

Korean Culture and Autism Spectrum Disorders

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Abstract This paper reviews the literature on early child development among Koreans, with a focus on autism spectrum disorders (ASD). The literature review of 951 abstracts in English, 101 abstracts in Korean and 27 full articles published from 1994 to 2011 was performed to understand the presentation of and response to ASD in Korean culture. Based on research to date on the identification, description, and treatment of ASD in Korean populations, we argue that at both conceptual and practical levels, early child development and interventions must be understood within cultural context. Culturally informed research on ASD is vital for increasing awareness of the importance of early intervention and the need for educational and psychological services in countries in which autism is stigmatized, misdiagnosed or undiagnosed.

Keywords Autism spectrum disorder · Korean culture · Early child development

Introduction

Most evidence suggests that the earlier autism spectrum disorders (ASD) are diagnosed and treated, the better the outcomes will be (Dawson et al. 2010). Unlike many other psychiatric conditions, autism can be detected before the age of two, and by definition (American Psychiatric Association 2000), must emerge before the age of 36 months. The symptoms of ASD manifest similarly in children across different cultures, but the meaning attributed to particular symptoms, help-seeking behavior, the degree that researchers and clinicians in different cultures follow the international diagnostic criteria, and available treatment options may vary greatly (Bernier et al. 2010; Daley 2002). Despite the renaissance in international autism research, there has been little attention to the effects of cultural context on the presentation, diagnosis and treatment of ASD, perhaps because of the assumption that autism is a neurobiological condition and that the social meanings of the condition for a particular population, while crucial in determining how people respond to and manage the symptoms, are relatively unimportant for diagnosis (Daley 2002).

The bulk of the research in cross-cultural psychiatry has focused on disorders other than autism, and on older children, adolescents and adults. A large amount of literature on mental disorders from a cross-cultural perspective exists and the guidelines published by the American Psychological Association and the Association for Multicultural Counseling and Development have provided culture or population-specific guidance for clinicians and service providers (Whaley and Davis 2007). For example, the guidelines suggest that Asians are more responsive than other groups to psychotherapy. Similarly, lower dosages of psychotropic drugs are recommended for Asians due to a

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possibly slower enzymatic metabolism (Lin and Cheung 1999).

To understand ASD in cultural context, this paper reviews the literature on early child development among Koreans, with a focus on ASD. The first epidemiological study of autism in South Korea comprised a total population study of 7–12 year olds and estimated the prevalence to be 2.64 %, the highest rate ever reported for ASD in any country (Kim et al. 2011). Approximately two-thirds of these children were enrolled in mainstream elementary schools, and were undiagnosed and untreated, raising the question of what accounts for the lack of diagnosis among children with a clinical presentation comparable to that many children with autism in other countries. The goal of the current paper is to explore the potential influences of Korean culture on ASD identification, diagnosis, assessment and treatment through a review of the English and Korean-language peer-reviewed literature. Although Korean attitudes towards health and illness, child development and education, undoubtedly vary according to a range of socio-demographic characteristics, country of residence, language skills, geographic origin within Korea, and religion, numerous patterns are discernable in the literature on Korean child development. An understanding of Koreans' parenting attitudes, early child education style, and ways of coping with children's developmental disabilities can help clinicians and other social service providers to fashion outreach plans and provide culturally competent services to Korean families of children with ASD.

Methods

The literature search was conducted in both English and Korean. The electronic databases used for the literature search in English included: Pubmed, EBSCO, Google Scholar Beta, ISI, PsycInfo, Health STAR, sociological abstract, PsycCritiques, and International Bibliography of the Social Sciences (IBSS). Two keyword searches were conducted: (1) Korean, child, and early development; and (2) Korea and child development. A total of 951 abstracts were reviewed in English and 15 articles that provided empirical evidence of the impact of Korean parenting attitudes and education system on children's early development were selected for the full review. The literature search in Korean was conducted using the National Discovery for Science Leaders, a South-Korean government database. In the review of Korean literature, autism was used as a keyword. Despite the relative paucity of research on ASD outside of Europe and North America, we expected to find literature on autism published in the Korean language since autism is a common illness across countries and there has been increased awareness of autism

in recent years with the rapid advancement of medicine and technology in South Korea. A total of 101 abstracts in Korean were reviewed and the 13 articles that provided a practice review of diagnosis and treatment of ASD in South Korea, empirical evidence of psychosocial interventions for children with autism, or the information on Korean parents' ways of coping with their child's developmental disability were selected for full review. With the exception of the 13 articles, all articles on ASD in Korean concerned neurological, genetic, and pharmacological data, and were therefore excluded from the review.

Results

Tables 1 and 2 list the English and Korean literature identified through the search. Among the studies identified in the English literature search, seven studies were conducted in the US using a Korean-American sample, two studies were conducted in both South Korea and the US, one study was conducted in South Korea and England, and five studies were conducted exclusively in South Korea. All studies written in Korean were conducted in South Korea and nine of the 13 included study samples of either children with ASD or their mothers. More than three quarters of the Korean language literature on autism was published after 2004. The sample sizes of qualitative studies ranged from three to twenty and the sample sizes of quantitative studies (including those with mixed-methods designs) greatly varied, ranging from 46 to 55,266. The age of children included in the studies ranged from one to 12 years. Below we summarize findings from these studies in three categories: (1) those specific to the assessment and treatment of ASD in Korea and children of Korean descent, (2) systems of care for children with ASD in Korea and (3) more general issues related to child development in this population.

