

The Acculturation of Maternal Sensitivity: A Comparison of South Korean, Korean American, and European American Mother-Infant Dyads and an Analysis of Variation in Korean American Mothers' Traditional South Korean Parenting Values

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Abstract

This study explored the relations between acculturation and the maternal sensitivity of Korean American mothers and examined how Confucian-derived values of *hyo* might be associated with maternal sensitivity. Mean-levels of maternal sensitivity in native South Korean, South Korean immigrants in the United States (Korean American), and U.S.-born European American mothers and their 5.5-month-old infants were compared. In addition, this study examined the associations between maternal sensitivity and acculturation in Korean American mothers, specifically the extents to which Korean American mother maintain South Korean cultural values and/or adapt the dominant cultural values in the United States (U.S.). Maternal sensitivity was assessed using three popular Western observational maternal sensitivity measures, namely the Ainsworth Maternal Sensitivity Scales (AMSS; Ainsworth, 1969), Mini Maternal Behaviour Q-Sort-VR (Mini MBQS-VR; Moran et al., 2009), and the Nursing Child Assessment Feeding Scale (NCAFS; Oxford & Findlay, 2015). Altogether 181 mother-infant dyads participated: 57 South Korean, 74 Korean American, and 50 European American. South Korean mothers showed statistically greater (< 2-point), but perhaps not meaningful, mean-level AMSS Acceptance subscale score than European American mothers. Additionally, South Korean mothers showed meaningfully greater (.20), but not statistically significant, difference in Mini MBQS-VR scores than European American mothers. No associations were found between maternal sensitivity, as measured by AMSS, MBQS, and NCAFS, and acculturation level in Korean American mothers. This study suggests that, depending on the measure used to assess maternal sensitivity, there may be some differences observed in the scores of mothers from different cultures. However, overall, there appear to be few differences in observed maternal sensitivity across South Korean, Korean American, and European American mothers. Furthermore, this study suggests that there may be

no relations between acculturation and maternal sensitivity in Korean American mothers. This study provides insight into maternal sensitivity behaviours in South Korean, Korean American, and European American mothers in different cultural contexts.

Keywords: maternal sensitivity; observational maternal sensitivity measures; mother-infant interactions; acculturation; cross-cultural

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The Acculturation of Maternal Sensitivity: A Comparison of South Korean, Korean American, and European American Mother-Infant Dyads and an Analysis of Variation in Korean American Mothers' Traditional South Korean Parenting Values

The concept of maternal sensitivity, introduced by Ainsworth (Ainsworth et al., 1978), refers to a mother's capacity for noticing an infant's signals and subsequently "interpreting them accurately and...responding to them appropriately" (Ainsworth et al., 1978, p. 40). Maternal sensitivity has been extensively studied in various contexts and is considered one of the most crucial features of positive parenting that has important implications for healthy child development (Bakermans-Kranenburg et al., 2003; Bornstein, 1989; Bornstein, 2002; Bornstein, Putnick, et al., 2019; Deans, 2020; DeWolff & van IJzendoorn, 1997; Mesman et al., 2012). A number of observational measures have been developed over the last decades to allow for the quantification and objective assessment of maternal sensitivity. However, consensus on the characteristics and behaviours that define maternal sensitivity is still sorely lacking (Bailey et al., 2017; Bohr et al., 2018; Meins et al., 2001; Posada et al., 2016; Shin et al., 2008; van Den Boom, 1997), particularly in non-Western populations, including immigrant parents acculturating in Western settings (Bornstein, 2017b; Cote & Bornstein, 2021; Mesman et al., 2018; Park & Chesla, 2007).

Although maternal sensitivity has been widely studied in various contexts, its theoretical claims are largely monocultural (Quinn & Mageo, 2013) as evidenced in the *10/90 divide* (Saxena et al., 2006). Indeed, less than 10% of the world has contributed more than 90% of scientific research in maternal sensitivity which is generally conducted with "Western, Educated, Industrialized, Rich, and Democratic" (WEIRD; Henrich et al., 2010, p. 61) samples (Tomlinson et al., 2014), even though infants born in the Western part of the world make up less than 10% of

the total world infant population (Population Reference Bureau, 2013, as cited in Tomlinson et al., 2014, p.625; Statista, 2020¹; United Nations Statistics Division, 2020²). In other words, research findings based on 10% of the world infant population have been generalized to more than 90% of the under-represented infants around the world. Even though culturally diverse contributions have been increasing in research on maternal sensitivity, there remains a critical shortage of investigations that explore sensitivity across cultural settings, especially in settings where acculturation may have occurred. In a globalized world, it seems crucial to better understand immigrant caregivers in their dominant culture of destination (Bornstein, 2017b; Posada et al., 2016).

Given the current gap in the literature, examining the conceptualization and assessment of maternal sensitivity in the context of acculturation is warranted (Deans, 2020; Ekmekci et al., 2016; Emmen et al., 2012; Keller, 2013). The current study aimed to investigate whether maternal sensitivity behaviours vary with culture by comparing three contrasting cultures. More specifically, native South Korean, South Korean immigrants to the United States (Korean American), and U.S.-born European American mother-infant dyads were compared to gain a better insight into similarities and differences in maternal sensitivity behaviours. Furthermore, associations between maternal sensitivity and acculturation in Korean American mothers were examined to better understand the extent of their similarities or differences in maternal sensitivity behaviour within Korean American mothers in relation to their acculturation levels. Maternal sensitivity in South Korean, Korean American, and European American dyads were measured by three mainstream Western standardized assessment tools of maternal sensitivity.

¹ Data were collected in 2010.

² Data were collected in 2011.

Acculturation is a complex process that involves changes in an individual's behaviours when relocating from one cultural environment to another. The influence of a host culture, and subsequent integration of aspects of that new culture with one's culture of origin, likely influences parenting and family dynamics (Bornstein, 2017a; Bornstein, 2017b; Bornstein & Bohr, 2011; Bornstein et al., 2020; Chen et al., 2014; Choi et al., 2017).

South Korean dyads were purposefully chosen to allow for a meaningful comparison of expressions of maternal sensitivity with matched Korean American dyads. South Korean culture was identified as a culture of interest as there are notable distinctions between South Korean and European American cultures in respect to parenting practices, including more parental control or intrusiveness (Vinden, 2001), tendency to take initiatives in directing parent-child interactions (Sung & Hsu, 2009), and high standards and self-discipline required for academic success (Kim et al., 2005; Kim and Park, 2006) in South Korean parenting practices compared to those of European American. Specifically, Confucian values have shaped family dynamics and parenting roles in South Korea and continue to exert some influence on them, even with the prevalent exposure to Western values that is common today (Chung, 2015; Hyun, 2001; Lee et al., 2018; Lévi, 2013; Sung, 2005, 2020). In addition, Korean American dyads were chosen for a three-way acculturative comparison with South Korean and European American mothers to evaluate the extent of the Korean American mothers' resemblance of maternal sensitivity in South Korean and/or European American mothers.

Caregiving in the Context of Immigration and Acculturation

Across cultures, the importance of sensitive caregiving has been well-established as quality of caregiving is believed to directly nurture the emerging generation to adapt and integrate into its community (e.g., Mesman et al., 2016; Moran et al., 2011; Posada, 2013).

Caregiving in turn is embedded in cultural values and norms (Bornstein & Cote, 2019). Immigrant caregivers undergo acculturation, which is a “disorganizing and reorganizing experience” (Bornstein et al., 2020, p. 3) that presents numerous challenges, including negotiating a new culture, and learning to navigate new and different systems alongside the already difficult task of raising well-adjusted children. Many immigrants also face systemic challenges, including discrimination, prejudice, low income, and/or lack of familiar social support (Bornstein, 2017a; Bornstein et al., 2020; Prevoo & Tamis-LeMonda, 2017). During acculturation, immigrant caregivers may face dilemmas related to engaging with both the host culture and their culture of origin (Berry, 1994, 2001; Ryder et al., 2000). For example, it may be difficult to decide which familiar caregiving beliefs and/or practices they will maintain while also adopting some practices from the culture of destination (Bornstein, 2017a; Bornstein & Cote, 2019; Bornstein et al., 2020). Thus, acculturation of parenting values may be embedded in maternal sensitivity.

This study has been grounded in the theoretical framework of the developmental niche (Harkness & Super, 1986), which organizes various cultural and ecological factors that relate to caregiving into three major subsystems, which function together as a larger system. The developmental niche is an appropriate theoretical framework for this study because it clearly takes into consideration the interaction between cultural context and caregiving practices, situating them within the broader ecological and cultural factors that may influence maternal sensitivity across diverse cultural groups. The three components are: 1) the physical and social setting of the child’s life; 2) culturally regulated customs of childcare and child rearing; and 3) the psychology of the children’s caregivers. In this study, the physical and social setting of native South Korean, Korean American, and U.S.-born European American mother-infant dyads were

their country of residence (South Korea or the United States) and their family socioeconomic status. Furthermore, culturally regulated customs of childcare and child rearing were captured by maternal sensitivity, in which cultural caregiving values of South Korea and/or the United States were included. Finally, the psychology of the children's caregivers were the dominant cultural South Korean and/or U.S.-born European American caregiving values, which contribute to maternal sensitivity. The premise for my study was that cultural values contribute, at least partly, to maternal sensitivity.

Rationale for Selection of South Korean Culture to Examine Sensitivity in the Context of Acculturation in the United States

In order to study culture and acculturation of maternal sensitivity, Ward's (2001) culture learning approach was adopted, which states that negotiating contrasting heritage and host cultures requires learning skills that are predominantly practiced in the host culture. Thus, South Korea and the United States were chosen for comparison in this study based on their distinctive cultural differences. Also, a comparative approach to studying acculturation, as recommended by Berry (2009), was adopted to explore whether immigrant mothers from South Korea retain maternal sensitivity behaviours of their heritage culture and/or incorporate those of the host culture. Therefore, maternal sensitivity of Korean American (immigrants from South Korea) were compared to comparable mothers in South Korea (heritage culture) and in the United States (host culture).

South Korean culture tends to be relatively more homogenous, particularly in contrast to the United States' "melting pot" of diverse cultures. Also, relationships in South Korea are generally hierarchical and patriarchal, whereas relationships in the United States are more unilateral and social roles tend to be negotiated between individuals. Additionally, family

dynamics and parenting expectations in South Korea have been shaped by Confucian values. Confucian principles continue to exert influence in many domains, including parenting beliefs and practices, in South Korea, despite the latter's modernization and globalization in recent decades (Chung, 2015; Lee et al., 2018; Sung, 2005, 2020; Yi, 2007). These cultural differences would likely lead to differences in maternal sensitivity.

Confucianism (유교), an ethical-moral system developed by Confucius (551-479 BC), has been rooted in South Korea socially and politically for approximately 600 years and has been a dominant influence on traditional South Korean cultural values (Chou et al., 2013; Chung 2015; Hyun, 2001; Park & Cho, 1995; Park & Müller, 2014; Starr, 2012). One of the Confucian teachings, which is central to the foundations of interpersonal relationships in South Korea, is the teaching of Five Human Relationships (삼강오륜) that includes parent-child relationships (Chung, 2015; Hyun, 2001; Kim, 2001). This teaching promotes a hierarchical structure of superiors and subordinates in interpersonal relationships to maintain order and harmony in family units, and thus, in society. A principle that derives from the Five Human Relationships that remains prominent in families in South Korea is *hyo* (효), filial piety, emphasizes the importance and the expectation of the child paying reverence, loyalty, and compliance to their parents (Chung, 2015). In addition, *hyo* emphasizes bidirectional interpersonal responsibility between parents and children, which includes unconditional benevolence from parents and respect from their children (Kim, 2006). Upholding *hyo* in families in South Korea is a distinction from typical dominant family dynamics in the United States, which are more unilateral than hierarchical and more individualistic than collectivistic.

