verbal instructions to measure their cognitive abilities.	
U. Chung et al. (2016)	A prosocial online game for social cognition training in adolescents with high-functioning autism	20 South Korea	15% 13-18 years old	Empirical study	Ten adolescents with high-functioning ASD received cognitive behavior therapy (CBT) using a prosocial online game (game-CBT), and another ten adolescents with high-functioning ASD received an offline-CBT. At baseline and 6 weeks later, social communication quality, correct identification of emotional words and facial emoticons, and brain activity were assessed in both groups. all ASD adolescents in both groups were evaluated using the Korean Kiddie Schedule for Affective Disorders and Schizophrenia-Present and Lifetime version (K-SADS-PL), ADOS, the Social Communication Questionnaire Current form-Korean version (SCQ-K), an activity in which they identified emotional words and facial emoticons, and fMRI.	Participants in both groups showed improvement in Social communication quality and correct response rate of emotional words and facial emoticons over the course of the intervention, and there were no significant differences between groups.
S. H. Kim et al. (2016)	To evaluate whether Asian (Korean children) populations can be validly diagnosed with	292 South Korea	27% 7 to 14 years old	Validity study	Autism Diagnostic Interview-Revised, and Autism Diagnostic Observation Schedule were used.	Using Western-based diagnostic methods, Korean children with ASD were successfully identified with moderate-to-high diagnostic validity, strong internal consistency, and

Authors	Topic & Type	<i>n</i> , Site	Female %, Age	Study Methods	Outcome measures	Findings
	autism spectrum disorder (ASD) using Western-based diagnostic instruments and criteria based on DSM-5.					convergent/concurrent validity. The results indicate that standardized diagnostic methods widely used for ASD in Western culture can be validly used as part of the assessment process and research with Koreans and, possibly, other Asians.
Pantelis & Kennedy (2016)	To reconstruct the empirical study of Kim et al. (2011) on the prevalence of ASD in South Korea.	23,234 South Korea	NS 7-12 years old	Statistical simulation replication study	The researchers reconstructed the Y. S. Kim et al. (2011) study's methodology and used Monte Carlo simulations to analyze whether their point estimate and 95% confidence interval were reasonable, given what was known about their screening instrument and sample.	The finding was that the original point estimate was highly assumption-dependent, and after accounting for additional sources of uncertainty, a more reasonable confidence interval would be approximately twice as large as originally reported.
S.-S. Yun et al. (2016)	To propose and examine the feasibility of a robot-assisted intervention system capable of facilitating social training for children with autism spectrum disorder (ASD) using human-robot interaction (HRI) architecture	8 South Korea	NS 3-5 years old	Empirical study	There was triadic interaction between a child, a therapist, and a robot for a set of 10 trials for two training elements between the child and robot in the practice part. A preliminary experiment was on the performance evaluation of eye contact recognition via an evaluation matrix of accuracy, precision, and recall was conducted. As a ground truth for eye contact rate, the researchers utilized partial interval recording, with the total observation time of the first 300 s in the child-robot interaction. As a part of the system	By examining reliable performance evaluations and the positive effect of the training process targeting preschoolers with a high functioning level ASD, it was found that HRI can induce a positive transition in the response of children with ASD.

Authors	Topic & Type	<i>n</i> , Site	Female %, Age	Study Methods	Outcome measures	Findings
					effectiveness, they examined the learning achievement of participants for instructional approach and analyzed the trial results of reading emotions by requesting the robot's facial expressions depending on each level.	
An (2017)	The effectiveness of the parent training and gauged parents' perceptions and experiences of a more family-centered approach to therapy.	4 South Korea	100% Children's age: 3-9 years old	Intervention study	Four parent-child dyads living with a child with autism participated in five months of parent training at the HOPE center. The Canadian Occupational Performance Measure was given to the parents and Six open-ended questions were used to investigate parents' perceptions and experiences of parent training.	The result of the Canadian Occupational Performance measure showed that the parent training improved the occupational performance of both children and parents. Two broad themes emerged from the open-ended questions: improved self-efficacy and the cultural reality of living with autism in Korea. The results of this study indicate that building parent training into an occupational therapy program may optimize the effectiveness of any therapy and introduce a more family-centered approach to therapy while maintaining cultural integrity.
K.-M. Chung & Jung (2017)	To figure out Validity and reliability of the Korean version of autism spectrum	560 South Korea	Children 30% Children 2-16 years old	Validity study	Mothers of children with ASD ($n = 330$) and of typically developing children ($n = 220$) aged from 2 to 16 years completed the ASD-CC. The confirmatory factor analysis (CFA) was used to figure out the	It was found that the 7-factor structure of the ASD-CC is applicable to the Korean version, its internal consistency and test-retest reliability were in either moderately good or within the

Authors	Topic & Type	<i>n</i> , Site	Female %, Age	Study Methods	Outcome measures	Findings
	disorders-comorbid for children (ASD-CC)				factor structure of the Korean version of the ASD-CC, the internal consistency and test-retest reliability were measured and the inter-correlations between the ASD-CC and the Korean Child Behavior Checklist (K-CBCL) and the ASD-CC and Korean Behavior Problem Inventory (BPI-01) were computed. In addition, the cut-off scores for 7 subscales of the ASD-CC were calculated using the Mean and Standard Deviation.	acceptable range and the discriminant validity between ASD and typically developing children was well established. These findings suggest that the Korean version of ASD-CC is a psychometrically sound instrument.
H. Kwon et al. (2017)	Identifying the optimal cut-off score of K-CARS for diagnosing individuals with high functioning ASD	329 South Korea	NS 2-19 years old	Validation Study	Participants were assessed by the Korean versions of the Autism Diagnostic Interview – Revised (K-ADI-R), Autism Diagnostic Observation Schedule (K-ADOS), and K-CARS.	It was found that using K-CARS increases a false negative error in diagnosing individuals with high-functioning autism and Asperger’s syndrome. Its cut-off scores might need re-adjustment.
S. Hwang et al. (2018)	The experiences of children with ASD as victims and/or perpetrators of bullying.	Participants with ASD=82 Comparison group=12,320 South Korea	Participants with ASD: 21% Control group: 51.3% 7-12 years old	Quantitative study	The Korean-BASC-2 Parent Rating Scale (PRS) was used to assess comorbid developmental psychopathology and bullying experiences in participating children (Reynolds & Kamphaus 2004). The Korean-BASC 2-PRS has been standardized in Korean children with adequate psychometric properties, consistent with those reported in US children (J. Song et al. 2017).	It was found that children with ASD showed significantly increased risk for bullying involvement compared to control group, after controlling for comorbid psychopathology and other demographic factors, increased risks for being perpetrators disappeared while risk for being bullied/teased continued to be significantly elevated.

Authors	Topic & Type	<i>n</i> , Site	Female %, Age	Study Methods	Outcome measures	Findings
Kang-Yi et al. (2018)	To understand how community-level cultural beliefs affect families' and professionals' care for children with autism and developmental delays in immigrant communities	13 United States	NS NS	Qualitative study	Open-ended semi-structured interviews were conducted via phone to four early childcare workers and nine church leaders in the NYC Korean-American community. Developmental Milestones, Developmental Screening Fact Sheet, Warning Signs of Autism and M-CHAT Screening Tool (Robins, Fein, & Barton, 1999), and Tips for Talking with Parents were given to the participants, and they were asked to provide feedback on the cultural appropriateness and usefulness of the outreach materials, They shared their experiences of autism and developmental delays, thoughts and opinions on facilitators and barriers to increasing awareness of autism and early intervention for children with autism, and perception of community-level response to autism and developmental delays.	It was found that discomfort, stigma and discrimination are the prevailing community attitudes toward autism and developmental disorders in the Korean-American community. Families' and professionals' understanding of autism and their care for children are affected by these community beliefs. In addition, approaching immigrant communities with general information about child development and education rather than directly talking about autism and developmental disorders is likely to engage more families and professionals in need for diagnostic evaluation and early intervention for autism.
J. Kim (2018)	The effects of a point-of-view video modeling (POV) during vegetable gardening for Korean adolescents with autism spectrum	3 South Korea	0% 13-18 years old	Intervention study	The intervention consisted of point-of-view video modeling of weeding and watering skills in gardening and (b) attending a vegetable gardening class right after watching the video modeling. A multiple probe across participants design was used to evaluate the effectiveness of the intervention	The results suggest that using a POV approach during vegetable gardening could be a desirable intervention for adolescents with ASD to teach them vocational skills in their daily environments.