Assessment and Treatment of Autism Spectrum Disorders

To date, only one epidemiologic study of ASD has been conducted in Korea. Kim et al. (2011) found that two-thirds of children with ASD were unrecognized and untreated, receiving no special education services. The majority of these children differed markedly, however, from those with ASD in special education environments. The sex ratio of children with ASD in the mainstream schools was more narrow (2.5 boys for every girl in mainstream schools compared with 5.1 boys to every girl in special education schools), the majority had average or above average IQs, and 12 % had superior IQs (Kim et al. 2011).

Table 1 Description of studies included in the review of English literature

Author	Study topic	Study site	n	Gender	Age	Study methods	Outcomes measured	Findings
Au et al. (1994)	Comparison of linguistic input and early vocabularies in Korean and English	United States	18	Male = 61.1 versus female = 39.9 %	12–24 months	Qualitative study	Vocabulary checklist developed by Dapretto and Bjork (1993). Using the checklist, this study measured number of nouns, number of verbs and the ratio of verbs to nouns used by mothers and children.	Far more verbs than nouns appeared in salient positions in Korean adults' speech to infants, while the more nouns appeared in English-speaking mothers' speech in Study 1. However, both Korean and English-speaking infants acquired nouns much faster than verbs (Study 2) suggesting that constraints on word meanings are more important than natural variations in input for explaining basic patterns of semantic development across languages.
Farver and Lee-Shin (1997)	Cultural differences in social pretended play between Korean- and Anglo-American preschoolers	United States	92	Male = 50 versus female = 50 %	44–63 months	Mixed methods, cross-sectional study	Child's highest level of social level play during every 60 s for 5 min was measured using a scale developed by Howes (1988) that codes solitary play, parallel play, simple social play, complementary and reciprocal play, and social pretend play. Korean parents completed the acculturation rating scale for Mexican Americans translated in Korean.	There was no cultural difference in the frequency of pretend play between the two groups. However, there was significant differences in children's communicative strategies and in the play themes. Korean American children's play included everyday activity and family role themes, whereas Anglo-American children enacted danger in the environment and fantastic themes. Anglo-American children described their own actions, rejected the partners' suggestions, and used directives, whereas Korean American children described their partners' actions and used tag questions, semantic ties, statements of agreement, and polite requests. The thematic content and the communicative strategies used to structure and maintain pretend play are influenced by culture.

Table 1 continued

Author	Study topic	Study site	n	Gender	Age	Study methods	Outcomes measured	Findings
Shin et al. (1999)	A Korean syndrome of attachment mimicking symptoms of pervasive developmental disorder	South Korea	25	Male = 92 versus female = 2 %	24–48 months	Qualitative study	The Letter Scale, the Korean Vineland Social Maturity Scale, the Korean Denver Developmental Screening Test, structured playroom observation, the Korean version of Beck Depression Inventory, the Korean version of the Minnesota Multi-Phasic Personality Inventory (MMPI-K).	The children's major symptoms included a lack of social relatedness and extreme inhibition of emotional expression. Children also exhibited problems in language and cognitive development. With the mothers' symptoms (depression/stress) improved, children's behavioral problems also improved. Korean mothers suffering severe stress or psychiatric problems are more likely to have difficulties in sharing their emotional expressions in child-rearing and withdraw socially than they are to express their emotions and seek help. Play therapy and child-mother psychotherapy were effective in improving children's language development and socio-emotional areas.
Belsky et al. (2000)	Reciprocal parent and child effects in the case of child inhibition in US and Korean samples	South Korea and United States	125	Male = 78.2 versus female = 21.8 %	36 months	Matched samples experiment	Child inhibition and parental behavior reacting to their child's inhibition. Child inhibition was rated on each of the 21 events based on a 5-point scale from 1 (no wariness) to 5 (a great deal of wariness). Parental behaviors on encouraging/accepting withdrawal, discouragement of withdrawal, encouragement of approach, and discouragement approach were rated using 3-point scales (0 = not evident at all; 1 = somewhat evident; 2 = very evident).	The results on the effect of inhibited behavior on parenting were consistent between Korean and American samples. Child effects on parenting were stronger than parenting effects on child behavior. Mothers were more affected by child inhibition than fathers. Parents who responded to child inhibition by accepting/encouraging child withdrawal also reacted by discouraging child withdrawal and encouraging approach.