Changes in Maternal Sensitivity in the Context of Acculturation in Korean American Mothers

Currently, there have been no studies that have examined the expression of maternal sensitivity specifically in Korean American mothers using observational maternal sensitivity measures. A small number of studies however have investigated caregiver sensitivity in Asian Americans generally. These studies have suggested that typical caregiver sensitivity measures may not be culturally sensitive and appropriate to assess sensitivity in Asian Americans (Bernstein et al., 2005; Wang et al., 2007). Moreover, Huang et al. (2012) showed that maternal sensitivity significantly reduced the odds (by more than half) of Asian American children in the United States being insecurely attached, whereas maternal sensitivity did not significantly reduce the odds of Hispanic American children in the United States being insecurely attached. The results of these studies should be interpreted with caution given that they pertain to ethnocultural groups that are not Korean (Bernstein et al., 2005; Wang et al., 2007), or authors do not actually indicate which ethnocultural groups were included under an “Asian American” label (Huang et al., 2012). The state of the current literature thus demands future research to determine the cultural variability of expression, and measurement of sensitivity in Korean American immigrant caregivers specifically in Western settings like the United States. Likewise, there has been a limited number of studies that have investigated different aspects of parenting generally in Korean American caregiver-infant relationships (Bornstein, Cote, et al., 2019; Cote et al., 2015; Seo et al., 2017). Those studies also suggested a need for additional research to explore the acculturation on parenting in Korean American caregiver-infant relationships, having shown that parenting beliefs and behaviours of Korean immigrant mothers simultaneously resembled specific aspects of South Korean and U.S.-born European American mothers. Considering that there has been a dearth of studies that have investigated parenting generally and maternal sensitivity specifically in Korean American caregiver-infant dyads, more research is warranted

when it comes to the unique acculturation experiences of Korean immigrant mothers in the United States.

Observational Measures of Caregiver Sensitivity

Diverse observational measures of caregiver sensitivity are being used in research and community settings, as is evident from recent systematic reviews (Deans, 2020; Mesman & Emmen, 2013; Pritchett et al., 2011; Tryphonopoulos et al., 2016), perhaps a testament to the ongoing quest to develop ever more culturally competent ways to quantify sensitivity and assess it accurately in various contexts. Although self-report measures of caregiver sensitivity are easier to administer and more cost-efficient compared to observational measures, self-report measures have generally been deemed to lack validity (Pritchett et al., 2011; van IJzendoorn et al., 2004; Voorthuis et al., 2013). Therefore, using observational measures to assess sensitivity is typically considered as the preferred practice in sensitivity research (Pritchett et al., 2011).

Perhaps not surprisingly, some of the research that has sought to link sensitivity to child development has produced ambiguous results (Paavola et al., 2006; Page et al., 2010; van IJzendoorn, 1995), calling into question, among other things, whether the commonly used tools that measure sensitivity are interchangeable (Bohr et al., 2018). Moreover, little is known about how even the most commonly used assessment measures perform in diverse cultural contexts (Cheung & Elliott, 2016; Ziehm et al., 2013), especially outside North America and Europe (Mesman & Emmen, 2013). I propose here that the field of developmental science is in need of more research initiatives that examine whether tools designed to assess maternal sensitivity are a) based on a clear conceptualization of maternal sensitivity as a construct and b) dynamic enough to be useful in diverse cultural contexts including contexts of acculturation (Bornstein, 2012; Deans, 2020).

Cultural Differences in Maternal Sensitivity as Conceptualized by Western Sensitivity Assessment Tools

For this study, I chose the Ainsworth Maternal Sensitivity Scales (AMSS; 1969), the Mini Maternal Behaviour Q-Sort-VR (Mini MBQS-VR; Moran et al., 2009), and Parent Child Interaction - Nursing Child Assessment Satellite Training Feeding Scale (NCAFS; Barnard, 1978; Sumner & Spietz, 1994; Oxford & Findlay, 2015) as the sensitivity measures of interest because they are well-researched, popular observational measures of caregiver sensitivity that share conceptual clarity, relative objectivity, and strict coder training requirements. Additionally, AMSS, Mini MBQS-VR, and NCAFS were developed on WEIRD (Henrich et al., 2010) samples and to capture behaviours that measure sensitivity as embedded in Western caregiving values. Moreover, these measures have been deemed to be suitable for coding live or filmed interactions (Tryphonopoulous et al., 2016).

Although limited, emerging research has shown that beliefs and behaviours associated with parenting are at least in part influenced by culture (Jin et al., 2012; Park 2001; Ziehm et al., 2013). Studies have highlighted a need to identify parenting beliefs and behaviours that are culturally influenced, including those associated with maternal sensitivity (Cheung & Elliott, 2016; Mesman et al., 2016, 2018; Posada, 2013; Posada et al., 2016).

Thus, given that the values of *hyo* remain prominent in families in South Korea, in this study, cultural differences in maternal sensitivity as measured by AMSS, MBQS, and NCAFS were hypothesized in reference to *hyo*.

Cultural Differences in Maternal Sensitivity as Conceptualized by the AMSS Sensitivity Subscale (AMSS; 1969)

The AMSS Sensitivity subscale assesses the mother's capacity to be aware of her³ infant's signals, to interpret, and to respond appropriately and promptly. There are some virtues of *hyo* that are aligned with the AMSS Sensitivity subscale and some *hyo* virtues that differ from the AMSS Sensitivity subscale. In regard to the AMSS Sensitivity subscale's aim to assess the mother's capacity to be aware of her infant's signals, *guan-sim* (attentiveness), *jung-sung* (wholehearted devotion), and *heui-saeng* (sacrifice) are consistent with the AMSS Sensitivity subscale's description of the mother's capacity to be aware of her infant's signals. However, the remaining aspects of the AMSS Sensitivity subscale differ from virtues of *hyo*. Unlike the AMSS Sensitivity subscale's expectations for mothers to interpret, and to respond appropriately and promptly to their infants' signals, *hyo* virtues outline the expectations that parents hold of their children, including *gong-gyung* (respect of parents), *seung-zee* (following parents' directions), and *jull-ze* (moderating and controlling of desire) (Kim, 2006), which reflect contrasting ideals from those of this subscale. Although *guan-sim* (attentiveness), *jung-sung* (wholehearted devotion), and *heui-saeng* (sacrifice) are consistent with the expectations for mothers to be aware of their infant's signals, which is a necessary condition for sensitivity, *gong-gyung* (respect of parents), *seung-zee* (following parents' directions), and *jull-ze* (moderating and controlling of desire) differ from the emphasis of the AMSS Sensitivity subscale because these *hyo* values describe the ways that children should be aware of and follow or obey their parents, whereas the AMSS Sensitivity subscale describes the ways that mothers should be aware of and respond to their children. Likewise, parents teaching their children of obedience and respect of elders has been described to be an important way of being supportive parents in traditional Confucian

³ She/her/hers pronouns will be used to refer to mothers to aid clarity when describing their dyadic relationship with their infants.

culture (Kim et al., 2013).

Cultural Differences in Maternal Sensitivity as Conceptualized by the AMSS Cooperation

Subscale (AMSS; 1969)

The AMSS Cooperation subscale assesses the mother's degree and frequency of physical interference in her infant's activity, being geared in timing and quality to her infant's state, mood, and current interests. The AMSS Cooperation subscale also emphasizes the importance of the mother's ability to respect her infant as an autonomous being and integrate her own desires into the infant's activities. On the other hand, *hyo* prioritizes the critical role that parents hold in their children's growth, particularly in regards to teaching (*ga-reu-chim*) values that are essential to the family and to succeed in the society (Kim, 2006). Additionally, *hyo* states that it is imperative for children to follow their parents' teachings (*seung-zee*). Aligned with these values of *hyo*, South Korean mothers tend to view their children as extensions of themselves and reflections of their family (Choi, 1990; Chung, 2015). Similarly, South Korean culture has been found to endorse psychological control in parenting, which refers to parents' intrusive control of their children's thoughts and emotions through inducing guilt, withdrawing love, invalidating feelings, erratic emotional behaviour, personal attack, and constraining verbal expressions (Barber, 1996), more than U.S. European American culture that endorses more autonomy promoting parenting (Chao & Aque, 2009).

Cultural Differences in Maternal Sensitivity as Conceptualized by the AMSS Accessibility

Subscale (AMSS; 1969)

The AMSS Accessibility subscale assesses the mother's accessibility in terms of responsiveness to her infant, including the mother's physical and psychological accessibility to be aware of her infant and their needs. *Hyo* virtues, *guan-sim* (attentiveness), *jung-sung*

(wholehearted devotion), and *heui-saeng* (sacrifice), are consistent with the notion of the AMSS Accessibility subscale. More specifically, these virtues underscore the expectations of parents paying keen attention to their children (*guan-sim*) and parental devotion to childcare (*jung-sung*) that starts from pregnancy (*tae-kyo*). Furthermore, parental sacrifice is expected of mothers to nurture and raise children (*heui-saeng*) (Kim, 2006). South Korean mothers typically are expected and tend to become very closely tied to their children (Choi, 1990; Chung, 2015). Ziehm et al. (2013) showed that South Korean mothers prioritized valuing emotional closeness with their children. O'Brien et al. (2020) developed a measure that reflects expectations of “good mothering” that are culturally similar or different, comparing mothers in South Korea and the United States. This study found similarities across South Korean and U.S. American mothers in that traditional and modern parenting expectations were present for mothers in both groups. There were also differences that showed higher collectivistic values, emphasizing family relations in South Korean mothers, and higher individualistic values in U.S. European American mothers, highlighting prioritizing the individual child’s development. Although caregiving is a priority for all parents of young children, because of the dominant individualistic culture in the United States, European Americans might be relatively less likely to invest in parenting, prioritizing it above all else.

Cultural Differences in Maternal Sensitivity as Conceptualized by the AMSS Acceptance Subscale (AMSS; 1969)

The AMSS Acceptance subscale assesses the mother’s balance of positive and negative feelings about her infant, and the extent of her ability to integrate these conflicting feelings or to resolve the conflict. To further explain this notion, the AMSS Acceptance subscale asserts the importance of mothers demonstrating positive feelings towards their infants, even if they have

negative feelings from viewing their infants' behaviours as annoying or problematic. Well-aligned with this principle, *hyo* describes *guan-dae* (generosity/tolerance) as a basic and desirable characteristic for caregivers of children, even if their children appear to be making mistakes or at fault (Kim, 2006). Indeed, in East Asian cultures, including South Korean culture, the parent-child relationship is described as warm and supportive (Chao, 2001; Stevenson & Zusho, 2002).

Cultural Differences in Maternal Sensitivity as Conceptualized by Mini Maternal Behaviour Q-Sort-VR (Mini MBQS-VR⁴; Moran et al., 2009)

The MBQS is a caregiver sensitivity assessment tool that has garnered attention in the attachment literature. Theoretically, the MBQS is rooted in Ainsworth's maternal behaviour descriptions and her Maternal Sensitivity Scales, which describe a mother's acceptance, availability, cooperation, and sensitivity, providing a conceptual framework for measuring maternal sensitivity. Pederson et al. (2014) noted that most of the MBQS items were derived from Ainsworth's descriptions of sensitive and insensitive maternal behaviour in relation to the infant (e.g., "Realistic expectations regarding baby's self-control of affect", "Interactions revolve around Baby's tempo and current state", "Non-synchronous interactions with Baby"), to assess the quality of maternal behaviour during mother-infant interactions in the home. The majority of the MBQS items appear to stress the caregivers' ability to be accessible and sensitive to their infants, reflecting heavily on the AMSS Sensitivity subscale.