Authors	Topic & Type	<i>n</i> , Site	Female %, Age	Study Methods	Outcome measures	Findings
	disorder (ASD) to improve their on-task behavior and independent task performance.					
J. K. Lee & Chiang (2018)	Parenting stress in South Korean mothers of adolescent children with ASD and the associated variables	138 South Korea	100% Ages of the children were between 10 and 19 years old	Survey	Participants were asked to complete the Stress Index for Parents of Adolescents (SIPA) (Sheras et al., 1998) which uses a five-point Likert scale for each question to measure parental stress. The Childhood Autism Rating Scale (CARS) (Schopler et al., 1988) was used to measure autism severity and Maladaptive Behavior Index (MBI) adapted from the Vineland Adaptive Behavior Scale-Second Edition (VABS-II) (Sparrow et al., 2005) was used to measure maladaptive behavior. Lastly, Demographic information was assessed using a demographic questionnaire that was designed for the purpose of this study.	Most South Korean mothers of adolescent children with ASD in this study showed higher parenting stress than others who do not have children with ASD. Parenting stress is significantly associated with the following factors: Child's maladaptive behavior, receipt of early childhood special education, age, autism severity and mother's receipt of services from mental health professionals.
S. Park, et al. (2018)	Korean adults' beliefs about and social distance toward ADHD, Tourette Syndrome and ASD.	673 South Korea	50%. 20-64 years old	Empirical	The participants' acceptance of social relationships with individuals with the disorders was measured by a modified version of the Bogardus Social Distance Scale (Bogardus, 1925), which includes six items representing the following social relationships.	No significant difference in acceptance rates living in the same street or village between the three disorders. However, when it comes to closer relationships such as friendship or marriage, participants preferred more social distance from individuals with

Authors	Topic & Type	<i>n</i> , Site	Female %, Age	Study Methods	Outcome measures	Findings
						ASD.
G. Bong et al. (2019)	The feasibility and validity of autism spectrum disorder screening instrument: Behavior development screening for toddlers (BeDevel)	155 South Korea	NS 18-42 months old	Validity study	The participants were examined through parent-reported screening questionnaires, BeDevel, and standard diagnostic assessments.	When individual items were analyzed, responses of all BeDevel-Interview items and of most BeDevel-Play items well matched actual diagnoses. The BeDevel screening results were reasonably consistent with the results of most other screening/diagnostic instruments. These results suggest that BeDevel can be a useful instrument for early screening of ASD.
E.-Y. Park & Kim (2019)	Depression and life satisfaction among parents caring for individuals with developmental disabilities in South Korea.	1045 South Korea	32.2% NS	Secondary Analysis	A secondary analysis of data from the 2011 Survey on the Actual Conditions of Individuals with Developmental Disabilities, conducted by the Korean Ministry of Health and Welfare, was performed in this study. Caregiving time, behavior problems, parental depression, and life satisfaction were measured.	The finding was that caregiving time and severity of behavior problems in individuals with developmental disabilities influenced parental life satisfaction, and these relationships were partially mediated by depression.

Note. N/A= Not Applicable; NS= Not Specified

Table 3*Description of Studies Included in the Review of Korean Literature*

Authors	Study Topic	<i>n</i> , Site	Female %, Age	Study Methods	Outcomes measured	Findings
K. M. Kim et al. (2013)	Review of Korean studies on family-centered interventions for children with ASD.	N/A South Korea	N/A N/A	Systematic Review	15 studies about family-centered interventions for children with ASD were selected and analyzed in terms of general characteristics of research and characteristics of family-centered interventions	It was found the most frequently used object of the interventions was to improve social skills and decrease problem behaviors of the participants; Most interventions involved parents and only a few involved siblings; play-focused strategies were commonly used in family-centered interventions.
Min & Kim (2013)	A literature review of interaction interventions between children with ASD and their parents.	N/A South Korea	N/A N/A	Systematic review	A systematic search of Korean literature about interaction interventions between children with ASD and their parents published between 2000 and 2012 was done, and 16 studies were reviewed in terms of 4 analytical domains and 7 specific analytical variables.	It was found that interaction interventions using play therapy was the most commonly used and most of dependent variables were about behavioral changes of parents or children in their interactions with each other. Most studies found interaction interventions to have positive effects, but fidelity or social validity were hardly measured.
J.-Y. Park & Yang	The change of coping methods of mothers with	12 South Korea	100% Children	Qualitative study; interview	In-depth interviews were done with mothers with a child with developmental disabilities about their	There are 4 periods mothers with a child with developmental disabilities go

Authors	Study Topic	<i>n</i> , Site	Female %, Age	Study Methods	Outcomes measured	Findings
(2013)	developmental disabilities based on the child's life course.		25%		nurturing experiences in four stages of child's life. The data was analyzed via objective hermeneutics.	through: Latency - explosion - rest - second explosion. In order to help mothers feel less burdened, more informative systems, parents education programs and social support systems need to be developed and implemented.
Shim & Kim (2013)	The factors affecting care stress of parents with adult children with ASD.	249 South Korea	79.5%; Average: 51 years children: 19.3% Average age 22.8 years	Survey	The survey was given to the parents of adult children with ASD. 249 survey was analyzed and the data were analyzed using the SPSS program, and frequency, t-test, anova and stepwise regression were used.	This study found that the most influential factor that affects care stress of parents with ASD is family support, and the degree of their children's disability and usage of social service provided by the government also affected the stress level of the parents.
K. M. Kim et al. (2014)	Use of various treatment modalities for individuals with ASD or mental retardation.	50 South Korea	24% Average = 14.06 years	Questionnaire	A questionnaire about the experienced modality, its duration, cost, satisfaction, etc. was distributed to the participants using 7- likert scale. The collected data was analyzed by using independent t-test and chi-square test.	The study found that 36% of children with ASD have experienced pharmacological treatment, educational-behavioral therapy and complementary alternative medicine (CAM). Pharmacological treatment has the least monthly cost and CAM was scored the lowest in satisfaction by parental report.
E. K. Kim et al. (2014)	Research trends in education for individuals with ASD in Korea.	N/A South Korea	N/A N/A	Systematic Review	146 Journal articles about education for individuals with ASD that were published between 2006 and 2014 in Korea were reviewed and analyzed to	Research related to "social communication" was the most common topic and children/elementary students

Authors	Study Topic	<i>n</i> , Site	Female %, Age	Study Methods	Outcomes measured	Findings
					find research trends of this topic.	were the most common participants.
K. H. Kim (2014)	The expectations that mothers with children with ASD have about education.	5 South Korea	100% 30s	Qualitative study; interview	Focused interviews were conducted with the participants and its results were analyzed by the constant comparative method.	This study found that mothers with children with ASD want their children to be in an inclusive education setting, but, at the same time, are concerned about possible problems by putting them in inclusive education. They also have a tendency to rely on the teachers' role in educating their children with ASD.
J. Kim (2015)	Caregiving experiences of Korean mothers who have a child with developmental disabilities.	N/A South Korea	N/A N/A	Qualitative Meta-synthesis study	A total of 19 Korean studies about caregiving experiences of mothers with a child with developmental disabilities were selected and meta-synthesized.	This study found out that caregiving experiences of mothers with a child with developmental disabilities is a life-long process of adjusting and re-adjusting to various situations, and caregiving burden and satisfaction co-exist.
M. A. Song & Lee (2015)	The perspective of general students on being in the inclusive classroom with students with ASD.	184 South Korea	57.6% Elementary school 66 Middle school 68 High school: 50	Survey	The participants completed a survey and data were analyzed by using F-test and t-test to find if there are significant differences among different variables.	This study found that general students' perception of being in the inclusive class with students with ASD is neutral. However, elementary schoolers, female students and those who received education about understanding ASD tend to have more positive

Authors	Study Topic	<i>n</i> , Site	Female %, Age	Study Methods	Outcomes measured	Findings
						perceptions than their counterparts.
Cho, S.J. (2016)	The effects of interactive instrument playing programs on social interaction of adults with ASD.	3 South Korea	0% 24 - 27 years	Multiple baseline design among single subject participants	There were 25 sessions for each participant, including baseline, intervention and maintenance sections. Intervention attempt behaviors and reaction behaviors were observed and measured based on the video data recorded in every section.	It was found that the incidence of interaction attempts and reactions of all participants increased, indicating that this intervention can be an effective intervention in improving social interaction of adults with ASD.
M. Y. Kwon (2016)	Secondary school students' perceptions and acceptance of students with ASD in inclusive education.	1,073 South Korea	11.1% 7th to 12th grade	Survey	A questionnaire was distributed to the participants and the collected data was analyzed through descriptive statistics, frequency analysis, independent variables t-test, one way ANOVA, factor analysis, correlation analysis, and reliability analysis.	This study found that secondary school students tend to recognize neurobiological characteristics of students with ASD but not academic or general characteristics of them; there were differences between middle school and high school students in their special experiences with students with ASD but there was no difference in their general acceptance of students with ASD.
K. Lee & Jung (2016)	Experience with violence in inclusive education among students	16 South Korea	100%; 41 - 63 years old (Average=49 years)	Qualitative study; interview	In-depth interviews were done with mothers of children with ASD about their children's experience of violence in inclusive classrooms. The data was analyzed by a continuous	This study found that students with ASD are exposed to various types of violence and assailants include both peers and teachers.

Authors	Study Topic	<i>n</i> , Site	Female %, Age	Study Methods	Outcomes measured	Findings
	with ASD		children: 0%		comparative analysis method.	Misunderstanding about the disability was one cause of the violence, so education about the disability for students and teachers are needed.
H.-I. Chung & Kim (2017)	Caregiving experiences of Korean mothers with a school-aged child with ASD.	7 South Korea	100%; 38- 46 years children: 29.6% 9 - 16 years	Qualitative study; Semi-structured interview	Semi-structured interviews were done with the participants and the collected data were analyzed via Giorgi's phenomenological method.	The results show that mothers with children with ASD need more practical individual and holistic services in the community and more physical, emotional, financial and informational support.
S. Kim & Ko (2017)	Cases of robot research and development for treatments of children with ASD.	N/A South Korea	N/A N/A	Literature review	The researchers searched previous studies about treatments and social adaptation for children with ASD and developed robots that were used for improving social interactions and communication of children with ASD.	This study found that children with ASD showed various responses to visual, auditory or tactile stimuli of robots, and order-taking games and imitation techniques provided by robots showed positive effects on improving communications of children with ASD.
J. Y. Lee et al. (2017)	The Status of Hospital-Based Early Intensive Intervention for Autism Spectrum Disorder in South Korea.	9 South Korea	N/A N/A	Survey	A survey was distributed to 9 institutions that operate hospital-based early intensive interventions for children with ASD and answered by the operator of the institution or the person who is in charge of the early intervention program in the facility.	This study found that the majority of institutions used Applied Behavioral Analysis (ABA) methods and language and occupational therapy as their theoretical bases; The merits of hospital-based interventions were the effectiveness of multi-