Table 1 continued

Author	Study topic	Study site	n	Gender	Age	Study methods	Outcomes measured	Findings
Farver et al. (2000)	Relationship between intracultural variations in children's skills and behavioral characteristics and social pretend play in early childhood	United States (Korean-American children from Korean preschools and European American children from preschools in a West Coast City)	60	Male = 50 versus female = 50 %	42–68 months	Mixed methods, cross-sectional study	Child's highest level of social level play during every 60 s for 5 min was measured using a scale developed by Howes (1988) that codes solitary play, parallel play, simple social play, complementary and reciprocal play, and social pretend play. Child's creative potential was measured using three subsets of the Multidimensional Stimulus Fluency Measure (MSFM): patterns, instances, and uses. Children's cognitive functioning was measured by the Wechsler Preschool and Primary Scale of Intelligence-Revised (WPPSI-R). Behavioral functioning of the children was measured by the Teacher Temperament Questionnaire (TTQ). Mothers completed the Parents as a Teacher Inventory (PAAT). Korean parents completed the acculturation rating scale for Mexican Americans translated in Korean.	European American children engaged in higher proportions of social pretend play than did Korean American children, and Korean American children engaged in more positive and less negative social interactions with peers than did European American children. Korean-American children were reacted by teachers as being more socially adaptable. European-American children had higher verbal IQ scores on the WPPSI-R. European-American parents had more positive attitudes toward play and creativity, while Korean-American parents had more positive attitudes toward teaching in the home, a greater desire for control over their children, and more frustration with parenting. Culture and parent attitudes were not a significant predictor of pretend play indicating that individual qualities such as socially adaptive behavioral style, frequent positive social interaction with peers, and creativity are more important for children's expression of pretend play than other culture-specific skills and behaviors.
Farver and Lee-Shin (2000)	Impact of acculturation styles Korean immigrant mothers' parenting and their play attitudes and their young children's social and play behavior	United States	160	Male = 50 versus female = 50 %	35–68 months	Mixed methods, cross-sectional study	Observations of peer interaction and pretend play complexity measured adopting Howe (1988) checklist. Teacher rating of child's functioning with peers as difficult, hesitant and sociable in 5-point Likert scale. Parent attitudes were measured by the Parents as a Teacher Inventory (PAAT). The Suinn-Lew Asian Self-Identify Acculturation Scale (SL-ASIA) was used to measure acculturation style.	Korean-American mothers who had an assimilated acculturation style, were more accepting and encouraging of children's creativity and play, and reported more parent-child play at home than mothers with an integrated, marginal, or separated acculturation styles. Children of assimilated and integrated mothers engaged in more frequent pretend play and were rated by their teachers as being more difficult.

Table 1 continued

Author	Study topic	Study site	n	Gender	Age	Study methods	Outcomes measured	Findings
Park and Turnbull (2001)	The perceptions, levels of satisfaction, and concerns of Korean parents of children with disabilities in regard to the special education services in the US	United States	8	Male = 12.5 versus female = 87.5 % (Parents' genders are reported.)	Parents of children aged from 4 to 14 with special needs	Qualitative study	Parents' perceptions on (1) strengths and weaknesses of special education services in USA; (2) differences in the special education for their child due to cultural barriers; (3) how professionals working in the field of special education could best work with them were measured.	Parents were overall satisfied with special education. However, they experienced difficulties in exchanging information with professionals. The parents used mediators who also had children with disabilities, experienced the special education system in the US for long time, and were knowledgeable about parental legal rights and procedural safeguards. The majority of families preferred a self-contained class being against the trend of inclusion.
Vinden (2001)	The relationship between maternal parenting attitudes and children's understanding of mind	United States	97	Male = 55.7 versus female = 44.3 %	3–6 years old	Cross-sectional quantitative study	Theory-of-mind tasks included deceptive container tasks and surprising object tasks. The Parenting Attitudes Inventory (PAI) was used to measure parents' parenting attitudes.	Korean mothers were generally authoritarians, but not exclusively. Korean mothers scored higher than Anglo mothers on the authoritarian factor that focused on the child's conforming to the parents' wishes with strict obedience. Anglo mothers scored higher on authoritative parenting, particularly in the area of encouraging their children's autonomy. However, there was no clear split between authoritative and authoritarian parenting by culture. Both Korean and Anglo mothers put a high value on their children's enjoyment of learning and freedom to fail in the learning process, though Korean mothers slightly less so than Anglo mothers. Five-year old Korean American children performed better on the theory-of-mind tasks than their counterpart. For Anglo-American children, a negative relationship between an understanding of mind and authoritarian parenting attitudes was found.

Table 1 continued

Author	Study topic	Study site	n	Gender	Age	Study methods	Outcomes measured	Findings
Shin (2002)	The informal and professional supports available for families of children with mental retardation in Korea and the United States	South Korea and United States	78	Female = 100 % (Parents' gender is reported.)	Mothers age from 31 to 50	Cross-sectional study	Social support for families of children with mental retardation developed adopting the Norbeck's Social Support Questionnaire was used. The Adaptive Behavior Scale (ABS) was used to assess the level of adaptive functioning of children in the family.	American mothers compared to Korean mothers received more informal and professional support in almost all domains of social support and Korean mothers experienced more stress.
Yang and McMullen (2003)	The relationships between American primary-grade teachers and Korean mothers: the role of communication and cultural sensitivity in the linguistically diverse classroom	United States	9 (5 parents and 4 teachers)	Male = 40 versus female = 60 %	Parents and teachers of children with grade level between 1st and 3rd	Qualitative study	Perceptions of the effective ways of communicating with each other, roles of teachers and parents, cultural sensitivity, characteristics of Korean mothers, and concerns about academics and language learning were explored.	Korean parents were reluctant to participate in the parent teacher association board and other group activities although they were very involved in one-on-one relationships with their children's teachers. The tendency for Korean mothers to contact and speak frequently with American teachers was often interpreted by the American teachers as an extreme emphasis on education and achievement. However, the more parents and teachers shared information about students' school progress in casual as well as formal communications, the more they learned each other's communication style.
Kim and Mahoney (2005)	The impact of Relationship Focused Intervention (RFI) on Korean mothers and their preschool-based children with disabilities	South Korea	18	Male = 55.6 versus female = 44.4 %	Children: ages 3–8 years mothers' mean age: 34	Longitudinal and mixed methods	To measure child development, the Korean Vineland Social Maturity Scale and the Korean Carolina Curriculum for Preschoolers with Special Needs (K-CCPSN) were used. Maternal interactive behavior was measured by the Korean Maternal Behavior Rating Scale (K-MBRS). Children's interactive behavior was measured by the Korean Child Behavior Rating Scale (K-CBRS). Parenting stress was measured by the Korean Parenting Stress Inventory Short Form (K-PSI).	The comparison of pre- and post-intervention assessments of parent-child interaction indicated that RFI was effective at encouraging parents to become more responsive, affective and achievement oriented with their children. These changes in mothers' interactional style were associated with an 18 % increase in children's interactive behaviors. Regression analyses revealed that increases in children's behavior were associated positively with maternal responsiveness and negatively with maternal achievement orientation.