Similar to the AMSS Sensitivity subscale, there are a number of virtues of *hyo* that reflect ideals that are contrasting to those that are reflected by the majority of the MBQS items.

Although *hyo* reinforces the parental attentiveness (*guan-sim*) and *jung-sung* (wholehearted

⁴ Mini-MBQS-VR will be referred to as MBQS.

devotion) to children, and acceptance of *heui-saeng* (sacrifice) of parenting (Kim, 2006), *hyo* outlines several expectations for children to follow, including *gong-gyung* (respect of parents), *seung-zee* (following the parents' will and teachings), and *jull-ze* (moderating and controlling one's desire). Contrastingly to Western parenting values as demonstrated by the MBQS, *hyo* iterates the expectation for children to follow and comply with their mothers' agenda (e.g., expectation for their children to regulate their own behaviours, mothers leading interactions rather than following their children's leads).

Cultural Differences in Maternal Sensitivity as Conceptualized by the Nursing Child Assessment Feeding Scale (NCAFS; Barnard, 1978; Sumner & Spietz, 1994; Oxford & Findlay, 2015).

The NCAFS is a commonly used caregiver sensitivity measure in community practice (e.g., hospitals), which has been found to be one of the most valid and user-friendly measures of mother-infant interactions (Byrne & Keefe, 2003; Tryphonopoulos et al., 2016). The NCAFS was developed to measure mother-infant interaction and how it influences later child cognitive development (Sumner & Spietz, 1994). The NCAFS describes the following to be caregiver/parent responsibilities during a parent-infant interaction: 1) sensitivity to cues, i.e., the caregiver's ability to recognize and respond to the infant's cues; 2) the caregiver's ability to soothe or quiet a distressed infant; and 3) providing social-emotional and cognitive growth fostering situations.

Several virtues of *hyo* emphasize the NCAFS' descriptions, whereas some *hyo* virtues differ. Regarding sensitivity to cues, *guan-sim* (attentiveness), *jung-sung* (wholehearted devotion), and *heui-saeng* (sacrifice) are aligned but *gong-gyung* (respect of parents), *seung-zee* (following parents' directions), and *jull-ze* (moderating and controlling of desire) are contrasting

ideals than what is described in the NCAFS. However, ability to soothe is well-aligned with *guan-sim* (attentiveness), *jung-sung* (wholehearted devotion), *heui-saeng* (sacrifice), and *guan-dae* (generosity/tolerance). Furthermore, *hyo* underlines the importance providing teachings that their children need to know to succeed in life (*ga-reu-chim*) with keen attention (*guan-sim*) and wholehearted devotion (*jung-sung*), which are consistent with NCAFS' responsibility of providing social-emotional and cognitive growth fostering situations. The majority of the NCAFS items are aligned with the aforementioned *hyo* values, with the exception of *gong-gyung* (respect of parents), *seung-zee* (following parents' directions), and *jull-ze* (moderating and controlling of desire).

Because of these values of *hyo*, South Korean mothers are typically the most predominant influence on learning for their children and carry a strong expectation to educate their children, whether it is academically or behaviourally (Chung, 2015; Drewes, 2005; Kim, 2001). These expectations may be held less likely by European American mothers who prescribe to the dominant individualistic culture in the United States.

Acculturation of Hyo Virtues Associated with Maternal Sensitivity as Measured by Western Sensitivity Assessment Tools in Korean American Mothers

Korean American mothers' acculturation may change their adherence to certain values of *hyo*. Korean immigrant parents were found to be more likely to preserve certain traditional parenting values, including *hyo* (Hyun, 2001), and associated practices even when they acculturate to the culture of destination (Choi et al., 2018), possibly due to concerns about their children not learning Korean traditional values. Similarly, other deeply rooted cultural values have been found to acculturate slowly among Asian Americans in the United States (Kim, Atkinson, & Yang, 1999). However, Hyun (2001) found that Korean immigrant women in the

United States endorse traditional gender values less strongly for example than Korean immigrant men. Indeed, parenting roles tend to become more open to negotiations among immigrant caregivers in the United States (Tamis-LeMonda & McFadden, 2010). Korean immigrant mothers have been found to acculturate more closely to the culture of destination's parenting practices than Korean immigrant fathers (Yoon et al., 2021). Similarly, Cote et al. (2015) reported that the parenting cognitions of Korean immigrant mothers simultaneously resembled South Korean and U.S. European American mothers in different areas. Thus, virtues of *hyo* that have been traditionally more prescribed to mothers, including *jung-sung* and *guan-dae*, may be more susceptible to acculturation. Amongst Korean American mothers who are acculturating to U.S. European American values, *jung-sung* and *guan-dae* are more likely to be embedded in sensitivity behaviours of those mothers who maintain traditional Korean values, and less so the sensitivity behaviours of those who have more significantly adopted U.S. European American cultural norms (i.e., are more acculturated).

The Present Study

Mean-Level Comparison Hypotheses

In this study, I have undertaken an examination of maternal sensitivity in three cultural groups: native South Koreans, Korean immigrants to the United States (acculturated Korean Americans), and U.S.-born European American mothers, assessing maternal sensitivity with standard Western tools. Given the distinctive cultural differences known to exist between South Korea and the United States, and the extant research, I examined more specifically whether contrasting South Korean and U.S. European American cultural values are embedded in sensitivity behaviours in South Korean, Korean American, and U.S. European American dyads.

As shown in Table 1, given known differences in cultural belief systems and the results of previous research, it was expected that South Korean and Korean American mothers will score lower on the AMSS Cooperation and Sensitivity subscales and the MBQS than European American mothers. If South Korean and Korean American mothers score similarly on these measures to European American mothers, the results may suggest that sensitivity behaviours measured by the AMSS Cooperation and Sensitivity subscales and the MBQS may be culture-general behaviours rather than culturally different behaviours. If South Korean and Korean American mothers score higher on the AMSS Cooperation and Sensitivity subscales and the MBQS than European American mothers, the results may suggest that different Korean traditional parenting values, and not those associated with *hyo*, may be consistent with sensitivity behaviours assessed by these measures.

No differences were expected between South Korean and Korean American mothers on the AMSS Cooperation and Sensitivity subscales and the MBQS (see Table 1). If differences should be identified between the South Korean and Korean American mothers in their scores on these measures, particularly if South Korean mothers' scores are lower than those of Korean American mothers, the results may suggest that Korean American mothers relinquish sensitivity behaviours that are more influenced by their culture of origin during their acculturation in the United States. If South Korean mothers' scores are higher than those of Korean American mothers, the results may suggest that Korean traditional parenting values other than those associated with *hyo* may be embedded in sensitivity behaviours assessed by these AMSS Cooperation and Sensitivity subscales, and MBQS.

Furthermore, as shown in Table 1, it was expected that South Korean mothers will score higher on the AMSS Acceptance and Accessibility subscales and the NCAFS than Korean

American and European American mothers. If South Korean mothers score lower on these scales than Korean American and European American mothers, the results would suggest that Korean traditional parenting values other than those associated with *hyo* may contribute to sensitivity behaviours. If South Korean mothers score similarly on the AMSS Acceptance and Accessibility subscales and the NCAFS to Korean American and European American mothers, the results would suggest that sensitivity behaviours measured by these measures may be culture-general rather than culturally different.

No differences were expected between Korean American mothers and European American mothers on the AMSS Acceptance and Accessibility subscales and the NCAFS (see Table 1). If Korean American mothers score lower than European American mothers on these measures, the results would suggest that Korean American mothers relinquish sensitivity behaviours that are more influenced by their culture of origin during their acculturation. If Korean American mothers score higher than European American mothers on these measures, the results would suggest that Korean American mothers maintain sensitivity behaviours that are more influenced by their culture of origin during their acculturation.

Hypotheses Regarding Associations Between Sensitivity and Acculturation in Korean American Mothers

Last, I have looked at associations between sensitivity and acculturation to the United States in Korean American mothers in the context of virtues of *hyo*.

Positive associations were expected between sensitivity, as measured by AMSS Cooperation and Sensitivity subscales and MBQS, and acculturation, as measured by Korean American Acculturation Scales II Revised, to the United States in Korean American mothers, because values of *hyo* that are not as strongly prescribed to mothers based on gender may not be

susceptible to change as Korean American mothers undergo acculturation to the culture of destination. If a lack of association is found between sensitivity scores on these measures and the acculturation to the United States, the results may suggest that different levels of acculturation do not impact sensitivity behaviours associated with values of *hyo* that are not founded in gender. If the associations between sensitivity scores on these measures and acculturation to the United States in Korean American mothers are negative, the results may suggest there may be a different traditional Korean parenting value that is more associated with these sensitivity behaviours than *hyo*, or *hyo* may be embedded in different maternal sensitivity behaviours than those we expect.

Negative associations were expected between sensitivity, as measured by AMSS Acceptance and Accessibility subscales and NCAFS, and acculturation to the United States in Korean American mothers because values of *hyo* that are more explicitly prescribed based on gender may be susceptible to change as Korean American mothers undergo acculturation to the culture of destination. If a lack of association is found between sensitivity scores on these measures and acculturation to the United States, the results may suggest that different levels of acculturation do not impact sensitivity behaviours associated with gender-prescribed values of *hyo*. If the associations between sensitivity scores on these measures and acculturation to the United States in Korean American mothers are positive, the results would suggest that there may be a different traditional Korean parenting value that is more associated with these sensitivity behaviours than gender-prescribed values of *hyo*, or these values may contribute to different maternal sensitivity behaviours than those we expect.

Methods

This study used an existing data set. Data were collected at the *Eunice Kennedy Shriver* National Institute of Child Health and Human Development (NICHD). Data on the South Korean

mother-infant sample were collected in 2003. Data on the Korean American mother-infant sample were collected from 2004 to 2010. Data on the U.S. European American mother-infant sample were collected from 1988 to 1997.

Participants

South Korean mothers were recruited in the Seoul metropolitan area, and Korean American and European American mothers were recruited in the Washington metropolitan area via mass mailings, hospital birth notifications, medical group patient lists, and newspaper birth announcements and advertisements. These recruitment letters described the study and an invitation to contact the researchers if mothers were interested in learning more about the study and/or participating. All procedures involving human participants in this study were approved by the Institutional Review Board at the *Eunice Kennedy Shriver* National Institute of Child Health and Human Development and were submitted to York University's Human Participants Review Committee to obtain approval for secondary data analysis.

The socioeconomic status of participants was controlled so they would not be confounded with culture (Rudmin, 2003). All South Korean, Korean American, and European American mothers in this study's samples were demographically representative of those who tend to be from metropolitan areas and middle class. Korean American mothers in this study were also representative of South Korean immigrants to the United States, who tend to be well-educated and immigrate primarily for economic reasons (Budiman & Ruiz, 2021; Pew Research Center, 2013). European American mothers were selected from a larger sample to be comparable in education, socioeconomic status, and sample size to South Korean and Korean American mothers' demographics.

All mothers were primiparous. Infants who were non-term but healthy were included and were assessed to determine whether they would be outliers on the sensitivity measures.

South Korean Mother-Infant Dyads

Sociodemographic characteristics are presented in Table 2. The sample consisted of 57 South Korean mother-infant dyads (50.9% daughters). Infant age averaged 5.33 months ($SD = 0.16$ months). 96.5% of the infants were term (M birth weight = 3316.27g, $SD = 396.52$ g). Mothers averaged 29.06 years of age ($Mdn = 29.07$ years; $SD = 2.18$ years). Of all participating mothers, 0% had not completed high school, 12.3% had completed high school, 19.3% had completed college partially, 56.1% had completed college or university, and 12.3% had completed university graduate programs. Family socioeconomic status (SES; Hollingshead, 1975) ranged from 30-66 ($M = 49.90$, $SD = 7.14$), which suggested that the sample is relatively socioeconomically diverse. Hollingshead SES is a four-factor index, which includes education, occupation, sex, and marital status, ranging from 0 (*minimum score*) to 100 (*maximum score*) (Hollingshead, 1975), and has been used widely in research (Adams & Weakliem, 2011).