Authors	Study Topic	<i>n</i> , Site	Female %, Age	Study Methods	Outcomes measured	Findings
						disciplinary interventions, the accuracy of the diagnosis, combined medicine, etc.
M. Y. Kim & Choi (2018)	Special education teachers' needs for supporting successful transition of students with ASD.	195 South Korea	50.3% 20s - 50s	Qualitative study; survey	A group of experts in ASD and special education created a survey with 38 questionnaires and distributed them to the participants. The collected data were analyzed using Borich needs analysis and the Locus for Focus model.	Special education teachers view 'social skills at work,' 'support and information related to independent living and housing support,' and 'plans for independent living in a local community' as the most important components of successful transition of students with ASD.
H. S. Han (2018)	The directions of school education for students with ASD.	N/A South Korea	N/A N/A	Qualitative study; recommendation paper	The author analyzed statistics and article journals to find current status of education for students with ASD and suggested some ways of improving it.	The author's suggestions for education for children with ASD include that education programs only targeted at students with ASD need to be developed and robot-intervention and medical-intervention need to be included in directing behaviors of students with ASD.
Jeon (2018)	The direction of inclusive education for students with ASD.	N/A South Korea	N/A N/A	Opinion article	The author gave suggestions on what kinds of support would be needed for students with ASD in inclusive education.	The author suggested the following support: strengthening systems for inclusion and training school staff, collaborative relationships between special

Authors	Study Topic	<i>n</i> , Site	Female %, Age	Study Methods	Outcomes measured	Findings
						education teachers and inclusion classroom teachers, supporting general students in increasing acceptance of students with disabilities, strengthening school aides, and communications with parents and family support.
H. S. Kwon & Kwak (2018)	The directions of lifelong education for adults with ASD.	5 South Korea	100%; 50 - 57 years old children : 0% 22 - 28 years old)	Qualitative research; interview	In-depth interviews were done with mothers with adult children with moderate to severe ASD about their experiences with raising a child with ASD and their experiences with lifelong education for their children. An inclusive analytic procedure was used to analyze the data.	This study found that the parents with adult children with ASD perceive lifelong education as not helpful in promoting their children's more independent life and many employees at lifelong education showed lack of understanding on ASD.
S.-O. Kwon (2018)	Current status, problems and alternatives of educating students with ASD in inclusive education.	N/A South Korea	N/A N/A	Professional guidance	The author presented statistics and research to explain current status, problems and solutions of educating students with ASD in inclusive education.	Both general and special teachers express difficulties in having students with ASD in inclusive education settings. The author suggested the following solutions for the problems: Individual characteristics need to be considered in educating students with ASD, The methods, contents and grading of students' work need to be re-adjusted according to the needs of students with ASD, and appropriate consequences for problematic behaviors

Authors	Study Topic	<i>n</i> , Site	Female %, Age	Study Methods	Outcomes measured	Findings
						need to be prepared.
J. Y. Park & Lee (2018)	Research trends of experimental research about infants and young children with ASD.	N/A South Korea	N/A N/A	Systematic Review	The researchers selected 72 experimental studies about infants and young children with ASD published between 2007 and 2017 in South Korea and analyzed research trends based on general characteristics of research and dependent and independent variables.	It was found that ‘multiple baseline across subjects’ were the most frequently used study design; ‘human based intervention’ was the most frequently used independent variable and ‘social skills’ was the most frequently used dependent variable among studies about infant and young children with ASD in South Korea.
J. H. Yun & Yoon (2018)	Research trends in the clinical use of robots for children with ASD.	N/A South Korea	N/A N/A	Systematic Review	Studies about the clinical use of robots in the educational and therapeutic intervention for children with ASD published between 2009 and 2018 were reviewed. Critical literature review was used as a research method.	This study found that the clinical use of robots for children with disability has received much attention as its utility in intervention has been proven. Its progress in intervention for children with ASD could innovate treatments for children with ASD.
E. K. Kim & Kim (2019)	Research trends in self-management of students with ASD in South Korea.	N/A South Korea	N/A N/A	Systematic review	19 studies about self-management of students with ASD were selected and analyzed in terms of study period, study subjects, meditation environment and dependent variables.	The most targeted research subjects were elementary school students and problem behaviors were the most frequently used dependent variable. In the education setting, self-monitoring interventions were frequently used, especially in reading and

Authors	Study Topic	<i>n</i> , Site	Female %, Age	Study Methods	Outcomes measured	Findings
J. S. Park & Lee (2019)	Research trends of experimental research on career education programs for students with developmental disabilities.	N/A South Korea	N/A N/A	Systematic Review	A literature research method was used to analyze 32 experimental studies about career education programs for students with developmental disabilities.	It was found that ‘control group experiment design’ was the most frequently used study design and ‘career maturity’ was the most frequently used measuring area in career education programs.

Note. N/A= Not Applicable; NS= Not Specified

Those mothers of children with ASD in the research also reported that the employees who work closely with students with special needs such as special education teachers and service providers were changed often or not placed in the inclusive education setting (H.-I. Chung & Kim, 2017). It was found that, among parents with children with disabilities, parents with children with ASD were most stressed when they sent their children to the general education setting because they worried about their children's deficiencies in social interaction in the inclusive education setting (Jung & Park, 2010). Mothers of children with ASD reported that it was difficult for parents of children with ASD to find inclusive kindergarten and daycare near their homes, and more inclusive kindergarten and daycare need to be established so that the children with ASD can have more opportunities to have social interactions with their peers (K. H. Kim, 2014; E. S. Park & Kim, 2014).

Perspectives and Perceptions. When it comes to the perspectives of parents with children with ASD, it was found that they recognize the importance of the role of teachers in inclusive education, but they seem to fail to recognize the importance of the role of parents in inclusive education (K. H. Kim, 2014). In 2014, students with ASD were not included in general education, ranking second least as included among the ten categories of disability even though the students with ASD were the third largest group among the students with a disability who can receive inclusive education. These statistics indicate that being involved in inclusive education is still challenging to a lot of students with ASD (M. A. Song & Lee, 2015). M. A. Song and Lee (2015) asserted that more research is needed to help students with ASD be more successful in inclusive education, and they conducted research to find out general students' perceptions on being in the inclusive classroom with students with ASD. They created a questionnaire to figure out general students' perceptions on inclusive education with students with ASD and the

questionnaire was sent to 69 elementary schoolers, 69 middle schoolers and 68 high schoolers who were in inclusive classrooms with students with ASD. It was found that general students' overall perception on inclusive education with students with ASD was neutral, neither positive nor negative. It was also found that girls tend to have more positive perceptions than boys and elementary school students have more positive perceptions than students in secondary school. Having a family member or a relative with disabilities did not seem to affect general students' perception on inclusive education with students with ASD. Among the findings, it is notable that general students who received an education for understanding ASD tend to have more positive perceptions on being in the same classroom with students with ASD (M. A. Song & Lee, 2015). This result suggests that more education about students with disabilities, especially ASD, need to be provided to general students in order to help them have a better understanding of ASD and to help students with ASD be more successful in inclusive education.

Negative Perceptions. M. Y. Kwon (2016) conducted research to find out the perceptions and acceptances of secondary school students for students with ASD in an inclusive education environment. A questionnaire was made and distributed to 1,073 students of the nine middle and high schools in three different cities in Korea. It was found that secondary school students tend to recognize neurological characteristics of individuals with ASD but had difficulty with recognizing general characteristics of ASD and characteristics related to academic performance. H. S. Kwon and Han (2014) found that general secondary school students tend to understand neurobiological characteristics of individuals with ASD but still have negative perceptions about them. In their perspective, students with ASD in inclusive education are those who impede their education rights (H. S. Kwon & Han, 2014) and it is hard to perceive them as their equal friends (E. Kim et al., 2014). Heo (2013) asserted that middle school students tend to

have negative perceptions toward students with ASD as they think that general students are required to provide unconditional care for students with ASD in the inclusive education setting, which is overwhelming and can cause conflicts. In the Korean education system that is focused on college entrance examination, some of the characteristics of students with ASD such as impulsive behaviors or having difficulty with academic performance may burden general students in the same classroom (M. Y. Kwon, 2016). Negative perceptions that general students (in secondary schools) in inclusive education environments have about students with ASD indicate that experiences or interaction with students with ASD are not effective in helping general education students have positive perceptions about students with ASD. Rather than focusing on providing more frequent interaction with students with ASD, the education system needs to provide education that helps general students understand more about ASD and provide opportunities for them to improve their perception and acceptance (M. Y. Kwon, 2016).

Bullying. S. Hwang et al. (2018) found that students with ASD are more likely to be involved in bullying either as victims or perpetrators and have more frequent experiences with bullying, compared to students without ASD in Korea. Having difficulties with social skills and showing unusual behaviors make students with ASD stand out among peers and lead them to be victims of bullying (S. Hwang et al., 2018). Having a close relationship is one of the protective factors against being a victim of bullying (Hebron & Humphrey, 2013; Hebron et al., 2016), but students with ASD have difficulties with developing close relationships with their peers, possibly contributing to a higher number of victims of bullying among students with ASD (S. Hwang et al., 2018). K. Lee and Jung (2016) conducted in-depth interviews with Korean mothers who have a child that they described as having high-functioning ASD (HF-ASD) and found that students with HF-ASD are often bullied in inclusive education settings because their symptoms of ASD

are misunderstood by their peers. For example, students with HF-ASD are cognitively superior but they still have difficulties with social skills, so they sometimes appear to peers that they are bragging, or they often tell on their peers' poor (against the rules) behaviors to the teacher. While bullying experiences of students without ASD tend to be more obvious with verbal or physical abuse (Y. S. Seo et al., 2015), bullying experiences of students with HF-ASD tend to be more subtle and variable, so victims often may not notice their victimization. Examples of this type of bullying include asking them to do some ridiculous behaviors, hiding their possessions, excluding them from activities, and getting them in trouble. More serious bullying can include physical abuse by a group of peers. Experiences of school bullying negatively affect students with HF-ASD in various aspects of their lives, including physical, emotional and functional aspects. Students with HF-ASD often develop anxiety, isolate themselves, develop addiction or abandon their education. Considering that the purpose of inclusive education is to help students with ASD have more opportunities for social interaction with their peers, more education on developing their social skills and enhancing peer relationships would be necessary (K. Lee & Jung, 2016).