Table 1 continued

Author	Study topic	Study site	n	Gender	Age	Study methods	Outcomes measured	Findings
Heo et al. (2008)	Use of Ages and Stages Questionnaires (ASQ) in Korean for the identification of young children with developmental delays	South Korea	3,220	Male = 50.3 versus female = 43.9 %	4 month–5 years	Cross-sectional quantitative study	The Korean Ages and Stages Questionnaire (K-ASQ) and the Korean-Denver Developmental Screening Test II (K-DDST II) and the Korean Development Indicators for the Assessment of Learning, 3rd edition (K-DIAL-III) were used to measure the validity of the K-ASQ.	Internal consistency of the Korean ASQ was high, with overall correlations of 0.75 for communication, 0.85 for gross motor skills, 0.74 for fine motor skills, 0.72 for problem solving, and 0.65 for personal-social. Mean scores of Korean children and the US normative sample were similar. The validity was robust.
Oh and Lewis (2008)	Korean preschoolers' advanced inhibitory control and its relationship to other executive skills and mental state understanding	South Korea and England	40	Male = 45 versus female = 55 % (Parents' genders are reported.)	42–45 months	Matched samples experiment	Verbal ability was measured the Korean-Wechsler Preschool and Primary Scale of Intelligence (K-WPPSI). Executive functioning included conflict inhibition measures, delay inhibition measures, working memory measures, switching measures, and false belief measure.	Korean children younger than 3.5 years of age showed ceiling effects on some inhibition measures despite more stringent protocols. The link between executive function and mental state understanding was not as strong as in the British sample.
Shin (2008)	Potential influence of parental attitudes towards education on children's daily life and development in Korea	South Korea	17 married couples	Male = 50 versus female = 50 %	Married couples with more than one child between the ages of 2 and 12 years	Qualitative study	The potential influence of parental attitudes towards education on their children's daily life and development was explored.	The desire of the parents for the educational success of their children was profound and had a large impact on their behavior towards their children. All parents placed great importance on their children's academic achievement as a means to acquire personal advancement, higher social status, and wealth. Parents tended to overlook children's developmental needs for leisure, pleasure, and sleeping and tended to ignore their psychological and emotional wellbeing.
Kim et al. (2011)	Prevalence of autism spectrum disorders in a total population sample	South Korea	55,266	Male = 48.4 versus female = 48.7 % data missing = 2.9 %	7–12 years old	Cross-sectional quantitative study	The Autism Spectrum Screening Questionnaire (ASSQ), the Autism Diagnostic Observation Schedule (ADOS), and the Autism Diagnostic Interview-Revised (ADI-R).	The estimated prevalence of autism was 2.64 % with 1.89 % in the general population sample and 0.75 % in the high-probability group. The male-to-female ratios were 2.5:1 and 5.1:1 in the general population sample and high-probability group.

Table 2 Description of studies included in the review of Korean literature

Author	Study subject	Study site	n	Gender	Age	Study methods	Outcomes measured	Findings
Tak and Lee (1996)	Family stress, perceived social support, and coping of family that has a developmentally disabled child	South Korea	46 families	Unknown	Parents with mean age 38	Cross-sectional and quantitative study	The Family Inventory of Life Events (FILE), the Personal Resources Questionnaire (PRQ-85) and the Coping Health Inventory for Parents (CHIP) were used to measure families' stress and coping.	Families' perceived social support was a resiliency factor between family stress and coping.
Koo and Lee (2002)	Coping behaviors of mothers with children with autism	South Korea	23 pairs of mothers and therapists	Female = 100 %	Mother's age: unknown child's age between 23 months and 10 years	Cross-sectional and quantitative study	Mothers' coping behavior styles.	Four different coping types of mothers with children with ASD were identified: (1) accepting their child's disability and their situation; (2) being engaged in therapeutic work for their child with positive attitude; (3) sharing ambivalent feelings and responses regarding their child's disability; and (4) expressing concerns and difficulties related to the situation. For types (3) and (4), there was disagreement between mothers' psychological adjustment from the therapists and mothers' self assessments.
Cho (2003)	Development of communicative skills and grammar in Korean children with autism	South Korea	3	Male = 100 %	9–12 years old	Qualitative study	Measures included the total number of utterances and type-token ratio, proportion of noun phrases and verb phrases, proportion of communicative attempts in interchanges expressed verbally, proportion of speech act types used, proportion of null versus overt subjects, proportion of person-neutral and person-specific modals in the utterances with verbs, proportion of old and new referents in null subjects, and proportion of old and new referents in overt subjects.	The speech of all three children with ASD was largely repetitive and echolalic, and unable to consistently interact communicatively on the ongoing joint focus of attention. The more repetitive the child's speech was, the more it was morpho-syntactically impaired.