Korean American Mother-Infant Dyads

Sociodemographic characteristics are presented in Table 2. There were no sociodemographic data missing. The sample consisted of 74 Korean American mother-infant dyads (51.4% daughters). Infant age averaged 5.65 months ($SD = 0.54$ months). 98.6% of the infants were term (M birth weight = 3449.61g, $SD = 519.76$ g). Mothers averaged 31.60 years ($Mdn = 31.82$ years, $SD = 3.75$ years). Of all participating mothers, 2.8% had not completed high school, 5.4% had completed high school, 9.5% had completed college partially, 29.7% had completed college or university, and 48.6% had completed university graduate programs. All

mothers were first generation immigrants. Family SES (Hollingshead, 1975) ranged from 27-66 ($M = 57.72$, $SD = 7.61$), which suggested that the sample is socioeconomically diverse.

European American Mother-Infant Dyads

Sociodemographic characteristics are presented in Table 2. Data regarding infant term, infant illness, and birthweight were missing from one participant due to these items being left blank on the administered demographic questionnaires. Given that the missing data in the European American mother-infant dyads sample were small and negligible, they were treated via complete-case analysis. The sample consisted of 50 European American mother-infant dyads (50% daughters). Infant age averaged 5.38 months ($SD = 0.24$ months). 98% of the infants were term (M birth weight = 3467.45g, $SD = 444.66$ g). Mothers averaged 27.48 years of age ($Mdn = 29.29$ years; $SD = 6.92$ years). Of all participating mothers, 18% had not completed high school, 16% had completed high school, 20% had completed college partially, 26% had completed college or university, and 20% had completed university graduate programs. Family SES (Hollingshead, 1975) ranged from 19-66 ($M = 48.39$, $SD = 13.93$), which suggested that the sample is socioeconomically diverse.

Procedures

Home Visits and Data Collection

In the two weeks prior to each home visit, mothers completed a demographic questionnaire asking for background information about the infant, mother, and family. Mothers reviewed and signed informed consent forms during the home visits. Each mother-infant dyad was visited in the home once by a single female observer to film a 1-hour long naturalistic mother-infant dyadic interaction when the infant was 5 1/2 months of age (± 0.23 months). Visits were scheduled when mother and infant were home alone together during an optimal hour

in the infant's day (i.e., the infant is rested, alert, and awake). The mothers decided how to spend that hour. The observer stated that they were interested in the infant's usual activities and asked the mothers to carry on as they normally would at home if the observer were not present. The observer refrained from making eye contact with or interacting with the mother and the infant.

South Korean mothers completed the consent forms and sociodemographic questionnaires in Korean. Korean American mothers completed the consent forms, sociodemographic questionnaires, and the acculturation questionnaire in either Korean or English, depending on their preference. European American mothers completed the consent forms and sociodemographic questionnaires in English. Consent forms, sociodemographic questionnaires, and the acculturation questionnaire were written in English and translated into Korean by bicultural bilingual South Korean developmental scientists following translation procedures recommended by Brislin (1986) and Peña (2007).

Video Coding

All coders completed the required training and were research reliable as per requirements of the authors of the respective measures of maternal sensitivity. Coder reliabilities are presented in Table 3. All videos were coded with the AMSS, MBQS, and NCAFS by at least two coders for each measure, unaware of each other's coding. Coders were specific to the instruments except for AMSS and MBQS, which were coded by the same group of coders as per MBQS coding guidelines. The same group of two coders coded South Korean and Korean American mother-infant dyadic interactions with AMSS, MBQS, and NCAFS. Another group of three coders coded European American mother-infant dyadic interactions with AMSS and MBQS. A different group of two coders coded European American mother-infant dyadic interactions with NCAFS. South Korean and Korean American mother-infant dyadic interactions were coded by

bicultural and bilingual Korean Canadian coders, who had native fluency in Korean, to ensure that the differences recorded between the South Korean, Korean American, and European American samples would be due to cultural differences and not error of measurement. Korean American mothers were observed to speak Korean, English, or both in their dyadic interactions. European American mother-infant dyadic interactions were coded by Canadians, who were well-familiar with the culture of majority (European Americans) in Canada and the United States. Inter-coder reliability with other independent coders was assessed using intraclass correlation coefficients (ICC; McGraw & Wong, 1996; Shrout & Feiss, 1979). ICC estimates were calculated using IBM SPSS Statistics for Macintosh, Version 28 (IBM Corp., Armonk, New York) based on a single-rating, consistency, two-way random-effects model (Chenani & Madadzadeh, 2021). Typically, ICC estimates less than .5 are indicative of poor reliability, values between .5 and .75 indicate moderate reliability, values between .75 and .90 indicate good reliability, and values greater than .90 indicate excellent reliability (Chenani & Madadzadeh, 2021). ICC estimates in this study indicated moderate to excellent reliability (see Table 4).

It is important to note the reasons for the same coders being assigned to more than one measure in this study. For instance, MBQS coding guidelines indicate that MBQS and AMSS should be coded in tandem. Thus, AMSS and MBQS were coded by the same two bilingual bicultural coders, including myself, for the South Korean and Korean American samples, and the same three coders for the European American sample. Additionally, South Korean and Korean American samples were coded by the same two bilingual bicultural coders, for NCAFS. It was not feasible in the time allotted to conduct the dissertation research, to find another researcher within my network who would be fluent in English and Korean and able to understand the nuances of these languages, have knowledge of the cultural history of South Korea and the

cultural differences of South Korea and the United States, and capable of being trained in coding AMSS, MBQS, and NCAFS. For the NCAFS in the European American sample, three coders coded the interactions.

Measures

Observational Caregiver Sensitivity Measures

Ainsworth Maternal Sensitivity Scales (AMSS; Ainsworth, 1969). The AMSS is considered the prototypical naturalistic observation measure of maternal sensitivity. Ainsworth's scales have provided the foundation for research in mother-infant sensitivity and its link to attachment style. Ainsworth's pioneering maternal sensitivity construct has been often referenced when defining maternal sensitivity in the attachment literature (e.g., MBQS). The AMSS consist of four subscales, including 1) Sensitivity vs. Insensitivity to the baby's signals (Sensitivity), 2) Cooperation vs. Interference with baby's ongoing behaviour (Cooperation), 3) Physical and Psychological Accessibility vs. Ignoring and Neglecting (Accessibility), and 4) Acceptance vs. Rejection of the baby's needs (Acceptance). AMSS were developed to assist in constructing a comprehensive narrative of the mother-infant interactions, and each subscale focuses on a specific principle in sensitivity. The Sensitivity subscale scores range from 1 (*highly insensitive*) to 9 (*highly sensitive*). The Cooperation subscale scores range from 1 (*highly interfering*) to 9 (*conspicuously cooperative*). The Accessibility subscale scores range from 1 (*highly inaccessible, ignoring or neglecting*) to 9 (*highly accessible*). The Acceptance subscale scores range from 1 (*highly rejecting*) to 9 (*highly accepting*). Ainsworth's initial observations of a small sample of mother-infant dyads when the infants were 9 to 12 months old were strongly related to attachment security in the Strange Situation (concurrent validity; $r = .78$) (Ainsworth et al., 1971; Ainsworth et al., 1978; Pederson et al., 2014). These observations led Ainsworth and

her colleagues to conclude that maternal sensitivity plays a central role in attachment theory, which is widely accepted as providing a vital framework for early child development. However, results from meta-analytic reviews of maternal sensitivity and attachment security support Ainsworth's maternal sensitivity hypothesis, but with smaller effect sizes ($r = .24 - .32$) (Goldsmith & Alansky, 1987; DeWolff, & van IJzendoorn, 1997). Reasons for this notable difference in effect sizes could be that the lengths of the observation periods in the replication studies were much shorter than the observation periods in the original study and that Ainsworth made repeated visits to observe the same mother-infant dyads to capture fluctuations in the dyads' behaviour (Pederson et al., 2014). Although it is evident that Ainsworth's lengthy and repeated visits reveal rich data, the prototypical AMSS original observation method is more costly and less feasible to implement in modern observational sensitivity research. In this study, the first 20 min of the interactions were coded with AMSS so that the AMSS scores would be comparable to the previously coded AMSS scores of European American mothers from a previous study (Bohr et al., 2018) that were included in this study.

Mini Maternal Behaviour Q-Sort-VR (Mini MBQS-VR; Moran et al., 2009). There are multiple versions of MBQS. For this study, the Mini-MBQS-VR was used because it is more suitable for coding filmed interactions, compared to earlier versions of the MBQS (Tarabulsky et al., 2009). The Mini MBQS-VR is a shorter form of the original 90-item MBQS card set, consisting of 25 items (Tarabulsky et al., 2009). The MBQS generates a global maternal sensitivity score. The items are sorted into five groups, with five items per group. Items are designated as most like (+2), like (+1), neutral (0), unlike (-1), or most unlike (-2) the behaviours observed in the mother. The total score obtained for a given mother is then correlated with the developers' criterion sort for the prototypically sensitive mother, generating a global maternal

sensitivity score. A high MBQS global maternal sensitivity score suggests a high degree of maternal sensitivity. Scores vary from -1.0 (*least like the prototypically sensitive mother*) to 1.0 (*most like the prototypically sensitive mother*). The global sensitivity score can be obtained through an unforced or a forced sort. The difference between an unforced and a forced sort is that for an unforced sort, the coder is permitted to assign the quality of maternal behaviour to the groups, without being restricted by the maximum number of items that are allowed per group. On the contrary, when obtaining a forced sort, the coder is restricted by the maximum number of items that are allowed per group. In this study, forced sorts were used to generate the MBQS global sensitivity scores to allow comparisons with other studies that include MBQS with more ease and to follow the MBQS' recommendation to use forced sorts. According to Tarabulsy et al. (2009), the mini-MBQS-VR is moderately associated with the Original MBQS-90 completed at 6 months ($r = .35$), and with the Attachment Q-Sort index of attachment security ($r = .34$). A systematic review by Mesman and Emmen (2013) reported that the MBQS maternal sensitivity score is related to maternal attachment state of mind (Bailey et al., 2007; Lindhiem et al., 2011; Whipple et al., 2011), associated with infant attachment security (Atkinson et al., 2000), and sensitive to improvements in parenting quality post intervention (Moss et al., 2011). Additionally, the mini-MBQS-VR scores obtained at 6 months have been shown to predict infant brain development, particularly the bilateral hippocampal volume, and connectivity between the hippocampus and areas important for emotional regulation and socio-emotional functioning (Rifkin-Graboi et al., 2015). The first 20 min of the interactions were coded with Mini MBQS-VR to ensure that the MBQS is able to capture at least 10 min of direct mother-infant interaction, which is required for arriving at a global sensitivity score (Tarabulsy et al., 2009), and to be

comparable to the previously coded MBQS scores of European American mothers from a previous study (Bohr et al., 2018) that were included in this study.