Issues with Adults. Psychoeducation about ASD is needed not only for the students in inclusive education but also for educators and parents. According to qualitative research on high-functioning students with ASD and their experience with school violence or aggression, the violence or aggression in school was not just originated by students but also by the teachers (K. Lee & Jung, 2016). The mothers of children with ASD who participated in the research survey reported that there were times that general education teachers limited the activities the students with ASD could functionally participate in, perhaps because of lack of understanding of the disability and inaccurate knowledge. They also reported that teachers exclude students with ASD

from the school's outdoor activities or that they said things to belittle the students with ASD (Jeon, 2018; K. Lee & Jung, 2016). It was also found that general education teachers tend to have more negative perspectives about inclusive education than special education teachers but that historically, both special education and general education teachers tend to have a negative perspective on inclusive education (H. J. Park & Lee, 2008). Collaboration between special education teachers and general education teachers is likely to be necessary in order to make inclusive education more effective for students with ASD. Therefore, high-quality training on the faculty members including the school administrator, the special and general education teachers to help them improve a better school system will be needed (Jeon, 2018).

Research Trends in Special Education

As the number of students with ASD qualified for special education services in Korea increases, along with public attention to those with ASD, research related to appropriate education and interventions for students with ASD has also increased in the first decade of the 21st century (E. K. Kim & Kim, 2006) and is still active. E. K. Kim et al. (2014) did a review of peer-reviewed journal articles in the special education field in Korea to find research trends in education for people with ASD. They reviewed 395 journal articles that were published from 2006 to 2014 and analyzed the research topic, methods and the subject of study. The most common topic was about social communication, and intervention studies and literature review were the most common methods. The subjects of the studies were mostly young children and elementary students. They found that the number of research studies on ASD was incredibly increased compared to the past years. There were only 140 published research on ASD from 1996 and 2006 (E. K. Kim & Kim, 2006) while there were 396 journal articles on ASD from 2006 and 2014 (E. K. Kim et al., 2014). The authors of the study interpreted the increased

number of research articles on ASD in Korea as the result of increased diagnosis rate of ASD and improved social perspectives on ASD.

Changes in Laws

E. K. Kim et al. (2014) asserted that the improved social perspective on ASD is reflected in the change of legal education system for students with ASD. For example, the revised special education law in 2007 included ASD as one category of disability that can receive special education services, and this change enabled students with ASD to be identified with ASD rather than emotional disability or intellectual disability in order to be qualified for special education services. The revised law also made changes in training for special education teachers. A class about ASD became a required class to take for special education teachers to receive their license, expanding special education teachers' understanding of ASD and enabling more organized field studies to occur. The revised law also facilitated increases in experts on ASD in the universities in Korea, leading to increased number of studies about ASD in Korea. The authors also mentioned that improved social perspective on ASD influenced by mass media may have had a big impact on the increased quantities of the studies on ASD in Korea.

Another finding of this study was that, when it was analyzed based on the two main characteristics of ASD, studies on social communication and interaction were 61.8% of the studies found, and studies on the restricted and repetitive behaviors were 12.7%, which was comparably small. In addition, it was also found that the ratio of studies on problematic behaviors, diagnosis and definition and development of programs related to ASD have been decreased relative to the total studies done about ASD in Korea. The authors mentioned that this finding may indicate that the focus of the studies may have been shifted from supporting problematic behaviors directly to increasing appropriate skills such as increasing language and

communication skills or interventions to increase social skills. They also found that “sense and perception” was added as a new topic to ASD studies in Korea, which was not distinguished as one of study topics in 2006. This change may indicate that the topic of “problematic behavior” became more specified and the perspective on the problematic behavior has been changed (E. K. Kim et al., 2014).

Room for Improvement

While there are some positive changes in recent studies on ASD in Korea, there are still areas for improvement in ASD research in Korea. The researchers (E. K. Kim et al., 2014) asserted that there are still deficiencies in studies about diagnosis, definition and methods of diagnosis. Early identification and early diagnosis are important for supporting individuals with ASD (S. H. Lee et al., 2013), research on this topic needs to be improved in both its quality and quantity. Studies in those topics will need long-term and multi-perspective studies, therefore, a systematic support for those studies will be needed (E. K. Kim et al., 2014). Studies on development of programs are also limited. As the number of students with ASD in schools has been increased (Korea Ministry of Education, 2014), studies on development of programs need to be increased for every stage of their lives, from young children to adults (E. K. Kim et al., 2014). The number of studies on vocation and rehabilitation for individuals with ASD was increased, but its ratio was low at 3.3% compared to the overall studies found in the research between 2006 and 2014, and this result is related to the relatively small amount of research done for adults with ASD. Most ASD studies in Korea were focused on young children and elementary students, and more studies of participants with various characteristics and stages of life need to be done (E. K. Kim et al., 2014).

Lifelong Education for Adults with ASD

The opportunity of receiving education does not end when individuals with ASD become adults. Even if they do not go to college, there are still opportunities for them to learn vocational skills for employment, and lifelong education is one of the opportunities they can have for obtaining vocational or other necessary skills for their future employment. Lifelong education is a great tool for helping every member of the society adapt well to the society and enhance individual development and growth, and it can also help individuals with disabilities improve the quality of their lives (H. S. Kwon & Kwak, 2018). Studies have found that adults with ASD can gain various benefits by participating in supported employment programs (J. Kim, 2018) and those benefits include improved quality of life (García-Villamizar et al., 2002), cognitive and emotional empowerment (García-Villamizar & Hughes, 2007), improved social behaviors (Taylor et al., 2014) and reduction of anxiety and depression symptoms (Hillier et al., 2011). Therefore, it would be important for adults with ASD to receive appropriate employment training.

H. S. Kwon and Kwak (2018) conducted research to find out the directions of lifelong education for adults with ASD, so they interviewed five parents of adult children with ASD individually. The results of this study revealed two limitations of lifelong education for adults with ASD. The first limitation was that the employees working in the field of lifelong education did not show adequate understanding of ASD. The research participants shared their experiences that their children's enrollment was rejected for lifetime education services because their disability was ASD. They mentioned that the discrimination their children had to go through during school years did not stop even after they became adults. The second limitation they found was that the parents think that lifelong education programs are not helpful in promoting

independent lives of adult individuals with ASD. The research participants all expressed their need for having lifetime education that is reliable for a long time, even after the parents pass away (H. S. Kwon & Kwak, 2018). Myeong and Kim (2017) found that the participation rate of the parents with adult children with developmental disabilities in lifelong education programs tend to be low and their understanding of the concept of lifelong education is also low. The rate of parents with adult children with developmental disabilities who have participated in lifelong education was 36.1% and those who were still enrolled during the time of research was only 10.3% (Myeong & Kim, 2017). Moreover, it was found that some programs in lifelong education were not adequate for individual needs of adults with developmental disabilities (Rhee & Yoo, 2009), and the number and types of programs in lifelong education were insufficient (Son et al., 2016).

Screening and Diagnosis

Diverse assessment instruments for ASD have been developed in the world as the prevalence of ASD has increased (K.-M. Chung & Park, 2013; Lovaas, 1987; J. L. Matson & Kozlowski, 2011; Ozonoff et al., 2005). The Korean Ministry of Health and Welfare offers diverse developmental rehabilitation services for children under 18 who are diagnosed with ASD (Korean Ministry of Health and Welfare, 2016). In order to qualify for those services, the child needs to be diagnosed by a doctor (Korean Ministry of Health and Welfare, 2015). Therefore, using validated diagnostic and screening tools is necessary for careful diagnosis of ASD (H. Kwon et al., 2017). Among various assessment instruments for ASD, the translated and modified versions of the Autism Diagnostic Interview-Revised in Korean and the Korean Autism Diagnostic Observation Schedule (K-ADOS: H. Yoo et al., 2007) have been most commonly used (K. S. Lee et al., 2019). However, in Korea, the use of these instruments has some

limitations because there are not many certified assessors for these assessments because of language barriers and complex certification processes (Lord, Luyster, et al., 2012; Lord, Rutter, et al., 2012; Rutter et al., 2003)

Recently, there has been some Korean research to investigate the reliability and validity of some of the diagnostic instruments or autism rating scales that have been translated into Korean (Cheon et al., 2016; K.-M. Chung & Jung, 2017; K.-M. Chung & Park, 2013; S. H. Kim et al., 2016; H. Kwon et al., 2017; Seung et al., 2015). These screening and assessment instruments include Korean Modified Checklist for Autism in Toddlers (K-M-CHAT; Robins et al., 2009/2014), a Korean Autism Diagnostic Interview-Revised (K-ADI-R; H. J. Yoo, 2007), and the Korean Autism Diagnostic Observation Schedule (K-ADOS; H. Yoo et al., 2007). All of these screening instruments or rating scales have been found to be valid in a Korean-speaking population. Some researchers translated screening tools from English to Korean and investigated their validity and reliability. Those screening tools include the Korean Version of Autism Spectrum Disorders-Diagnostic for Children (K-ASD-DC; K.-M. Chung & Park, 2013), the Korean Version of Autism Spectrum Disorders-Comorbid for Children (K-ASD-CC; K.-M. Chung & Jung, 2017) and a Korean version of the Social Responsiveness Scale (K-SRS; Cheon et al., 2016).