Table 2 continued

Author	Study subject	Study site	n	Gender	Age	Study methods	Outcomes measured	Findings
Lee and Jung (2005)	Adaptation process of mothers of children with autism	South Korea	10	Female = 100 %	Mean age = 41.6	Qualitative study	Adaptation process of mothers of children with ASD.	Most interviewees went through the stages of denial, isolation, anger, bargaining, depression, and acceptance. However, the interviewees did not experience the stages in the exact sequence as the stages sometimes would repeat or overlap one another. Many of the mothers could not obtain the needed social support.
Won et al. (2005)	Training mothers with children with ASD on social reciprocity	South Korea	5	Female = 100 % (Parents' gender is reported.)	38–72 months with mothers aged 31–37	Single subject design	Ecological Communication Orientation Scale (ECOS) interaction profiles.	Four of five children showed improvement in the use of imitation with animation and expectant waiting after the intervention. The children showed increased use of initiation of interaction, vocalizations, and verbal production after their mothers received the training intervention.
Hong et al. (2006)	Development of attachment promotion therapy program for children with autistic spectrum disorder	South Korea	NA	NA	NA	Literature review	NA	This paper provides an overview of an interventional program developed using attachment promotion theory. The attachment promotion theory mandates the participation of both the mother and the child with ASD, and consists of mutually enjoying play activities, close physical contacts and parental training on intense mother–child interactions, focusing on improving maternal sensitivity, responsiveness, and nurturing behaviors during their interactions.

Table 2 continued

Author	Study subject	Study site	n	Gender	Age	Study methods	Outcomes measured	Findings
Im et al. (2006)	Effects of an attachment promotion therapy program for the children with autistic spectrum disorder (ASD)	South Korea	NA	NA	NA	Literature review	NA	The review of eight studies concluded that attachment promotion therapy is effective in improving attachment behaviors and attachment security. Mothers' behavior became more child-centered, positively responsive, and expressive supportively. About 96 % of the mothers were satisfied with the program.
Lim et al. (2006)	Clinical diagnosis and emotional behavioral characteristics of children in a special education class in Korean elementary school	South Korea	53	Male = 67.9 versus Female = 32.1 %	9–11 years old	Cross-sectional and quantitative study	The Korean-Weshler Intelligence Scale for Children-III (K-WISC-III), the Vineland Social Maturity Scale (SMS), the Childhood Autism Rating Scales (CARS), the Children's Depression Inventory (CDI), the abbreviated Connors Parent-Teacher Rating Scale-Revised, the State-Trait Anxiety Inventory for Children (STAIC), the Korean Personality Inventory for Children (K-PIC), the Child Behavior Checklist Korean version (K-CBCL), and the computerized ADS (Attention Diagnostic System) program.	The mean scores of the measures were the following: SMS = 78.7 ± 20.0 CARS = 25.4 ± 9.0 CDI = 22.2 ± 5.2 STAIC = 35.2 ± 8.2 (SAIC)/ 36.5 ± 6.2 (TAIC) Abbreviated connors parent-teacher rating scale-revised = 11.0 ± 4.6 K-CBCL total problem Score = 55.6 ± 8.2
Jung and Seong (2007)	Characteristics of the prosodic phrases among children with autism spectrum disorder (ASD) and typically developing children in the reading of Korean read sentences	South Korea	20	Male = 100 %	5–6 years old	Qualitative study	Comparison of Korean sentence reading among children with ASD and typically developing children.	The two groups showed differences in the tonal patterns at the end of the prosodic phrases and in the degree of rising and falling slope related to pitch contour. The slope showing the variation in the fundamental frequency at the end of the prosodic phrase was twice as steep in the group of ASD children as in the group of typically developing children.

Table 2 continued

Author	Study subject	Study site	n	Gender	Age	Study methods	Outcomes measured	Findings
Koo et al. (2007)	The Korean practice parameter for the treatment of pervasive developmental disorders: Non-pharmacological treatment	South Korea	NA	NA	NA	Overview of literature	NA	This paper provides an overview of non-pharmacological treatments of children and adolescents with PDD based on literature on evidence-based practices.
Ju et al. (2007)	Effects of a music therapy program for children with ASD in child day care centers	South Korea	3	Male = 100 %	3–4 years old	Qualitative study	The Autistic Diagnostic Observation Schedule (ADOS), the Social Maturity Scale (SMS), the Social Quotient (SQ), and Fagot's interactive behavior code were measured.	After music therapy, children's ADOS score and SQ score improved indicating improvement in autistic symptoms and social maturity. Additionally, gaze, gesture for communication, verbal language, laughing/smile, and normal play behaviors increased.
Yoo et al. (2007)	The Korean practice parameter for the treatment of pervasive developmental disorders (PDD): diagnosis and assessment	South Korea	NA	NA	NA	Overview of literature	NA	This paper provides guidelines for the assessment of core features of PDD including abnormalities in communication, social interaction, and repetitive and stereotyped behavior.
Lee (2008)	Effects of massage therapy and attachment promotion program on social maturation and attachment between mothers and children with ASD	South Korea	44	Male = 86.4 versus Female = 13.6 %	36–68 months Mothers' mean age = 33	Quasi-experimental study	The childhood Autism rating scale (CARS) and the social maturity scale were used to measure the effect of massage therapy on children's symptoms and social maturity. Additionally, mother-child attachment behaviors were videotaped.	After 4 month of intervention, the experimental group scored significantly higher than the control group in maturation. However, there was no significant difference in measures using the Childhood Autism Rating Scale (CARS). The total scores of mother-child attachment between pre- and post-interventions showed a significant difference for the experimental group.

The diagnostic practice parameter for ASD used in Korea is based on the DSM-IV and the Autism Diagnostic Interview-Revised (ADI-R; Yoo et al. 2007). Treatment recommendations are, for the most part, adopted from the American Academy of Child and Adolescent Psychiatry's practice parameters for the assessment and treatment of children, adolescents, and adults with autism and other pervasive developmental disorders. Previous studies have used the ADI-R, the Autistic Diagnostic Observation Schedule (ADOS) and the Childhood Autism Rating Scale (Ju et al. 2007; Lee 2008; Lim et al. 2006; Won et al. 2005; Kim et al. 2011).