The Nursing Child Assessment Feeding Scale (NCAFS; Barnard 1978; Sumner & Spietz, 1994; Oxford & Findlay, 2015). The NCAFS includes 76 binary (*yes/no*) items, which describe the caregiver-infant dyadic relationship and which are organized into six subscales. Four subscales focus on caregiver behaviour: 1) Sensitivity to Cues; 2) Response to Distress; 3) Social-Emotional Growth Fostering; and 4) Cognitive Growth Fostering (Barnard, 1978). Scores in the four caregiver subscales are summed to provide a Total Caregiver score. A high total caregiver score suggests a high degree of caregiver sensitivity. The Sensitivity to Cues subscale assesses the mother's ability to recognize and respond to her infant's cues, particularly the mother's physical availability, and types and timing of stimulation that she provides to her infant. The maximum possible score for this subscale is 16. The Response to Distress subscale assesses the mother's ability to soothe or quiet a distressed infant by recognizing their cues for help, and knowing and executing the appropriate action that will alleviate their distress. The maximum possible score for this subscale is 11. The Social-Emotional Growth Fostering subscale assesses the mother's affect and ability to communicate a positive feeling tone by varying the pitch and tone of her voice, using gentle types of touch, and fostering social exchange to facilitate her infant's socio-emotional growth. The maximum possible score for this subscale is 14. The Cognitive Growth Fostering subscale assesses the mother's ability to make learning experiences available to her infant by introducing them to different sights, sounds and experiences verbally and through physical exploration. The maximum possible score for this subscale is 9. Two additional subscales describe the infant's contribution to the interaction; they were not considered in the present study. The NCAFS demonstrates good internal consistency at 0.85

(Cronbach's α) for the NCAFS Caregiver Total scores (Oxford & Findlay, 2015). The present study used McDonald's ω instead of Cronbach's α to assess the NCAFS Caregiver Total scale's internal consistency. Because NCAFS Caregiver Total scale has a multidimensional structure with its total score being a sum of its subscale scores, McDonald's ω reflects more accurately on the structure of the NCAFS and is a better fit to assess the internal consistency of the NCAFS Caregiver Total scale. In the current study, McDonald's ω for the NCAFS subscales were able to be estimated but not the NCAFS Caregiver Total scale due to NCAFS Caregiver Total scale having too many parameters in comparison to the sample size. Cronbach's α s and McDonald's ω s were estimated for the NCAFS subscales to provide a comprehensive evaluation of internal consistency. The following are the reported Cronbach's α s for the NCAFS subscales: .60 for the Sensitivity to Cues; .70 for the Response to Distress; .68 Social Emotional Growth Fostering; and .71 for the Cognitive Growth Fostering (Oxford & Findlay, 2015). In the current study, McDonald's ω s for the NCAFS Sensitivity to Cues, Response to Distress, Social-Emotional Growth Fostering, and Cognitive Growth Fostering subscales ranged from .73 to .89 (See Table 5). The present study's Cronbach's α s for the NCAFS Sensitivity to Cues, Response to Distress, Social-Emotional Growth Fostering, and Cognitive Growth Fostering subscales ranged between .70 and .87 (See Table 5).

The NCAFS has also been used to predict positive child development, children's behaviour, and attachment quality. The NCAFS demonstrates predictive validity with the Bayley II Scales of Infant Development ($r = .72$), the Preschool Behavior Questionnaire ($r = .79$), and the Home Observation for Measurement of the Environment (HOME; $r = .76$) (Badr et al., 2009). The 3-month NCAFS score was a predictor of security of attachment in the Ainsworth Strange Situation at 1 year ($r = .19$) (Britton et al., 2006). The NCAFS allows caregivers to

choose their preferred method of feeding, including breastfeeding, bottle-feeding, and solid food feeding, and the length of their feeding episode (Oxford & Findlay, 2015). Given that this study used previously filmed dyadic interactions, feeding episodes occurred spontaneously.

Information regarding the percentage of feeding episodes that occurred in the filmed dyadic interactions, percentage of method of feeding in filmed dyadic interactions, length of feeding episodes, and percentage of feeding episodes overlapping with the first 20 min of filmed dyadic interactions is available in Table 6.

Maternal Acculturation Measure

Korean American Acculturation Scales II, Revised (KAAS-II; Adapted from the Acculturation Ratings Scale for Mexican Americans (ARSMA II; Cuéllar et al., 1995). The KAAS-II consists of 30 items that cover areas including language, identity, friendship, behaviour, generation, and attitudes, which are organized into two subscales, Korean Identification (17 items) and American Identification (13 items). Only Korean Americans were asked to complete the KAAS-II and to rate their responses to each item on the scale ranging from 1 (*Never*) to 5 (*Almost Always or Extremely Often*). The KAAS-II demonstrated Cronbach's α values of .88 for the Korean Identification subscale and .90 for the American Identification subscale (see Table 5). The Korean Identification and American Identification ratings were computed by averaging the caregivers' ratings of all items in each scale.

Data Analytic Plan

IBM SPSS Statistics for Macintosh, Version 28 (IBM Corp., Armonk, New York) and R (Version 4.3.0; R Core Team, 2023) were used to conduct statistical data analyses. Descriptive statistics for study variables in South Korean, Korean American, and European American mother-infant dyads are presented in Table 7.

It is noteworthy that small statistically significant differences would likely not translate to meaningful differences between South Korean, Korean American, and European American mothers' AMSS, MBQS and NCAFS scores. AMSS, MBQS, and NCAFS developers have not explicitly specified meaningful score differences in their manuals. Thus, meaningful score differences were inferred from specified score difference criteria that determined the measures' coder reliability. Stiles (2004) recommended the AMSS coder reliability be within 2 points between two coders. Additionally, they recommended the MBQS coder reliability be within .2 points between two coders. NCAFS developers noted that the coder reliability is determined by a percentage of agreement based on the total items of agreement, which is a total of 69 items out of 76 items of agreement (7 items of disagreement; Parent-Child Relationship Programs, 2019). However, in the current study, because only the NCAFS Caregiver Total score was used, the total possible score was 50. Therefore, in this study, the total items of agreement were adjusted to a total of 45 items out of 50 items of agreement (5 items of disagreement) to reflect the difference in the total possible scores. In the current study, significant differences in pairwise comparisons as well as meaningful differences were discussed.

Covariates

Infant age, maternal age and education, and SES were screened as covariates in all analyses. Infant age was considered as a covariate because infant maturity has been associated with maternal sensitivity (Muller-Nix et al., 2004). Maternal age was considered as a covariate due to existing empirical evidence that adult mothers demonstrate higher sensitivity than adolescent mothers (Lounds et al., 2005; Secco & Moffatt, 2003). Also, lower maternal education has been related to lower caregiver sensitivity (Tamis-LeMonda et al., 2009). Furthermore, lower socioeconomic status has previously been considered as a stronger predictor

of sensitivity than either ethnicity or minority status (Mesman et al., 2012). Covariates were applied to rule out alternative explanations for cultural differences.

AN(C)OVAs

In order to test the group comparison hypotheses, six analyses of (co)variances (AN(C)OVAs) were considered to investigate the pairwise group differences (see Table 1). There were one between-subjects factor (culture) and six dependent variables (maternal sensitivity as measured by AMSS Sensitivity, Cooperation, Availability, and Acceptance subscales, MBQS, and NCAFS Caregiver Total). Prior to the formal ANCOVAs, diagnostic assumptions of linearity, normality of residuals, homoscedasticity, and homogeneity of regression slopes were examined. Additionally, multicollinearity was examined. The presence of extremely influential observations was also screened.

Negligible Effect Testing

Where a lack of association was hypothesized, negligible effect testing (equivalence testing) was adopted. For example, no differences were expected between Korean American mothers and European American mothers on the AMSS Acceptance and Accessibility subscales and the NCAFS Caregiver Total. Also, no differences were predicted between South Korean and Korean American mothers on the AMSS Cooperation and Sensitivity subscales and the MBQS. The 90% confidence intervals on the pairwise mean group differences were reported to indicate whether the mean group differences were within the equivalence intervals. If the 90% confidence intervals were within the equivalence intervals, equivalency was concluded. The equivalence intervals for AMSS, MBQS, and NCAFS were determined based on the aforementioned meaningful differences in the Data Analytic Plan section. Therefore, the following equivalence

intervals were used for this study: ± 2 points between groups for AMSS, ± 0.2 points between groups for MBQS, and ± 5 points between groups for NCAFS Caregiver Total.

Correlations

In order to examine the acculturation effects in Korean American mothers' sensitivity scores in the context of virtues of *hyo*, two-tailed Pearson zero-order and partial correlations ($\alpha = .05$), controlling for covariates, were considered. Prior to the formal correlation analyses, diagnostic assumptions of linearity and normality were examined. The presence of outliers was also screened.

Results

The means, standard deviations, and ranges for the study variables for South Korean, Korean American, and European American mother-infant dyads are presented in Table 7.

Missing Data

Sociodemographic Statistics

All missing sociodemographic data were due to items being left blank on the administered demographic questionnaires. There were five sociodemographic data missing in the South Korean mother-infant dyads sample: infant term and birthweight data were missing from two participants and infant illness datum was missing from one participant. There were no sociodemographic data missing in the Korean American mother-infant dyads sample. In the European American mother-infant dyads sample, there were three missing data points, including infant term, birthweight and illness, from one participant. Missing sociodemographic data were treated via complete-case analysis because the proportion of missing data was negligible in respect to the sample sizes.

Covariates

In the South Korean mother-infant dyads sample, maternal age datum from one participant was missing due to the item being left blank on the administered demographics questionnaire. In the Korean American mother-infant dyads sample, there were seven covariate data missing, including maternal education missing from three participants and SES missing from four participants. With the exception of one missing SES datum point, which was due to the item being left blank on the administered demographics questionnaire, the missing data in the Korean American mother-infant dyads sample were due to three demographics questionnaires being lost in mail. There were no missing covariate data in the European American mother-infant dyads sample.

Multivariate Imputation by Chained Equations (mice) package in R was used to treat the missing covariate data. Using the mice package, 10 datasets were imputed, with each dataset having 100 iterations. For all multiple imputations of the missing covariate data, all covariates, including infant age, maternal age and education, and SES, and the outcome variables were included in the imputation models. Convergence was monitored visually by plotting summaries of the imputed values across iterations. Plausibility of the imputed values was checked by comparing the distribution of imputed values against the distribution of observed values. The repeated estimates were combined into the final estimates using the pool() function from the mice package. Sensitivity analysis was conducted by comparing the analysis model that treated missing data via complete-case analysis and the imputed analysis model. Provided that the model comparisons revealed negligible estimate differences, all ANCOVAs, negligible effect tests, and partial correlations were conducted with models that treated data via complete-case analysis.

Outcome Variables

There were 14 NCAFS Caregiver Total data points missing in the South Korean mother-infant dyads sample and 25 NCAFS Caregiver Total data points missing in the Korean American mother-infant dyads sample. There were no missing NCAFS Caregiver Total data in the European American mother-infant dyads sample. A Missing Completely at Random (MCAR) test was conducted using a chi-squared test on the missing data pattern, which indicated that the missing data were not MCAR in the South Korean mother-infant dyads sample ($\chi^2(1)=12.79, p < .001$) and in the Korean American mother-infant dyads sample ($\chi^2(1)=7.78, p < .001$). Visual inspection of the missing data pattern in South Korean and Korean American mother-infant dyads samples did not suggest patterns of missingness. The missing NCAFS Caregiver Total data in both South Korean and Korean American mother-infant dyads samples were due to the filmed home observations being naturalistic. Thus, some filmed home observations randomly did not meet one of the NCAFS coding requirements, which include an occurrence of a feeding episode in the dyadic interactions. Given that there were no apparent patterns of missingness, the missing NCAFS Caregiver Total data were treated via complete-case analysis.