H. Kwon et al. (2017) also examined whether the Korean Version of the Childhood Autism Rating Scale (K-CARS; T. Kim & Park, 1995) can appropriately diagnose children with High Functioning Autism (HFA) or Asperger's syndrome. In this study, the researchers found that K-CARS is likely to misdiagnose children with HFA or Asperger's syndrome as non-ASD children due to the language development and intelligence of children with HFA or Asperger's syndrome. This problem existed in the English version as well, so the second edition of the

CARS included a High Functioning version (CARS-2-High Functioning Version or CARS2-HF) for children 6 or older who have age-appropriate cognitive and language skill (Schopler et al., 2010). The CARS-2 HF has not yet been translated and validated in the Korean language. Therefore, researchers suggested that, in the meantime, if the K-CARS is used, cut-off scores for concern may need to be adjusted in order to detect children with HFA or Asperger's syndrome more accurately (H. Kwon et al., 2017).

In addition to many researchers' efforts of translating screening tools of ASD to Korean and assessing validity and reliability, there have been efforts to develop an original screening tool among Korean researchers. G. Bong et al. (2019) developed the Behavior Development Screening for Toddlers (BeDevel), a culturally appropriate early screening tool for Korean children with ASD. BeDevel consists of two parts: BeDevel-I, a structured interview for primary caregivers, and BeDevel-P, a play-based observational measure. In their pilot study, G. Bong et al. (2019) found that both BeDevel-I and BeDevel-P showed concurrent validity, specificity, positive and negative predictive values at a satisfactory level and their agreement with other diagnostic instruments for ASD was at a moderate level, suggesting that this new diagnostic instrument can be a helpful tool for early diagnosis of children with ASD, with the strength of being developed within Korean culture. This progress in Korean research for original valid screening instruments and rating scales for children with ASD is an important first step towards improved identification and more autism research in Korea.

Treatment Approaches and Availability

K. M. Kim et al. (2014) investigated the use of various treatment methods for children with ASD. There were 22 participants with ASD, and the researchers investigated the modality, cost, duration and satisfaction of treatments they use for their disability. In the research, it was

found that the most frequently used treatment among the participants was speech therapy (90%) followed by pharmacologic therapy (72.7%), play therapy (72.7%) and art therapy (63.6%). According to the study, pharmacological therapy has been found as the most cost-effective treatment when it comes to price and satisfaction of the parents. The average cost of pharmacological therapy for the participants who use them was the equivalent of about \$60 a month, and it was relatively cheap compared to other behavior therapy or alternative treatment methods. Its comparably cheap cost may have been the result of the well-established national medical insurance system of Korea. There is a financial aid system provided by the Korean government for individuals with disabilities who are younger than 18 years old, and that is called rehabilitation voucher. With the voucher, qualified individuals with disabilities can receive financial support to receive appropriate treatments for their disabilities such as speech therapy, art/music therapy, play therapy, etc. (Korean Ministry of Health and Welfare, 2019).

Usage of the rehabilitation voucher is low among individuals with ASD, however, and one of the reasons why is that there are not enough appropriate facilities that offer treatments for individuals with ASD (J. Y. Lee et al., 2017). The demand for facilities that offer evidence-based treatments/intervention for individuals with ASD has been increased (J. Y. Lee et al., 2017). The number of facilities has also been increased, but the family of individuals with ASD reported that the facilities for treatments of individuals with ASD is not sufficient (J. Y. Lee et al., 2017). In addition, J. Y. Lee et al. (2017) stated that there is no national license system to be a behavioral therapist in Korea. Therefore, behavioral therapists working in the institutes for individuals with ASD are usually those who got their licenses in the States or currently working on getting that license. Without a national system to license behavioral therapists, it is hard for the autism community to have behavioral therapy as their main focus in the treatments/interventions in the

facilities (J. Y. Lee et al., 2017). More systematic efforts of training behavioral therapists or experts would be beneficial to those with ASD.

In the K. M. Kim et al. (2014) study, it was found that there were participants who use complementary alternative medicine (CAM) as a part of their treatment such as oriental medicine (27.3%), auditory integration training (22.7%), special diet (18.2%) and special vitamins (18.2%). Those complementary alternative treatment methods have little evidence to support claims and are typically used without experts' monitoring or instructions (K. M. Kim et al., 2014). Since there are various treatment methods for ASD but there is no definite cure for ASD, many parents are trying to use different methods to find better treatment for their children with ASD (K. M. Kim et al., 2014). Only 6 out of 18 participants who used CAM reported the use of those alternative treatments to the doctor, so its usage was not well monitored by the experts treating the child's health (K. M. Kim et al., 2014). This result of using CAM such as oriental medicine is consistent with what Dr. Yoo shared in an interview (personal communication, November 1, 2017). Since it is unsure how those alternative treatment methods affect children with ASD, practitioners need to check with their patients with ASD about which treatment methods they use and monitor them as part of their health care (K. M. Kim et al., 2014).

Korean Research on Specific Interventions

J. Y. Park and Lee (2018) analyzed research trends of experimental research about infants and young children with ASD that were published between 2007 and 2017. The study found that the most common independent variable in research was interventions focused on human relationships (30.6%) and these interventions were found to be used most frequently for infants and young children with ASD. When it comes to dependent variables of research, social skills was the most common dependent variable (33.3%), followed by communication skills (23.6%),

and it showed that there has been much research about social interaction, which is one of the core deficits in ASD (APA, 2013). The research about behavior, interest or activity of children with ASD was included in the category of “problem behaviors” of children with ASD, and the researchers encourage more research to be done in those areas since problem behaviors are also related to core symptoms of ASD. The researchers also mentioned that the amount of research about children with ASD has increased in Korea, but there are still deficits in the quantity and quality of research that support the development and learning of children with ASD, and more varied research needs to be done to provide evidence-based support for infants and children with ASD (J. Y. Park & Lee, 2018).

Program for the Education and Enrichment of Relational Skills (PEERS®).

Culturally appropriate interventions for adolescents with ASD to develop their social skills are also needed in Korea, so some Korean researchers (H. Yoo et al., 2014) translated and modified an evidence-based social skills intervention for adolescents with ASD, from English to Korean. PEERS® (Laugeson & Frankel, 2010) is a parent-assisted social skills training program proven as an effective social skills intervention for adolescents with ASD in North America, but its effectiveness in other cultures had not been proven yet. H. Yoo et al. (2014) translated PEERS® from English to Korean and 21 child mental health professionals reviewed its translation. In addition, culturally sensitive items were modified based on the results of the survey given to 447 middle school students in Korea. As a result of the study, the researchers found that the PEERS® is an effective intervention for social skills of adolescents with ASD in Korea with a few modifications of its culturally sensitive items. This study found that the participants receiving the PEERS® intervention showed significant improvement in their social skills knowledge, interpersonal skills and play/leisure skills, and their depressive symptoms were decreased.

Interventions Using Online Games and Robots. Among interventions for increasing social skills of individuals with ASD in Korea, there has also been research done about using a prosocial online game and using robots. There was research that found that Cognitive Behavioral Therapy (CBT) using a prosocial online game (game-CBT) is as effective as in-person CBT in increasing social skills of adolescents with high functioning ASD in Korea. The game-CBT was found to be as effective as the offline CBT when it comes to recognizing emotions and social interaction but was less effective in increasing brain activity in relation to emotional words (U. Chung et al., 2016). Research on the clinical use of robots for children with ASD has been done in Korea and some research has found that interventions using those robots can strengthen the social skills of children with ASD (S. Yun et al., 2016; S. Yun et al., 2017; J. H. Yun & Yoon, 2018). S. Yun et al. (2017) found that a robot-facilitated behavioral treatment was as effective as human-facilitated behavioral treatment in increasing eye contact and recognizing facial emotions and decreasing general behavioral and emotional symptoms of children with ASD in Korea. Some researchers used robots in an educational setting to support children with ASD in a variety of ways and environments (C. Kim, 2012). Some research has found that more human-like looking robots such as humanoid and android are developed these days while in the past most robots used to have animal or robotic shapes (S. B. Kim & Shin, 2014). Either type of robot has been shown to have great potential in helping children with ASD (K. Cho et al., 2009; K. H. Kim et al., 2011). It was found that when there were social stimuli delivered by the robots, children with ASD showed more positive interactions than negative interactions with the robots (S. B. Kim & Shin, 2014). Robot interventions were able to solve communication difficulties children with ASD have by playing order-taking games and using imitation techniques (S. Kim & Ko, 2017). In addition, children who have difficulty with communication voluntarily explored the

robot and expressed their interest in the robot using both body and language (Bae & Lee, 2013). It is anticipated that remote-controlled robot systems can be used in helping children with ASD in various ways such as monitoring them, diagnosing them by observing their behaviors, and interacting with children with ASD (J. H. Yun & Yoon, 2018). S. Kim and Ko (2017) suggested that developing robots that can play interactive games and multiplayer games with children with ASD would be effective in helping those with ASD understand others' expression of emotions. Yun et al. (2016) asserted that using a robot-assisted system with interaction technologies can have a benefit of saving labor (allocation of scarce resources) in therapy for children with ASD since the robot can perform interactions with children in therapy. Much research has been done to find out how robots can help children with ASD, but most of the studies used a small number of participants so it is hard to generalize the results to all children with ASD (J. H. Yun & Yoon, 2018).