In South Korea, children that American clinicians might diagnose with autism tend to be diagnosed with reactive attachment disorder (RAD), pejoratively referred to as “lack of love” (*aejŏng kyŏlpip*), a term that parallels the older American concept of the “refrigerator mother.” In Korea, RAD is often thought to be a condition mimicking autism, caused by a mother's absence of attachment to her child (Shin et al. 1999; Hong 2006; cf. Grinker 2007). For example, Shin et al. (1999) assessed children who had received a diagnosis of autism. Their study observed twenty-five children between the ages of 2 and 4 (all living in “intact nuclear families”) and their mothers playing for 20 min while they were observed through a two-way mirror. Researchers report that the mothers lacked social skills, failed to join in play with their children, appeared insensitive to their children's cues, and engaged in parallel play. They report that the children's behavioral problems improved as their mothers' symptoms improved, and play therapy and child-mother psychotherapy were effective in improving children's language and socio-emotional areas. They also emphasize providing appropriate mental health services to mothers with children with ASD.

Two studies conducted in Korea provide information on the development and clinical presentation of ASD in Korean children. Cho (2003) reported that the speech of Korea children with ASD was largely repetitive and echolalic and that they were unable to consistently engage in social communication. The author found that the more repetitive the child's speech was, the more it was morpho-syntactically impaired. Jung and Seong (2007) found that Korean children with autism and normal development had differences in both tonal patterns at the end of the prosodic phrases and the degree of rising and falling slope related to pitch contour.

One study described Korean families' mechanisms for coping with their child's ASD or developmental disability. Korean families' perception of strong social support has been found to be positively associated with their resilience and coping with children with developmental disorders (Tak and Lee 1996).

Four of the studies reviewed here described psychosocial interventions for children with ASD. The interventions used in the studies include music therapy, massage therapy, behavioral therapy involving mothers, attachment

promotion, and maternal training on social reciprocity for children with autism. These interventions focus on developing a healthy and supportive emotional relationship between mother and child, with the goal of increasing attachment. Music therapy has been found to have a positive effect on Korean children's verbal skills, laughing/smiling and play behavior (Ju et al. 2007). Lee (2008) reported that massage therapy and an attachment promotion program significantly improved the social maturation of children with ASD, as measured by the Korean Vineland Social Maturity Scale. The researchers found no significant differences between pre- and post-intervention attributes when measured using the Childhood Autism Rating Scale. The attachment promotion program was found to be effective in helping Korean mothers become more child-centered, respond more positively to their children's behavior, and show more support for their children's needs (Im et al. 2006). Training in social reciprocity for mothers of children with autism has been reported to increase Korean mothers' use of imitation with animation and expectant waiting, and to increase children's initiation of interaction, vocalizations, and verbal production (Won et al. 2005).

Systems of Care for Children with ASD in Korea

Several studies described systems of care for children with ASD in Korea. Although education for children with disabilities is mandatory in Korea under the special education promotion act of 1977, the quality of education is reported to be substandard (Shin 2002). According to the South Korea Ministry of Education, Science, and Technology (2010), among 79,711 students receiving special education in the country (population 44 million), 5.6 % (approximately 4,500 students) have a diagnosis of ASD. Given an estimate of 9.7 million children ages 5–19 in Korea as of 2005 (United Nations Demographic Yearbook 2008), a figure of 4,500 school-age children with a government classification of autism would yield a diagnosed prevalence of .046 %, much lower than the Kim et al. (2011) estimate. A previous survey (Seo 1997) reported that among the children who are entitled to special education in South Korea, only 42 % are enrolled in special education programs. The children not enrolled in special education are reported to attend regular classes at regular schools or welfare facilities that pay little attention to individual capabilities and difficulties (Park 2010). Although the Korean Special Education for Individuals with Disabilities and Others Law (2007) promotes inclusive education by increasing the number of special education classrooms in regular schools, the lack of special education classrooms and the shortage of trained staff remain major obstacles towards improving school-based services. Perhaps as a

result, Korean families with children with ASD often have trouble obtaining the social support that they need outside of school (Lee and Jung 2005).

Impact of Korean Culture on Early Child Development of Korean Children

Previous research has investigated the impact of Koreans' parenting style and school culture on children's cognitive development, including executive function and theory of mind. Executive function is generally defined as "the ability to maintain an appropriate problem-solving set for attainment of a future goal" (Welsh and Pennington 1988, 201, cited in Oh and Lewis 2008). Oh and Lewis' (2008) study of Korean preschoolers' advanced inhibitory control and its relationship to other executive skills and mental state understanding found that Korean children younger than 3.5 years of age showed ceiling effects on some inhibition measures. The link between executive function and mental state understanding was not as strong as in a sample of British children. The authors found that executive skills, including inhibitory control, working memory, and switching were not significantly correlated and raised questions about whether the executive system is as unified in preschoolers as has been suggested and whether the structure of the executive system is consistent across cultures. Oh and Lewis suggest that Confucianism, in particular, the enforcement of proper etiquette and strict rules of social engagement between children and elders, could be a factor associated with Korean children's high inhibitory control; Korean teachers continue to prefer to adopt whole class teaching, emphasize the teacher's authority, extrinsic motivation, completion of worksheets, and clear separation of play time and work time.