AMSS (all four subscales) and MBQS data were missing from two participants in the Korean American mother-infant dyads sample. There were no missing AMSS or MBQS data in the South Korean or the European American mother-infant dyads samples. A Missing Completely at Random (MCAR) test was conducted using a chi-squared test on the missing data pattern, which indicated that the missing data were not MCAR in the Korean American mother-infant dyads sample ($\chi^2(1)=66.22, p < .001$)⁵. Visual inspection of the missing data pattern did not indicate patterns of missingness. The missing AMSS and MBQS data were due to the filmed

⁵AMSS and MBQS were coded in tandem, per coding guidelines. Therefore, only one chi-squared test was needed to determine whether missing AMSS and MBQS data were MCAR, as if AMSS scores were missing, MBQS scores were missing as well.

naturalistic home observations randomly lacking mother-infant dyadic interactions (e.g., more interactions between the infant and the other family members than between the infant and the mother). Provided that there were no apparent patterns of missingness, the missing AMSS and MBQS data were treated via complete-case analysis.

Mean-Level Comparison of AMSS Sensitivity Subscale

Prior to interpretation, ANCOVA diagnostics revealed linearity, homoscedasticity, and homogeneity of regression slopes. There were no concerns regarding multicollinearity. However, the normality of residuals assumption was not met. Data transformations did not improve the normality of residuals. Therefore, to address the deviation from normality in the distribution of residuals, multiple linear regression with dummy coding for the group variable (culture) was performed using robust estimation (Huber-White sandwich estimator). One possible influential observation was identified with Cook's distance value of 0.19, which was close to the commonly used rule of thumb for identifying potentially influential observations of $4/(N - k - 1)$, where N is the number of observations and k is the number of explanatory variables. Given that the identified potential influential observation was close to but under the determined threshold ($4/(179-6-1) = 0.02$), sensitivity analysis was performed by comparing the multiple linear regression model with the potential influential observation and model without the potential influential observation to observe changes in the model outputs. The sensitivity analysis revealed negligible differences in the model outcomes. Therefore, the potential influential observation was included in the formal analysis.

The European American mothers group was designated as the dummy coding reference group against which South Korean and Korean American mothers groups were compared on the AMSS Sensitivity subscale scores, after controlling for the effects of covariates. There were no

significant differences in AMSS Sensitivity subscale scores between South Korean and European American mothers ($B = 0.60$, $SE = 0.47$, $t(168) = 1.28$, $p = .204$, 95% CI [-0.34, 1.54], $sr^2 = .01$, sr^2 95% CI [-.02, .03]) and between Korean American and European American mothers ($B = 0.06$, $SE = 0.49$, $t(168) = 0.13$, $p = .896$, 95% CI [-0.92, 1.05], $sr^2 = .00009$, sr^2 95% CI [0, .003]) after controlling for the effects of infant age, maternal age and education, and socioeconomic status (see Table 8). Maternal age significantly predicted AMSS Sensitivity subscale scores ($B = 0.13$, $SE = 0.05$, $t(168) = 2.50$, $p = .014$, 95% CI [0.03, 0.23], $sr^2 = .03$, sr^2 95% CI [-.02, .08]) regardless of culture. Remaining covariates were not found to have a significant effect on the AMSS Sensitivity subscale score.

Negligible effect test results indicated that the difference between the means of AMSS Sensitivity subscale scores between South Korean and Korean American mothers ($MD = -0.53$, 90% CI [-1.30, 0.23], $sr^2 = .01$, sr^2 95% CI [-.02, .03]) fell within the negligible effect interval of 2 points. Therefore, it could be concluded that there was a negligible difference between the mean scores of South Korean and Korean American mothers.

The multiple linear regression results did not support the hypotheses that South Korean and Korean American mothers would demonstrate lower scores on the AMSS Sensitivity subscale than European American mothers. However, maternal age predicted the AMSS Sensitivity subscale scores across the cultural groups. The remaining covariates did not predict the AMSS Sensitivity subscale scores. Furthermore, the negligible test results supported the hypothesis that there is no meaningful score difference between South Korean and Korean American mothers on the AMSS Sensitivity subscale scores.

Mean-Level Comparison of AMSS Cooperation Subscale

Prior to interpretation, ANCOVA diagnostics revealed linearity and homogeneity of regression slopes. There were no concerns regarding multicollinearity or extremely influential observations. However, the normality of residuals and homogeneity of variances assumptions were not met. Square root transformations improved normality of residuals but did not improve homoscedasticity. Square transformation improved homoscedasticity but did not improve normality of residuals. Therefore, to address the violation of both normality of residuals and homogeneity of variances assumptions, multiple linear regression with dummy coding for the group variable (culture) was performed using robust estimation (Huber-White sandwich estimator).

The European American mothers group was designated as the dummy coding reference group against which South Korean and Korean American mothers groups were compared on the AMSS Cooperation subscale scores, after controlling for the effects of covariates. There were no significant differences in AMSS Cooperation subscale scores between South Korean and European American mothers ($B = 0.57$, $SE = 0.46$, $t(168) = 1.26$, $p = .210$, 95% CI [-0.34, 1.49], $sr^2 = .01$, sr^2 95% CI [-.02, .04]) or between Korean American and European American mothers ($B = 0.24$, $SE = 0.45$, $t(168) = 0.53$, $p = .596$, 95% CI [-0.66, 1.14], $sr^2 = 0$, sr^2 95% CI [-.01, .01]) after controlling for the effects of infant age, maternal age and education, and socioeconomic status (see Table 9). Maternal age significantly predicted AMSS Cooperation subscale scores ($B = 0.11$, $SE = 0.04$, $t(168) = 2.56$, $p = .011$, 95% CI [0.02, 0.20], $sr^2 = .03$, sr^2 95% CI [-.02, .08]) regardless of culture. Remaining covariates were not found to have a significant effect on the AMSS Cooperation subscale score.

Negligible effect test results indicated that the difference between the means of AMSS Cooperation subscale scores between South Korean and Korean American mothers ($MD = -0.34$,

90% CI [-0.98, 0.31], $sr^2 = .03$, sr^2 95% CI [-.02, .08]) fell within the negligible effect interval of 2 points. Therefore, it could be concluded that a negligible difference in means existed between the scores of South Korean and Korean American mothers.

The multiple linear regression results did not support the hypotheses that South Korean and Korean American mothers would demonstrate lower scores on the AMSS Cooperation subscale than European American mothers. However, maternal age predicted the AMSS Cooperation subscale scores across the cultural groups. The remaining covariates did not predict the AMSS Cooperation subscale scores. Furthermore, the negligible test results supported the hypothesis that no meaningful score difference was expected between South Korean and Korean American mothers on the AMSS Cooperation subscale.

Mean-Level Comparison of AMSS Accessibility Subscale

Prior to interpretation, ANCOVA diagnostics revealed linearity, homogeneity of variances, and homogeneity of regression slopes. There were no concerns regarding multicollinearity or extremely influential observations. However, the normality of residuals assumption was not met, and data transformations did not improve the normality of residuals. Therefore, multiple linear regression with dummy coding for the group variable (culture) was performed using robust estimation (Huber-White sandwich estimator).

The South Korean mothers group was designated as the dummy coding reference group against which Korean American and European American mothers groups were compared on the AMSS Accessibility subscale scores, after controlling for the effects of covariates. There were no significant differences in AMSS Accessibility subscale scores between South Korean and Korean American mothers ($B = -0.43$, $SE = 0.45$, $t(168) = -0.95$, $p = .342$, 95% CI [-1.34, 0.47], $sr^2 = 0$, sr^2 95% CI [-.01, .02]) and between South Korean and European American mothers ($B =$

-0.68, $SE = 0.47$, $t(168) = -1.46$, $p = .147$, 95% CI [-1.61, 0.25], $sr^2 = .01$, sr^2 95% CI [-.02, .04]) after controlling for the effects of infant age, maternal age and education, and socioeconomic status (see Table 10). Covariates were not found to have a significant effect on the AMSS Accessibility subscale score.

Negligible effect test results indicated that the difference between the means of AMSS Accessibility subscale scores between Korean American and European American mothers ($MD = 0.25$, 90% CI [-0.56, 1.06], $sr^2 = .02$, sr^2 95% CI [-.02, .06]) fell within the negligible effect interval of 2 points. Therefore, it could be concluded that a negligible difference in means existed between the accessibility scores of Korean American and European American mothers.

The multiple linear regression results did not support the hypotheses that South Korean mothers would demonstrate higher scores on the AMSS Accessibility subscale than Korean American and European American mothers. Covariates did not predict the AMSS Accessibility subscale scores. Furthermore, the negligible test results supported the hypothesis that no meaningful score difference was expected between Korean American and European American mothers on the AMSS Accessibility subscale scores.

Mean-Level Comparison of AMSS Acceptance Subscale

Prior to interpretation, ANCOVA diagnostics revealed linearity, normality of residuals, homogeneity of variances, and homogeneity of regression slopes. There were no concerns regarding multicollinearity or extremely influential observations.

The South Korean mothers group was designated as the dummy coding reference group against which Korean American and European American mothers groups were compared on the AMSS Acceptance subscale scores, after controlling for the effects of covariates. There was a significant effect of culture on AMSS Acceptance subscale after controlling for the effects of

infant age, maternal age and education, and socioeconomic status, $F(2, 168) = 8.54, p < .001, \eta^2 = .03$ (see Table 11). The effect of maternal age was significant for the AMSS Acceptance subscale, $F(1, 168) = 18.20, p < .001, \eta^2 = .04$. Remaining covariates were not found to have a significant effect on the AMSS Acceptance subscale score. Pairwise comparisons revealed significant differences in AMSS Acceptance subscale scores between South Korean and European American mothers ($MD = -0.98, p = .023, 95\% \text{ CI } [-1.82, -0.14], sr^2 = .03, sr^2 \text{ 95\% CI } [-.02, .07]$), with South Korean mothers showing higher mean scores than European American mothers. Pairwise comparisons revealed no significant differences in AMSS Acceptance subscale scores between South Korean and Korean American mothers ($MD = -0.12, p = .780, 95\% \text{ CI } [-0.95, 0.72], sr^2 = 0, sr^2 \text{ 95\% CI } [0, .01]$).

Negligible effect test results indicated that the difference between the means of AMSS Acceptance subscale scores in Korean American and European American mothers ($MD = -0.86, 90\% \text{ CI } [-1.60, -0.12], sr^2 = .02, sr^2 \text{ 95\% CI } [-.02, .07]$) fell within the negligible effect interval of 2 points. Therefore, there was a negligible difference in score means when comparing Korean American and European American mothers.

ANCOVA results supported the hypothesis that South Korean mothers would demonstrate higher scores on the AMSS Acceptance subscale than European American mothers after controlling for infant age, maternal age and education, and socioeconomic status. However, the statistically significant difference between the AMSS Acceptance subscale scores of South Korean and European American mothers was not a meaningful difference as the score difference was less than 2 points. The results also did not support the hypothesis that South Korean mothers would demonstrate higher scores than Korean American mothers. Maternal age had an influence on the AMSS Acceptance subscale scores across the cultural groups. The remaining covariates

did not influence the AMSS Acceptance subscale scores. Furthermore, the negligible test results supported the hypothesis that no meaningful score difference was expected between Korean American and European American mothers.

Mean-Level Comparison of MBQS

Prior to interpretation, ANCOVA diagnostics revealed linearity, homoscedasticity, homogeneity of regression slopes. There were no concerns regarding multicollinearity or extremely influential observations. However, the normality of residuals assumption was not met. Data transformations did not improve the normality of residuals. Therefore, to address the deviation from normality in the distribution of residuals, multiple linear regression with dummy coding for the group variable (culture) was performed using robust estimation (Huber-White sandwich estimator).