Research on Interventions for Adults with ASD. S. J. Cho (2016) conducted research about the effects of an interactive instrument-playing program on social skills of adults with ASD and found that the interactive instrument-playing program was effective in increasing social interactions of individuals with ASD. The study results showed that the use of evidence-based interventions can make changes in social behaviors of adults with ASD. S. J. Cho (2016) asserted that research about the development of interventions and programs for adults with ASD is not regarded as important as the development of interventions and programs for children with ASD so there is not much research done for effective interventions for adults with ASD. As adults with ASD can still benefit from improvement of their social skills and behavioral management, more research about interventions targeted at adults with ASD would be needed.

Social Environments for Individuals with ASD in Korea

One of the difficulties that parents of children with ASD commonly experience in Korea is dealing with the social stigmas people have for individuals with ASD (Gray, 2002; S. Park et al., 2018). S. Park and colleagues (2018) found in their research that Korean adults still tend to have a social distance attitude toward individuals with ASD. In their study, between 23% and 29% of participants answered that they do not want to live in the same village or street as people with these disorders, and approximately 33% to 46% did not want to or want their children to work, study with, or befriend individuals with ASD. Moreover, between 75% and 91% of participants answered that they do not approve of marriages to close family members or relatives of someone who has ASD. This result is consistent with what Grinker et al. (2012) found, that ASD is highly stigmatizing to Korean people and it interferes with marriage opportunities for extended family members of individuals with ASD. Participants in this study (87%) were categorized as preferring a high social distance from individuals with ASD. Socioeconomic status was not found to be associated with high social distance, which indicates that Korean adults generally have a tendency to prefer social distance with individuals with ASD regardless of their place in societal strata. The researchers found that the possible cause of preferring high social distance from individuals with ASD was people's belief that ASD is caused by biological factors such as brain dysfunction and genetic defects and suggested that psychoeducation among Korean people would be needed to reduce their biases and negative attitudes toward individuals with ASD (S. Park et al., 2018).

Social Stigmas Outside of Korea

Social stigmas about ASD based on misunderstanding of its causality not only affects Korean people living in Korea but also affects Korean people who live outside of Korea, as

many Korean immigrants are still connected with their original culture and have social relationships with people in Korea (Kang-Yi et al., 2018). Kang-Yi et al. (2018) conducted interviews with Korean church leaders and child caregivers living in New York City (NYC) and found that Korean people living in NYC share similar cultural views about individuals with ASD as people living in Korea when it comes to stigmatization and marginalization of people with ASD. They reported that Korean people living in NYC tend to have negative or discomfort attitudes toward individuals with ASD and marginalize them by avoiding them (Kang-Yi et al., 2018). One of the reasons Korean people in NYC feel discomfort around individuals with ASD was that they do not know how to speak about ASD since it could be a sensitive topic to the family of individuals with ASD (Kang-Yi et al., 2018). The researchers in this study suggested that culturally appropriate outreach programs for Korean community members living in the United States would help them reduce their stigmas and discomfort for individuals with ASD and their families (Kang-Yi et al., 2018).

Grinker et al. (2015) interviewed Korean mental health professionals and Korean mothers living in Queens, NY who have or do not have children with ASD and the findings were consistent with what other researchers found in Korea in terms of stigmas (S. Park et al., 2018), preferred treatments (K. M. Kim et al., 2014) and beliefs about its causality (S. Park et al., 2018). In the interview, health care providers mentioned that one of the barriers for the treatment of children with ASD is fear of medications that Korean mothers have. They mentioned that Korean mothers tend to believe that once the child begins medications for their mental health, the child will always be on the medications, and that belief has led to a negative view on using medications for ASD treatment. As a result, the parents tend to prefer traditional medications such as herbal medications since they view them as less risky than allopathic medications. The

researchers also found that younger mothers with ASD have more openness to its diagnosis and treatment but they are still reluctant to disclose their child's diagnosis because of fear of social stigmas (Grinker et al., 2015; Kang-Yi et al., 2018), and there was one mother who had been delaying visiting Korea in fear of stigmas that her relatives and friends in Korea would have about her child who has ASD. In the interviews with Korean mothers living in Queens, NY who *do not* have children with ASD, it was found that they tend to have stigmas about parents of children with ASD as being “cold,” “greedy” or “not able to relate” (Grinker et al., 2015, p. 2334). The researchers asserted that in efforts to translate outreach materials from English to Korean, it is important to consider cultural adaptations to help Korean people reduce their disparities in diagnosis and treatment. For example, the researchers added some statements that can help reduce stigmas Korean people commonly have in their outreach materials while translating it to Korean (Grinker et al., 2015).

Stigmatization of individuals with ASD affects not only people outside of family but also extended family members. In a meta-analysis study about caregiving experience of Korean mothers with a child with developmental disabilities, the researcher found that mothers with a child with developmental disabilities often felt hurt because of misconception, criticism or non-cooperation of their husband, family-in-law or their own family (J. S. Kim, 2015), which can lead them to be isolated from other people including their extended family. In An's 2017 research, there were a total of four participants who are all mothers of children with ASD and they all expressed how stressful and overwhelming it is to raise a child with ASD in Korea because of the stigmatization, lack of support and feeling isolated. They all shared their experiences of avoiding family and social events since the diagnosis of their child's ASD and being afraid of the stigmatization that their extended family members might experience. One of

them shared that she moved away from her friends and family of origin, not wanting them to know about her child's diagnosis of ASD. It was also found in the research that Korean mothers tend to be passive in treatments of their children with ASD. They felt uncomfortable or disqualified when it comes to setting goals for their child and wanted the "experts" to give them more guidance and set goals for their child. Giving parent training and helping them more involved in their child's treatment as collaborating partners would help them feel less overwhelmed and more empowered in taking care of the needs of their children with ASD (An, 2017).

NIMBY (Not in My Backyard) and Special Schools in Korea

News articles about developmental disabilities including ASD show current status of the government's efforts in increasing support for individuals with developmental disabilities and the societal barriers against them. NIMBY phenomenon is one of those societal barriers that were reported in the news articles. There are a small number of special schools for ASD in Korea, and they admit a small number of students. For example, there is one special school in Korea that receives only seven children a year. According to statistics acquired by Yonhap News Agency, there is a growing gap between the number of special schools compared to the growing number of students who need to receive special education. The number of students including kindergarten, elementary and secondary school students with disabilities increased from 58,362 in 2005 to 79,711 in 2010. However, the number of institutions specifically for students with disabilities increased only from 142 in 2005 to 155 in 2010, which decreased the ratio of students receiving special education to 29.7 percent of the total student population. In the interview with Yonhap news agency, Shin Hyun-Ki, a professor at Seoul's Dankook University asserted that the Korean government needs to strive to meet the increased demand for special schools and expand

the capabilities of current special schools (Oh, 2012). However, even when the government strives to build more special schools and job training centers for individuals with disabilities, there is a huge obstacle they need to overcome, which is the opposition of the local community caused by the not in my backyard (NIMBY) effect.

The NIMBY effect is defined as “one’s opposition to the location of something considered undesirable in one’s neighborhood” (Kinder, 2016, para. 1), and it has been affecting the government’s effort to build more special schools in Korea. For example, Seoul, the capital city of South Korea, had a plan to build special schools that was disrupted by NIMBY protests from neighbors. Seoul has over 12,000 students who are qualified for special education, but there are only 29 special schools and they can accept only about 4,400 students. As a result, about 40% of students with disabilities travel for more than thirty minutes each way to go to school. The last special school that was built in Seoul was built in 2002, and no additional special schools have been built in 16 years. Therefore, to meet the demand for special schools, the Seoul Metropolitan Office of Education made a plan to build three more special schools in Seoul by 2019. However, this plan has been opposed by the local community of the area that the schools were supposed to be built in (D. Hwang, 2016). There were delays with establishing those special schools because of the opposition of the local community members. As a result, one special school was established in 2019 and another special school was established in 2020 and the third special school’s establishment was pushed to 2024 (Namgung, 2020).

In 2017, one event that occurred during a public hearing brought the public’s attention to the NIMBY sentiment and its effect on Seoul’s special school plan. In a public hearing for building a new special school in Gangseo-gu, one of the districts of Seoul, there was huge opposition from the local community, and the parents of children with disabilities pled with the

opposition to let them have a new special school for their children by kneeling down in front of them (Chang, 2017; S. Park, 2018). That event is an example of how desperate the parents of children with disabilities are for having a special school for their children.

The NIMBY effect did not just affect the establishment of special schools but also the establishment of a job training center for individuals with developmental disabilities. In 2015, Seoul Metropolitan Office of Education was pushing ahead with establishing Korea's first job training center for individuals with developmental disabilities. The office announced that the job training center for individuals with developmental disabilities would be built on the fourth floor of a middle school building. However, in a public hearing, over 100 local people attended who were opposed to the plan. They were worried about the increased traffic around the area and concerned for the safety of their children in the middle school who would share the same building with adults with developmental disabilities (Spot News Team, 2015). The parents of children with developmental disabilities knelt down to the opponents of the plan, and the opponents of the plan also knelt down to the parents with children with disabilities (J. Y. Lee, 2017). The opposition of the local community led to the delay of the establishment of the job training center for individuals with developmental disabilities (Y. Y. Lee, 2016).

Inyong Park, the previous president of Korean Parents' Network for People with Disabilities (KPNPD), stated that the reasons local community members are against the establishment of special schools and a job training center for individuals with developmental disabilities are because they are worried about their resale values going down because of proximity to those institutes and they think individuals with developmental disabilities are dangerous (2017). I. Park (2017) asserted that those reasons are rooted in people's hatred and stereotypes that they have toward individuals with disabilities. Even though it was found that the

housing prices are not affected by having special schools around (S. Park, 2017) and it is not true that individuals with developmental disabilities are dangerous, the opponents of having a special school in their local area continue to use those as their reasons to not have the special school in their area (I. Park, 2017). At least as recently as 2017, families with developmental disabilities including ASD have not yet experienced understanding within general society for their children's disability. They are still waiting (and in more than one instance) begging on their knees for societal improvement to reduce the stigmas and stereotypes about individuals with disabilities.