In contrast to the hypothesis that Korean teaching customs negatively influence the development of children's social skills, including theory of mind, Korean parents' authoritative parenting is reported to have a positive impact. Korean parents have been found to generally exhibit more authoritative parenting styles than their Anglo-American counterparts. Vinden (2001) found that authoritative parenting is positively associated with a more developed theory of mind in Korean children, while such a parenting style is negatively associated with Anglo-American children's development of theory of mind. The authors suggested that culturally different parenting styles achieve similar developmental goals and that evaluations of good parenting should be based on the complex of attitudes and behaviors within particular socio-cultural contexts. With regard to early word acquisition, Korean and English-speaking children appear to follow a similar developmental pattern. Au et al. (1994) found that Korean-speaking children, like English-speaking infants, learn

nouns faster than verbs although Korean parents' verbal communication with their children incorporated significantly more verbs than nouns in comparison to English-speaking parents.

Social relationships in Korean culture are based to a large degree on a hierarchy of differences that confer status, including age, gender, family, and social role such as parent, child, teacher, and student (Howe 1988; Min 1997; Park and Cho 1995). Studies have found major cultural differences between Korean and Anglo-American families regarding how children play and socialize. Farver and Lee-Shin (2000) found that Korean children spend a greater proportion of time not being engaged in any activity involving social communication and engage in more parallel play than social and pretend play compared with Anglo-American children. Compared to American children, Korean children engaged in mostly parallel play (46 %) and solitary play (29 %). The researchers also found that, in comparison to Anglo-American children, Korean children were more cooperative and showed more neutral affect. Anglo-American children were found to be more negative and aggressive in pretend play, but also exhibited more shared positive affect. Although this study observed Korean-American children, not the Korean children residing in Korea, the study findings likely reflect Korean parenting style since the children's parents were all Korean immigrants.

Korean parents' attitudes toward early child development also differ from those of American families. Despite rapid cultural changes in Korea in response to both endogenous historical forces and exposure to non-Korean cultures, Koreans' child rearing practices, parent-child relationships, and children's development and behavior continue to be strongly influenced by Confucian ideals, which highly value parental control over children's lives and decision-making (Lee and Lee 1990; Park and Cho 1995; Choi 1997; Park 2001; Hong 2006).

Discussion

This paper reviewed studies that have examined the impact of Korean culture on ASD and early child development. Of 15 studies reviewed in English, two were studies of ASD; of the 13 articles reviewed in Korean, nine were studies of ASD and two concerned guidelines for ASD diagnosis and treatment.

Assessment and Diagnosis

Our review suggests that autism is an uncommon diagnosis in South Korea, despite the relatively high prevalence estimate. Children in Korea who have a diagnosis of autism

are assessed and diagnosed at an early age, often before the second birth date (Grinker 2007), but this is in large part due to the fact that diagnoses are made primarily for children with significant impairments (Kim et al. 2011).

Despite the fact that an attachment disorder diagnosis places blame on the mother, many mothers seem to prefer the diagnosis to autism. First, unlike autism, RAD or lack of love can be ameliorated by giving love and thus is not a permanent condition. Koreans widely consider autism to be untreatable (Grinker 2007). Second, RAD, unlike autism, is not a genetic condition. Thus, as Grinker notes, while RAD may stigmatize the mother, autism would stigmatize the whole family—past, present, and future and negatively influence the marriage prospects of an autistic person's relatives. Third, and perhaps most importantly, the diagnosis makes sense in the context of Korea's dramatic social changes over the past 50 years, as the country emerged from the total devastation of the Korean War to become one of the largest economies in the world. Child health experts make a causal link between contemporary nuclear families, daycare and autism, arguing that modern parents no longer know how to raise children properly, and that children left with nannies or in daycare cannot form appropriate or lasting attachments with their mothers (Hong 2006). This failure of attachment leads to RAD, which is then confused with autism (Shin et al. 1999).

In response to these phenomena, Shin et al. (1999) argued that Korean women suppress emotion more than do women in other countries, and handle stress by withdrawing from social situations; when they do express emotion they do so through somatic symptoms, especially *Hwa-byung*. *Hwa-byung* is a Korean disorder that cannot be described easily in English. It is a kind of depression with bodily complaints such as fatigue and soreness associated with old age, and the persistent feeling of a mass lodged in the stomach. *Hwa-byung* is thought to be caused by inhibiting anger. In addition, mothers' withdrawal, the authors argue, is exacerbated by Korean women's progress, as professional careers take them away from their children, the national preoccupation with educational advancement, and the widespread use of videos and computers in the household. The researchers say, "We inferred that these mothers also used videotapes as a way of avoiding direct interactions with their children" (1999: 73). To ameliorate these problems, the authors suggest that mothers of children with autism should receive appropriate mental health care.

It is important to note that the only therapies for children with ASD described in the Korean literature were music therapy, massage therapy, play therapy, psychotherapy, and attachment promotion. Behavioral and developmental interventions found to be effective in other countries do not seem to have attracted much research or clinical interest in Korea.