The European American mothers group was designated as the dummy coding reference group against which South Korean and Korean American mothers groups were compared on the MBQS scores, after controlling for the effects of covariates. There were no significant differences in MBQS scores between South Korean and European American mothers ($B = 0.20$, $SE = 0.12$, $t(168) = 1.63$, $p = .104$, 95% CI [-0.04, 0.44], $sr^2 = .01$, sr^2 95% CI [-.02, .05]) and between Korean American and European American mothers ($B = 0.11$, $SE = 0.13$, $t(168) = 0.88$, $p = .380$, 95% CI [-0.14, 0.36], $sr^2 = 0$, sr^2 95% CI [-.01, .02]) after controlling for the effects of infant age, maternal age and education, and socioeconomic status (see Table 12). Maternal age significantly predicted MBQS scores ($B = 0.03$, $SE = 0.03$, $t(168) = 2.21$, $p = .029$, 95% CI [0.003, 0.05], $sr^2 = .02$, sr^2 95% CI [-.02, .07]). The remaining covariates, including infant age, maternal education, and SES, did not predict MBQS scores.

Negligible effect test results indicated that the difference between the means of MBQS scores between South Korean and Korean American mothers ($MD = -0.09$, 90% CI [-0.29, 0.11], $sr^2 = 0$, sr^2 95% CI [-0.02, .07]) did not lie within the negligible effect interval of 0.2 points. Therefore, it could not be concluded that there was a negligible difference between the score means of South Korean and Korean American mothers.

The multiple linear regression results did not support the hypothesis that South Korean and Korean American mothers would demonstrate lower scores on the MBQS than European American mothers after controlling for infant age, maternal age and education, and socioeconomic status. However, the results showed that South Korean mothers demonstrated higher scores on the MBQS than European American mothers, with a meaningful mean score difference of 0.20. Maternal age predicted the MBQS scores across the cultural groups. The remaining covariates did not predict the MBQS scores. Furthermore, the negligible test results did not support the hypothesis that no meaningful difference would be detected on the MBQS scores between South Korean and Korean American mothers.

Mean-Level Comparison of NCAFS Caregiver Total

Prior to interpretation, ANCOVA diagnostics revealed linearity and homoscedasticity. There were no concerns regarding extremely influential observations. However, the normality of residuals and the homogeneity of regression slopes assumptions were not met. Also, there were concerns regarding multicollinearity between maternal education and socioeconomic status with variance inflation factors (VIF) values being 2.91 and 2.85 respectively. Maternal education was retained, and socioeconomic status was removed from the model based on the NCAFS' inclusion of maternal education, but not socioeconomic status, as an influential factor in the development of NCAFS (Oxford & Findlay, 2015).

The South Korean mothers group was designated as the dummy coding reference group against which South Korean and Korean American mothers groups were compared on the NCAFS Caregiver Total scores, after controlling for the effects of covariates. There were no significant differences in NCAFS Caregiver Total scores between South Korean and Korean American mother-infant dyads ($B = -0.13$, $SE = 1.01$, $t(168) = -0.13$, $p = .898$, 95% CI [-2.15, 1.89], $sr^2 = 0$, sr^2 95% CI [-.01, .01]) and between South Korean and European American mother-infant dyads ($B = 0.42$, $SE = 0.86$, $t(168) = 0.49$, $p = .622$, 95% CI [-1.30, 2.15], $sr^2 = 0$, sr^2 95% CI [-.01, .01]), (see Table 13). Maternal age significantly predicted NCAFS Caregiver Total score ($B = 0.23$, $SE = 0.11$, $t(168) = 2.08$, $p = .040$, 95% CI [0.01, 0.44], $sr^2 = .02$, sr^2 95% CI [-.02, .07]). Remaining covariates were not found to significantly predict NCAFS Caregiver Total score.

Negligible effect test results indicated that the difference between the means of NCAFS Caregiver Total scores of Korean American and European American mothers ($MD = -0.55$, 90% CI [-2.35, 1.25], $sr^2 = 0$, sr^2 95% CI [-.01, .02]) fell within the negligible effect interval of 5 points. Therefore, it could be concluded that there was a negligible difference in the score means between Korean American and European American mothers.

Multiple linear regression results did not support the hypotheses that South Korean mothers would demonstrate higher scores on the NCAFS Caregiver Total than Korean American and European American mothers. However, maternal age predicted the NCAFS Caregiver Total scores across the cultural groups. The remaining covariates did not predict the NCAFS Caregiver Total scores. Furthermore, the negligible test results supported the hypothesis that no meaningful score difference would be expected between Korean American and European American mothers.

Summary of Mean-Level Comparisons of AMSS, MBQS, and NCAFS

Overall, the mean-level comparisons showed statistically significant or meaningful differences between South Korean and European American mothers on the AMSS Acceptance subscale and MBQS scores, respectively. More specifically, as expected, South Korean mothers scored significantly higher on the AMSS Acceptance subscale, but the actual difference was small (less than 2 points). Contrary to expectations, South Korean mothers also had higher MBQS scores (0.2 point) than European American mothers, even though this difference was not statistically significant. Lastly, although negligible differences were expected in MBQS scores between South Korean and Korean American mothers, a non-negligible difference was observed.

Associations Between Sensitivity and Acculturation in Korean American Mothers

Prior to the formal analyses, the linearity assumption between the acculturation measure scores and the maternal sensitivity scores was assessed. The linearity diagnostics suggested that most relations were linear; however, some relations, specifically between the AMSS Acceptance subscale scores and Korean Identification scores and American Identification scores, as well as between the AMSS Cooperation subscale scores and American Identification scores, which appeared to show non-linear patterns. These non-linear patterns showed a monotonic relationship, meaning that as one variable increased, the other consistently increased or decreased, but not necessarily at a constant rate. Given this observed monotonic but non-linear relations, two-tailed Spearman's rho correlations were performed because it can effectively capture consistent rank-based associations. Additionally, normality diagnostics suggested that univariate distributions of the maternal sensitivity scores were non-normal and skewed ($p < .05$), and no transformation normalized them. Linearity diagnostics for the covariates confirmed that their relations with maternal sensitivity scores were linear. Therefore, two-tailed

Spearman's rho correlations were performed, as this test is better suited than Pearson correlations in accommodating non-linear relationships.

Four sociodemographic variables were considered as covariates: infant age, maternal age and education, and socioeconomic status. There were no concerns regarding multicollinearity. Table 14 displays Spearman's rho as well as partial rho between the acculturation measure (KAAS-II) scores, including Korean Identification scores and American Identification scores, and maternal sensitivity measure (AMSS, MBQS, and NCAFS Caregiver Total) scores, controlling for the covariates, including infant age, mother age, mother education, and socioeconomic status. All Spearman's rho and partial rho coefficient sizes were trivial, ranging from $-.144$ to $.073$ and from $-.180$ to $.210$, respectively. Thus, there was no association between sensitivity and acculturation to the United States. in Korean American mothers in the context of virtues of *hyo*.

Mean-level comparisons revealed that South Korean, Korean American, and European American mothers scored similarly on the majority of the maternal sensitivity measures, including AMSS Sensitivity, Cooperation, and Accessibility Subscales, and NCAFS Caregiver Total. The exceptions were that South Korean mothers scored significantly higher on AMSS Acceptance subscale and meaningfully higher on MBQS than European American mothers. Furthermore, there was a score difference observed between South Korean and Korean American mothers on the MBQS. In contrast, correlation analyses indicated that maternal sensitivity scores were not significantly associated with acculturation among Korean American mothers. These findings suggest that while some mean-level differences in maternal sensitivity exist in South Korean, Korean American, and European American mothers, these differences are not consistently associated with acculturation or variability in acculturation scores.

Discussion

The present study examined maternal sensitivity, assessed by standard Western maternal sensitivity measures, including AMSS, MBQS, and NCAFS, in three cultural groups: native South Korean mothers, Korean immigrants to the United States (acculturated Korean Americans), and native European American mothers in the United States. Although there has been extensive research regarding the role of maternal sensitivity in child development, there remains a need for a better understanding of cultural influences on maternal sensitivity, especially in settings where acculturation may have occurred. This study contributed to addressing this gap by comparing South Korean, Korean American, and European American mothers' maternal sensitivity to investigate similarities and differences in how they are measured by standard Western maternal sensitivity measures, as well as assessing the associations between maternal sensitivity and acculturation in Korean American mothers.

Mean-Level Differences of Maternal Sensitivity Scores Across South Korean, Korean American, and European American mothers

Table 15 provides a summary of all mean-level comparison hypotheses and results. Most mean-level comparisons revealed that there were no maternal sensitivity score differences across South Korean, Korean American, and European American mothers. Some differences of maternal sensitivity scores were found across South Korean, Korean American, and European American mothers. South Korean mothers scored higher on the AMSS Acceptance subscale and MBQS than European American mothers. Furthermore, South Korean and Korean American mothers scored differently on the MBQS.

All mean-level comparisons of AMSS subscales, MBQS, and NCAFS will be discussed separately in their own sections.

Cultural Differences in Maternal Sensitivity as Conceptualized by the AMSS Sensitivity Subscale

Contrary to the hypothesis, which was that South Korean mothers would score lower on the AMSS Sensitivity subscale than European American mothers, no cultural differences emerged between South Korean and European American mothers' AMSS Sensitivity subscale scores. This finding may be due, amongst other things, to a slow but gradual change of *hyo* values within parent-child relationships in South Korea (Sung, 2005, 2020). It is possible that South Korean mothers may still endorse certain *hyo* values while increasingly rejecting others. The AMSS Sensitivity subscale's aim was to assess the mother's capacity to be aware of her infant's signals, to interpret, and to respond appropriately and promptly, and thus *guan-sim* (parents paying keen attention to their children), *jung-sung* (parental devotion to childcare that starts from pregnancy), *heui-saeng* (parental sacrifice), *gong-gyung* (respect of parents), *seung-zee* (following parents' directions), and *jull-ze* (moderating and controlling of desire) were the *hyo* values that were hypothesized to be relevant to AMSS Sensitivity subscale. It is important to reiterate that the AMSS Sensitivity subscale explicitly states that *accessibility* (i.e., "the mother's awareness of her baby's signals and communications"; Ainsworth, 1969, "Sensitivity Versus Insensitivity" section) is a necessary condition for *sensitivity* to occur within mother-child relationships. Although *guan-sim*, *jung-sung*, and *heui-saeng* were consistent with the mother's capacity to be aware of her infant's signals, *gong-gyung*, *seung-zee*, and *jull-ze* differed from the remaining parts of the AMSS Sensitivity subscale's aim, including mother's capacity to interpret, respond appropriately and promptly to her infant's signals. Thus, in the hypotheses regarding the AMSS Sensitivity subscale, there was a mixture of *hyo* values that were aligned with *accessibility* or *sensitivity*, with an emphasis on the *hyo* values that prioritized teaching children

of obedience and respect of parents. As South Korea has undergone rapid industrialization and gained exposure to Western ideas and practices (Sung, 2005, 2020), *hyo* values that are relevant to, and may negatively affect scores on the AMSS Sensitivity subscale, including *gong-gyung* (respect of parents), *seung-zee* (following parents' directions), and *jull-ze* (moderating and controlling of desire), may have been influenced by western ideas about optimal parenting in South Korea. More specifically, given that there was no difference between South Korean and European American mothers' AMSS Sensitivity subscale scores, *gong-gyung*, *seung-zee*, and *jull-ze* may no longer be viewed as important by South Korean mothers, as they were traditionally. Although it is not clear which specific values of *hyo* within parent-child relationships in South Korea may have been more impacted by industrialization and exposure to Western ideas and practices, Ju (2020) suggested that the practice of *hyo* overall is beginning to be viewed as less mandatory than it has been historically due to more acceptance towards non-traditional lifestyle choices that reflect behaviours that indicate deviations from *hyo*. Therefore, waning endorsement of *gong-gyung*, *seung-zee*, and *jull-ze* (*hyo* values that might affect the AMSS Sensitivity subscale) and continued strong subscription to *guan-sim*, *jung-sung*, and *heui-saeng* (*hyo* values that align closely with *accessibility*) may explain the lack of cultural differences between South Korean and European American mothers on their AMSS Sensitivity subscale scores.