Desperation of Parents with Children with ASD and Other Disabilities

The news articles related to children with ASD included in this study have shown the efforts of parents of children with developmental disabilities in asking for help for their children from the government. In 2016, civic group members and parents of children with developmental disabilities held an all-night-sit-in protest in Seoul for 42 days, demanding the improvement of infrastructure for individuals with disabilities. The protest ended after the Seoul mayor, Wonsoon Park, agreed to review their proposal to support housing facilities and a pension plan for individuals with developmental disabilities. Also, members of the civic groups and parents of children with developmental disabilities agreed to establish a master plan to support individuals with developmental disabilities living in Seoul (D. Kim, 2016). Unfortunately, even though the protest resulted in some agreements on improving infrastructure for individuals with developmental disabilities and their families, protests by parents of children with developmental disabilities arose again within two years.

On April 2, 2018, which is the World Autism Awareness Day, there was a rally where hundreds of parents of children with ASD shaved their heads calling on the government to expand state funded welfare and employment programs for individuals with ASD near the

Korean President's house, called Cheong Wa Dae, in Seoul. Moreover, the parents of children with disabilities recently filed a petition to Cheong Wa Dae (S. Park, 2018), asking the government to take responsibility for their children with developmental disabilities. The Korean government recently introduced a state program that supports dementia patients, and the parents with children with developmental disabilities want a similar program for their children since they believe that they are in similar or even worse situations compared to those suffering from dementia. The Act on Guarantee of Rights of and Support for Persons with Developmental Disabilities was enacted in 2015 (Korea Ministry of Government Legislation, 2015), but the participants of the rally claimed nothing has changed. One of the rally participants and a mother of a son with a developmental disability said that all she asked for is to have her precious children have a normal life and be able to live in the world by themselves when their parents die. Another rally participant said that the society that individuals with developmental disabilities live in is entirely different from the society that other people live in, and that is the reason why the government needs to stand up for them (Jo, 2018).

Adult Services for ASD in Korea

As their children become adults, parents of children with developmental disabilities have more difficulty taking care of their children. The parents are usually physically and financially weaker by the time their children grow up to be adults and they start worrying about their own deaths and the death of their child. The difficulties faced by parents of adult children with developmental disabilities include physical, mental, financial and social challenges. Parents may feel less burdened while their children with developmental disabilities receive support from society during their school years such as special schools, continuity of care in an adult societal support system will be helpful for parents of adult children with developmental disabilities (J.-Y.

Park & Yang, 2013). J. Kim (2015) conducted a meta-analysis study on caregiving experiences of mothers with developmental disabilities, and found that it is more difficult for adults with developmental disabilities to receive services from caregiving institutions as some of those institutions refuse to have individuals with ASD or aggressive tendencies, or they had to wait for a long time for a spot to open up to receive caregiving services for their adult children with developmental disabilities.

Shim and Kim (2013) found that the stress level of parents with adult children with ASD tends to be reduced when they have prior experience with using activity support services as a social service. Adults with ASD can be still qualified for those services based on the severity of their disability, but Shim and Kim (2013) asserted that those services need to be given to all adults with ASD regardless of the severity of their disability in order to ease the burden and reduce the stress level of their parents. Shim and Kim (2013) also found that the most influential factor that affects the stress level of parents with adult children with ASD was the support from their family members. The more united and accepting the family members with adults with ASD are, the less stress the parents experience (Shim & Kim, 2013). The Korean government offers a care aid program to families with disabled children, but this program is only for the families with a child with disability under 18 years old (Shim & Kim, 2013). Considering the dependence level of adults with ASD, it would be beneficial if the program is also offered to adults with ASD.

According to the Employment Development Institute in Korea (2019), the employment rate of individuals with ASD over 15 years old is 22%. The employment rate is low compared to individuals with other disabilities such as individuals with physical disabilities whose employment rate is 44.3% and individuals with blindness whose employment rate is 41.9%. In order to guarantee adults with developmental disabilities' rights and support their lives, the

Korean government issued a law called Act on the Guarantee and Support of the Rights of Persons with Developmental Disabilities in November 2015 (Korea Ministry of Government Legislation, 2015), and this law was renewed in 2020 (Korea Ministry of Government Legislation, 2020). Article 26 of this law which has the title of “Lifetime Education Support” ensures that individuals with developmental disabilities will receive opportunities for lifelong education and the expenses of this program will be provided by the state and the government (Korea Ministry of Government Legislation, 2017). Since the Lifelong Education Act was amended in May 2016, the first lifelong education center for people with developmental disabilities was established in 2016 (Na & Kim, 2017) and there are total 16 centers in Seoul, the capital city, as of October, 2020 (Yang et al., 2020). Since the amendment of the Act, research about lifelong education for individuals with disabilities has been more actively done in the fields of social work and special education (D. Kim et al., 2016).

Future with Hope

In September 2018, the Korean government announced that the Ministry of Education and the Ministry of Employment and Labor jointly prepared “Comprehensive Measures for Life Cycles of Developmental Disabilities” to ease the burden of parents with children with developmental disabilities and to increase the employment rate of individuals with developmental disabilities (Choi, 2018). These measures consist of 10 tasks and 24 detailed tasks throughout the life cycle from infants and toddlers to middle and old age. To strengthen early diagnosis of developmental disabilities, they announced an increase in the number of people who can receive free developmental examination for infants and toddlers. Households whose income is in the lowest 30% to 50% are now included and the number of inclusive kindergartens are to be expanded from 1 to 17, with increases in special kindergarten classes from 731 to 1,131

classes as well as increases in special classes in schools from 10,325 to 11,575 by 2022. In addition, they also announced provision of child career counseling and education programs for parents with developmental disabilities to be available to 3,000 parents by 2019 and to expand the number of training centers for individuals with developmental disabilities from 7 to 17 by 2022 (Choi, 2018).

Since the time the Korean government announced the Comprehensive Measures for Life Cycles of Developmental Disabilities (Korean Ministry of Health and Welfare, 2018), some plans for the measures have been progressing or have met goals, but some are having challenges. There was only one new inclusive kindergarten in Korea and there were only 3 new special schools built in 2 years, while the original plan was to build 23 new special schools in 5 years (B. Seo, 2019). There were 218 new special kindergarten classes and 780 special classes were made in 2 years so these are progressing toward the goal of having 400 and 1,250 new special classes by 2022. National centers for children with disabilities and developmental disabilities were established in 17 cities to provide information to parents about education and treatment of their children with developmental disabilities and to help them create future plans for their children. However, individual support plans that were supposed to be provided by the centers have not been well-established yet.

One of the goals of the “Comprehensive Measures for Life Cycles of Developmental Disabilities” for infants and toddlers was to help them get diagnosed at an early age, and the number of children who were diagnosed as having developmental disabilities between 0 and 5 years old has increased with this effort (S. W. Bong & Statistics Korea, 2019). However, increases in early treatment has not been following increases in early diagnosis in this measure. The measure includes training parents to get treatment as early as possible for their children with

disabilities, but the government's financial support is not included in the plan (B. Seo, 2019), not unlike the limited funding granted to the United States' early intervention legislation (Part C of the Individuals with Disabilities Education Improvement Act; IDEA, 2004). Many children with developmental disabilities receive treatments such as speech, cognitive learning, and behavioral therapies, but those are not covered by Korean national insurance (B. Seo, 2019). Therefore, the government's financial support plan for treatments of children with developmental disabilities would be needed to ease the burden of the parents. The government's efforts to ease the burden of parents of children with developmental disabilities and help those individuals have more independent lives brings more hope to many individuals with developmental disabilities and their parents. With more feedback and help from the society, the government could make positive changes in the society for individuals with developmental disabilities including ASD.

CHAPTER 5

Discussion

The interpretation of ASD and the environment surrounding individuals with ASD can be highly affected by the culture individuals live in (Bernier et al., 2010; Daley, 2002; Kang-Yi et al., 2013). Korean culture, which has been influenced by Buddhism and Confucianism (Chen et al., 2004; H. Yoo et al., 2014) impacts the way people view individuals with ASD, their educational system, diagnosis and treatment options. Previous research found that Korean people tend to have stigmas toward individuals with ASD, and the parents and grandparents of children with ASD want to avoid the diagnosis of ASD because of those stigmas, leading to late diagnosis of ASD (H. Yoo, personal communication, November 1, 2017). Previous studies also found that there was limited ASD research done with Korean populations compared to research done in North America and Europe, and the last systematic review about the Korean cultural impact on individuals with ASD and their diagnosis and assessment in English literature was published in 2012. The purposes of this study were to find any changes in how Korean culture affects individuals with ASD in Korea since 2012 and reduce the gap between the knowledge American ASD researchers have about individuals with ASD in Korea and what has been found about individuals with ASD in Korea since 2012.

Some significant changes have been noted in scientific literature and news sources in the short period between 2012 and 2019, when the data were collected. Some changes were noted in education, social environment, screening and diagnosis and steps for the future. Several barriers to progress were also found that showed little progress since the 2012 study. Stigmas are still a barrier to progress inside and outside of Korea within the culture. Legislation and policy have been created to improve the lives of individuals with ASD and their families, but implementation

of these measures has been slow and may not achieve the goals within the set timelines. Social distancing from individuals with ASD persists and continues to be a barrier to improved services in schools and centers. Improvements in perspective and perceptions are also found to be lagging behind advances in policy in some studies, while others report limited progress.