Systems of Care for Children with ASD in Korea

Our review suggests that obtaining appropriate resources after diagnosis can be very challenging in Korea. The studies reviewed in this paper report the lack of a formal support system for children with disabilities that could result in Korean parents becoming frustrated and children not receiving appropriate access to treatment and other services (Cho et al. 2000). Parents of children with special needs thus frequently think about the costs and benefits of traveling or immigrating to Europe or North America, where it is believed their children have a greater chance of receiving an appropriate education (Grinker 2007: 249). While more impaired children may be obtaining some services, most children, especially those with above average intelligence, are not. One reason for the lack of services may be the relative youth of child psychiatry in Korea. The first division of child psychiatry within a medical center was established in 1981 at what was then Korea's largest and most prestigious university hospital, Seoul National University Hospital. This remains one of only two medical schools in Korea that offer a fellowship in child psychiatry (Seoul National University 2008). At the time of this writing, Seoul National University Hospital is the only academic medical hospital in Korea that employs a clinician certified to administer the diagnostic instruments for ASD that are the gold standard throughout the world: the Autism Diagnostic Observation Schedule and the Autism Diagnostic Interview. The Behavior Assessment System for Children II (BASC-II) questionnaire has only recently been translated into Korea and is currently undergoing field trials in Korea (Song et al. 2011). Although there are only a few centers in Korea that provide assessment, treatment or services for children with ASD, there is a large volume of information available online through Korean websites. These sites are news blogs and Internet cafes that provide guidance for parents on coping skills, and facilitate the sharing of experiences among families. An extensive web search conducted by the authors found few sites offering information on the delivery of institutionally-based services. Nonetheless, as evidence of the increasing awareness of ASD in Korea, the websites of several academic and professional organizations in Korea such as the Korean Society of Special Education, the Korean Association for Persons with Autism, the Korean Psychological Association, the Korean Academy of Child and Adolescent Psychiatry, and the Korean Society for Early Childhood Special Education list ASD as a focus.

Impact of Korean Culture on Early Child Development of Korean Children

The studies suggest that particular areas of children's development can be affected by cultural factors. Korean

schools, from preschools through high school emphasize structure and routine within the classroom, learning by rote memory, with few transitions or alterations in daily schedules. Indeed, the authors of the Korean study of ASD prevalence suggest that the structure suits some of the needs of children with ASD who are high functioning, thus facilitating their participation in mainstream schools (Kim et al. 2011). This teaching method may promote Korean children's development of executive function, although it may not necessarily emphasize the development of knowledge or insight into other's internal states (theory of mind), a notable deficit in many children with ASD.

Although Korean children show similar patterns of language and communication development, the use of honorifics is unique in Korean language. In interviews with Grinker, clinicians reported a consistent deficit among children and adults with ASD in the use of honorifics, the suffixes appended to verbs to denote the social and/or hierarchical relationship between speakers (Grinker 2007). As a result, in Korea, and in the many other societies that employ grammatical forms to convey respect or mark one's place in a hierarchy, abnormalities in language and communication suggestive of an ASD can be identified in a clinical assessment or a screening instrument that includes a question about the appropriate or inappropriate use of honorifics (Grinker et al. 2011).

Based on the differences identified in this review, assessment and treatment of ASD without an understanding of Korean culture and Korean families' coping strategies with ASD may hinder the implementation of effective intervention for Korean families. Culture, and parental belief systems in particular, can be constitutive of the ways parents identify, understand and manage aberrations in development. For example, Mandell et al. (2002) hypothesize that one reason African-American children with ASD may be diagnosed later than white children is that during assessments African-Americans parents may describe some autistic behaviors in children as disruptive while white parents describe the same behaviors as idiosyncrasies or social oddities, thus leading to more diagnoses of conduct disorder in African-American children. Studies have reported that among certain ethnic groups, such as Hispanics or American Indians, families are less likely to use the services of professionals such as case managers, psychologists, and developmental pediatricians (Thomas et al. 2007). The poor outreach and the lack of cultural competency of providers, overall mistrust of the system as a function of institutionalized discrimination, and greater reliance on extended family members and friends than professionals have been identified as reasons for underutilized professional services (Thomas et al. 2007).

Koreans frequently attribute children's disabilities to poor *tae kyo* (prenatal practices), that might negatively affect the

health and intelligence of babies, or mistakes in early parenting (Cho et al. 2000). The concept of *tae kyo* refers to the total relationship a mother forms with her unborn child and can thus include all prenatal experiences affecting the fetus, such as the mother's mood, loud verbal conflicts, excessive noise, or poor diet. While the relationship between mother and child does not cause ASD, therapists should pay greater attention to the fact that Korean parents believe in that causal relationship, and consider how to explain and structure interventions for the child that will not reinforce that belief. As it now stands, most family-based studies conducted in Korea focus almost exclusively on the relationship between mother and the child with ASD.

Attention should also be paid to the educational system since teachers can often identify functional impairments that are manifested, or are more salient, in settings outside the child's routine home setting. Because the law for integrated education (*Tonghap Gyokuk Bôp*), ratified by the Korean congress in 1994, mandated inclusion for all children without severe physical or intellectual disabilities, children on the autism spectrum who are verbal, educable, and with above average intelligence, are generally educated within mainstream schools, most of which do not provide special education services.

Although this literature review is incomplete and may have been influenced by the particular search terms used and the necessary reliance on one Korean-language database, it is clear that early child development and interventions, at both conceptual and practical levels, must be understood within cultural context. Cultural context refers here not only to patterns of Korean culture in Korea but also in the many societies in which Koreans now live, whether in Canada, the US, England, or Australia. This review highlighted existing studies on ASD in Korean, but few focus on culture. And while numerous English-language publications on Korea focus on the cultural aspects of the Korean family, marriage, and kinship, very few focus on ASD or developmental disorders. A first step towards new research would involve the study of cultural, structural, and financial barriers to care. A second step would involve the production of culturally informed materials written in Korean that can be distributed to healthcare professionals and service providers with a robust Korean clientele, as well as to patients and families.

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