Changes in Education

The number of students with disabilities in general classroom settings has increased every year (S.-O. Kwon, 2018), but the cooperative system among the students with disabilities, teachers, and parents has not been effectively established yet (K. H. Kim, 2014). Despite the emphasis of the new law issued in 2007 on inclusive education of students with disabilities (S.-O. Kwon, 2018), the ratio of students with ASD who are in inclusive education is low compared to students with other disabilities (M. A. Song & Lee, 2015).

One of our findings indicates that general education students who have been educated about understanding ASD tend to have more positive attitudes toward being in the same classroom with students with ASD (M. A. Song & Lee, 2015), and educating students to help them understand ASD is a more effective way to help general students have positive interactions with students with ASD rather than merely increasing the frequency of interactions between them (M. Y. Kwon, 2016). Moreover, students with ASD who have average or above average intelligence are more prone to be the victims of bullying in inclusive education settings since their lack of social skills are often misunderstood by other students (K. Lee & Jung, 2016). Therefore, education for general students about ASD and social skills training for students with ASD would be needed for them to have better social interactions with other students in inclusive education settings (K. Lee & Jung, 2016).

The findings also indicate that both parents and teachers also need more education about having students with ASD in inclusive education settings. Teachers were found to have negative attitudes toward inclusive education (H. J. Park & Lee, 2008) and parents with children with ASD reported that some teachers have bullied their children by excluding them from class activities or saying inappropriate or discriminative things to their children (Jeon, 2018; K. Lee & Jung, 2016). For parents with children with ASD, it was found that they tend to rely heavily on the teachers in inclusive education, not realizing the importance of their role in their children's education in inclusive education (K. H. Kim, 2014).

The amount of research about special education for individuals with ASD has increased, and the focus of the research was changed from supporting problematic behaviors to improving appropriate skills (E. K. Kim et al., 2014). Those changes reflect improved social perspectives on individuals with ASD. However, most of the studies were focused on young children and elementary students with ASD and there is comparably a limited number of ASD research done for adults with ASD (E. K. Kim et al., 2014). Adults with ASD are often neglected in the field of research or education (E. K. Kim et al., 2014), and the parents of adult children with ASD continue to feel burdened with the limited support they receive for their children. There is lifelong education available for adults with ASD that provide them vocational and other training to help them acquire useful skills for their lives, but lifelong education was also found not to be helpful in helping them live a more independent life (H. S. Kwon & Kwak, 2018). More research would be necessary in the field of education for adults with ASD so that they can continue to learn necessary skills for their lives and have more independent lives.

Changes in Screening and Diagnosis

There have been recent studies between 2013 and 2017 that investigate the reliability and validity of some diagnostic instruments or screening tools for ASD that were translated to Korean. ASD-DC, ASD-CC, K-M-CHAT-R/F, K-SRS, K-ADI-R and K-ADOS were all investigated and found to be valid to be used among Korean populations (Cheon et al., 2016; K.-M. Chung & Jung, 2017; K.-M. Chung & Park, 2013; S. H. Kim et al., 2016; H. Kwon et al., 2017; Seung et al., 2015). Some researchers found that the K-CARS is less likely to diagnose children with high functioning ASD (H, Kwon et al., 2017), so caution would be needed about its cut-off score when it is administered to children with average or above average intelligence. Moreover, some researchers made efforts to develop an original screening of ASD, BeDevel, for young Korean children (G. Bong et al., 2019).

Changes in Treatment Methods

In the previous study, Kang-Yi et al. (2013) mentioned that the only therapies described in the Korean literature for children with ASD were music therapy, psychotherapy, and attachment promotion. In this study, it was found that more varied types of therapies are used for individuals with ASD such as speech therapy, art therapy and pharmacological therapy (K. M. Kim et al., 2014). Speech therapy was found to be the most frequently used therapy for children with ASD followed by pharmacological therapy which was found to be the most cost-effective therapy available in Korea (K. M. Kim et al., 2014). Korea's well-established national medical insurance system allows individuals with ASD to use pharmacological therapy at a relatively cheaper price compared to other therapies (K. M. Kim et al., 2014). Korea has a rehabilitation voucher system which is a financial aid program for individuals with disabilities to get appropriate treatment for their disabilities (Korean Ministry of Health and Welfare, 2019) which

can also ease the burden of parents of children with ASD. Despite varied available therapy options for children with ASD, some parents still use non-evidence-based treatment such as oriental medicine, auditory integration training, special diet or special vitamins, and they are usually not monitored by professionals (K. M. Kim et al., 2014). Efforts for awareness of using evidence-based treatments for individuals with ASD need to be made.

There have been studies about varied interventions for children with ASD in the Korean literature and interventions using robots were the most frequently used topic among them. Many researchers have found that interventions using robots is effective in increasing social skills of children with ASD (J. H. Yun & Yoon, 2018; S.-S. Yun et al., 2016; S. Yun et al., 2017) and teaching behavioral skills using robots is as effective as human-facilitated behavior treatment (S. Yun et al., 2017). Using robot-facilitated behavior treatment and interventions in the facilities need to be encouraged as Korea does not have nationally licensed behavioral therapists which has made it hard for the facilities to focus on behavioral treatments for children with ASD (J. Y. Lee et al., 2017).

In contrast to the robot studies, another finding was that a main focus of intervention research for children with ASD in Korea was social interaction (J. Y. Park & Lee, 2018), and the researchers asserted that more intervention research focusing on behavioral problems is needed (J. Y. Park & Lee, 2018). It was found that adults with ASD are still neglected in the research field of interventions compared to children with ASD (S. J. Cho, 2016). In addition, individuals with disabilities over 18 years are not eligible for the rehabilitation voucher for their treatment (Korean Ministry of Health and Welfare, 2019). More research for the development of interventions and support systems for adults with ASD would be encouraged.

Limited Changes in Social Environment

One of the findings about people's perspectives about individuals with ASD was that there are still stigmas and misunderstandings about people with ASD that cause people to socially distance themselves from individuals with ASD (S. Park et al., 2018). Many people are more likely to avoid marrying someone who has a family member or a relative with ASD and this result is consistent with what previous research found (Grinker et al., 2012). This result reflects people's biases about the causality of ASD, namely that ASD is caused by biological factors such as defective genes (S. Park et al., 2018). Parents with children with ASD often feel hurt by other people, including their extended family members' misunderstanding and stigmas about their children's disabilities so they distance themselves from other people, not wanting to reveal their child's disability to others. That leads to feelings of isolation and more burdens for parents with children with ASD. In addition, stigmas Korean people have about individuals with ASD not only affects Korean people living in Korea but also those who live outside of Korea since they still have social connections with people in Korea and are culturally affected by Korean populations (Grinker et al., 2015; Kang-Yi et al., 2018). Culturally appropriate outreach programs would help Korean people both in and outside of Korea have a better understanding of individuals with ASD and reduce their stigmas toward them (Kang-Yi et al., 2018).

The negative perspectives people have towards individuals with developmental disabilities including ASD has hindered the development of facilities for individuals with developmental disabilities. When the government decided to build a special school or a job training center for individuals with developmental disabilities, people living in the local community in the area that the facility is supposed to be built in opposed the plans. They are against the building of those facilities for people with developmental disabilities because many

of them continue to have a bias that individuals with developmental disabilities are dangerous and believe that having those facilities in their community would reduce their housing market prices (I. Park, 2017). Even though the Korean government has been trying to support individuals with developmental disabilities including ASD by creating a law (Korea Ministry of Government Legislation, 2017), building more facilities for them (D. Hwang, 2016) and offering a support system for their families (Shim & Kim, 2013), without changing the perspective and stigmas of Korean people in general, the burden the individuals with ASD and their family have in Korean society has not effectively been eased.

Limitations

One of the limitations of this study was the limited search functionality of the Korean databases we used for this study. Korean databases were unable to read and utilize Boolean search terms in the same manner that US databases are, making it more difficult to obtain the entire body of relevant literature. There could be some missing studies that reflect recent changes in Korea for individuals with ASD with the limited functionality of Korean databases. Another limitation of this study was that it had various search terms to cover four different aspects of ASD in Korea: education, social environment, screening and diagnosis, and treatment. As it covered four different aspects of a topic and did not have a specific age group to focus on, the content was not able to cover many details of each aspect of the topic. Narrowing the contents to cover in the future research would provide more specific information about ASD in Korea. A final consideration is that the relatively short time frame for data collection (2012-2019) may not be long enough to show sustained societal change. Nevertheless, meaningful changes in services were noted. Lastly, this study found research that was published between 2012 and 2019 to find out the changes for individuals with ASD in Korea and seven years does not seem to be long

enough to observe a lot of changes happening in one population. Changes happen over time and changes in social environment, public policies or laws can take longer than a decade.

Conclusion

Since the last systematic review of how Korean culture affects individuals with ASD (Kang-Yi et al., 2013), there have been positive changes and improvement found in both English and Korean literature. Many of the findings in this study were consistent with what we found in the interview with Dr. Yoo (personal communication, November 1, 2017), and there were a lot of studies done in Korea about individuals with ASD that were not published in English databases. As our society becomes more global, information gathered from English databases, Korean databases and Korean news articles is useful to researchers in the US who are interested in learning more about individuals with ASD in Korea. In addition, it was found that Korean populations living in the States are still affected by Korean society and their perspectives on people with ASD (Grinker et al., 2015; Kang-Yi et al., 2018). Therefore, this updated information can be helpful for ASD professionals who work with Korean patients with ASD and their families to understand their perspectives and cultural effects on the disabilities. Consistent with research in other countries, this study's results indicated that adults with ASD are often neglected in the research field, future research for adults with ASD for their education, treatments or interventions would be helpful.

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