Additionally, there were no cultural differences between Korean American and European American mothers on the AMSS Sensitivity subscale scores. Furthermore, South Korean and Korean American mothers scored similarly on the AMSS Sensitivity subscale, which was aligned with the hypothesis. As previously mentioned, if South Korean mothers have likely already begun to relinquish *gong-gyung*, *seung-zee*, and *jull-ze* in South Korea, Korean American

mothers may have been subscribing less than their South Korean counterparts to *hyo* values even before beginning their acculturation to U.S. European American cultural values pertaining to parenting practices.

Cultural Differences in Maternal Sensitivity as Conceptualized by the AMSS Cooperation

Subscale

Contrary to the hypothesis, which was that South Korean mothers would score lower on the AMSS Cooperation subscale than European American mothers, there was no score difference found between South Korean and European American mothers on the AMSS Cooperation subscale. *Hyo* values, including *ga-reu-chim* (teaching) and *seung-zee* (children following their parents' teachings), were hypothesized to negatively influence South Korean mothers' scores on the AMSS Cooperation subscale due to *hyo*'s prioritization of the parents' critical teaching role that parents hold in their children's growth. Due to South Korean's mothers' tendency to view their children as an extension of themselves and reflections of their family (Choi, 1990; Chung, 2015) and previous research finding suggesting South Korean parents' endorsement of psychological control in parenting compared to U.S. European American parents that endorse more autonomy promoting parenting (Chao & Aqua, 2009), it was expected that South Korean mothers would more likely engage in behaviours that would be viewed as intrusive (as described by the AMSS Cooperation subscale). However, previous studies that have explored South Korean mothers' psychological control in parenting have been done on older children and adolescents (Chao & Aqua, 2009; Lee et al., 2018). Thus, it may be possible that when infants are 5.5 months old like in this study, *ga-reu-chim* and *seung-zee* may not be as strongly influential in South Korean mothers in mother-infant interactions.

Furthermore, there were no differences found between Korean American and European American mothers on their AMSS Cooperation subscale scores although Korean American mothers were expected to score lower than European American mothers. Also, South Korean and Korean American mothers scored similarly on the AMSS Cooperation subscale, which was aligned with the hypotheses. As previously mentioned, if *ga-reu-chim* and *seung-zee* may not impact the AMSS Cooperation subscale scores of South Korean mothers when infants are 5.5 months old, it is most likely that Korean American mothers would also be observed to not subscribe to *ga-reu-chim* and *seung-zee* strongly. These findings suggest that the maternal sensitivity behaviours assessed by AMSS Cooperation subscale may be trans-cultural when infants are 5.5 months old.

Cultural Differences in Maternal Sensitivity as Conceptualized by the AMSS Accessibility Subscale

No difference emerged between South Korean and European American mothers on their scores of the AMSS Accessibility subscale, contrary to the hypothesis that South Korean mothers would demonstrate higher AMSS Accessibility subscale scores than European American mothers. The lack of score difference found between South Korean and European American mothers suggests that *hyo* values may be more closely aligned with the aim of the AMSS Accessibility subscale than expected. In other words, behaviours assessed by AMSS Accessibility subscale may be trans-cultural, at least across South Korean, Korean American, and European American mothers. This finding was consistent with previous research that indicates that there exist some similarities across South Korean and European American mothers in terms of their traditional and modern parenting expectations (O'Brien et al., 2020). More specifically, similarities were noted across South Korean and European American mothers in

their beliefs about maintaining traditional roles and values, including perceiving the role of a mother as the most important, making sacrifices for their children, and loving being a mother (O'Brien et al., 2020), which map closely onto *guan-sim* (expectations of parents paying keen attention to their children), *jung-sung* (parental devotion to childcare), and *heui-saeng* (parental sacrifice that is expected of mothers to nurture and raise children) that were hypothesized to result in South Korean mothers scoring higher on the AMSS Accessibility subscale.

Also contrary to the hypothesis that South Korean mothers would score higher on the AMSS Accessibility subscale than Korean American mothers, no difference was observed between these two groups of mothers on their scores of the AMSS Accessibility subscale. Aligned with the hypothesis, Korean American mothers were found to score similarly to European American mothers on the AMSS Accessibility subscale. As previously mentioned, if similarities in traditional and modern parenting beliefs exist across South Korean and European American mothers (O'Brien et al., 2020), it is most likely that Korean American mothers would also share these same beliefs as South Korean and European American mothers, with or without factoring in additional acculturation to western values. This finding further supports the notion that the maternal sensitivity behaviours assessed by AMSS Accessibility subscale may be trans-cultural.

Cultural Differences in Maternal Sensitivity as Conceptualized by the AMSS Acceptance Subscale

As hypothesized, South Korean mothers scored higher on the AMSS Acceptance subscale than European American mothers. It is important to iterate that the observed group mean difference ($MD = 0.94$) was statistically significant ($p < .05$) but was not a meaningful group mean difference of 2 points on the AMSS Acceptance subscale. This finding was

consistent with previous research that parent-child relationships in East Asian cultures are described to be warm and supportive (Chao, 2001; Stevenson & Zusho, 2002) and consistent with the hypothesized *hyo* value of *guan-dae* (generosity/tolerance) being aligned with the descriptions of the AMSS Acceptance subscale.

Also, in support of the hypothesis, Korean American and European American mothers scored similarly on the AMSS Acceptance subscale. This finding was consistent with the hypothesized acculturation of *hyo* value of *guan-dae* that traditionally gender-prescribed values in Korean American mothers may be more susceptible to acculturation. However, unlike the hypothesis, the results did not suggest that South Korean mothers' scores on the AMSS Acceptance was higher on the AMSS Acceptance subscale than Korean American mothers' scores. These results suggest that Korean American mothers' *guan-dae* may have acculturated enough to be similar to European American mothers' AMSS Acceptance subscale scores but not enough to score lower than South Korean mothers on the AMSS Acceptance subscale.

Comparisons of the AMSS Acceptance subscale scores across South Korean, Korean American, and European American mothers highlight the importance of differentiating a meaningful difference from a statistical significant difference when exploring cultural differences. Although it is not always feasible to be able to pre-determine a meaningful difference like in the current study, these findings support the common claim that the statistical significance based on $p < .05$ is probability and arbitrary, and that statistical significance is susceptible to be influenced by various factors in the data (Constantinos et al., 2020; Miller & Ulrich, 2019).

Cultural Differences in Maternal Sensitivity as Conceptualized by the Mini MBQS-VR

A difference emerged between South Korean and European American mothers' MBQS scores. While the difference in recorded scores was not statistically significant, it was a

meaningful difference⁶ (0.20). Contrary to the study's hypothesized outcomes, South Korean mothers scored higher on sensitivity as measured by the MBQS than European American mothers. This finding may be due to the fact that *hyo* values other than those that were hypothesized may have been more strongly reflected in MBQS scores.

MBQS items are derived from Ainsworth's sensitive and insensitive maternal behaviours in relation to the infant and closely map on the descriptions of the AMSS *Sensitivity* subscale⁷. Thus, we hypothesized that *gong-gyung* (respect of parents), *seung-zee* (following the parents' will and teachings), and *jull-ze* (moderating and controlling one's desire) would likely influence South Korean mothers' expression of maternal sensitivity as measured by the MBQS. We expected that their MBQS scores would tend to be lower than those of European American mothers because *hyo* values emphasize the expectation for children to follow and comply with their mothers' agenda. However, *hyo* values that are more consistent with the AMSS *Accessibility* subscale, including *guan-sim* (parents paying keen attention to their children), *jung-sung* (parental devotion to childcare that starts from pregnancy), and *heui-saeng* (parental sacrifice), may have been more influential on the South Korean mothers' general expression of maternal sensitivity as measured by MBQS, resulting in South Korean mothers' higher MBQS scores overall when compared to those of European American mothers. It should be noted that Booth et al. (2023) conducted an Exploratory Factor Analysis (EFA) on the Mini-MBQS that identified two factors, "*Attention and Responsiveness*" and "*Contingency in Interactions*" (p.458). The description of *Attention and Responsiveness*, which was "parent psychological and physical accessibility and responsiveness to a variety of infant cues, suggesting ongoing

⁶ A 0.20 score difference on the MBQS was determined to be a meaningful difference.

⁷ AMSS unlike MBQS allows scoring on separate subscales.

awareness of and attention to infant needs” (Booth et al., 2023, p.458), consistent with the AMSS Accessibility subscale description. Also, the description of *Contingency in Interactions* described “meaningful attunement to the tone, content and pace of interactions based on infant signals” (Booth et al., 2023, p.458), which was similar to the description of the AMSS Sensitivity subscale. Given that Ainsworth’s definition of sensitivity explicitly states that accessibility is a prerequisite for sensitivity (Ainsworth, 1969, “Sensitivity Versus Insensitivity” section) and that the MBQS’ latent structure consists of two factors that closely describe the AMSS Accessibility and Sensitivity subscales, *hyo* values that are more relevant to AMSS *Accessibility* (i.e., *guan-sim*, *jung-sung*, and *heui-saeng*) than AMSS *Sensitivity* (i.e., *gong-gyung*, *seung-zee*, and *jull-ze*) may be better aligned with sensitivity assessed by MBQS. Additionally, it is possible that South Korean mothers in South Korea currently still endorse *guan-sim*, *jung-sung*, and *heui-saeng* that are consistent with AMSS *Accessibility* but may be becoming increasingly rejecting, at least partially, *gong-gyung*, *seung-zee*, and *jull-ze*. Sung (2020) stated that *hyo* values and their impact on the family dynamics have been changing extremely slowly in comparison to the overall rapid industrialization of South Korea. Sung (2020) further added that parent-child relationships in South Korea have been and will remain anchored in *hyo* and differ from parent-child relationships in Western parts of the world that subscribe to more autonomous and individualistic values. Moreover, Sung (2020) stated that under *hyo*, South Korean parents and their children are seen as one without separation, meaning that their experiences are shared rather than autonomous. Therefore, there may be certain *hyo* values that continue to more strongly influence the parent-child relationship than others.

Also, contradicting our hypothesis, which was that Korean American mothers would score lower than European American mothers on the MBQS, there was no significant nor meaningful

difference between Korean American and European American mothers' MBQS scores. This finding may reflect factors similar to the ones discussed above when attempting to understand the similar scores between Korean American and European American mothers on AMSS Accessibility subscale. Furthermore, contrary to another of the study's hypotheses, South Korean and Korean American mothers did not score similarly on the MBQS. Interestingly, this finding is contradicting the result that South Korean and Korean American mothers were found to score similarly on the AMSS Accessibility subscale. Here again, it is possible that South Korean, Korean American, and European American mothers may endorse modern parenting beliefs that are more similar than previously anticipated (O'Brien et al., 2020) and that reflect closely to *hyo* values that are consistent with the AMSS Accessibility subscale description.

In summary, it is noteworthy that there were no significant or meaningful differences recorded between the AMSS Accessibility subscale scores across South Korean, Korean American, and European American mothers, but that a meaningful difference *was* found between the overall MBQS scores of South Korean and European American mothers, in favour of South Korean mothers. This finding is intriguing because most MBQS items may be consistent with *hyo* values that should reflect the AMSS Accessibility subscale scores. These seemingly inconsistent findings may be explained by the difference between MBQS' and AMSS' structure and design in terms of how they set out to assess maternal sensitivity. The AMSS describes patterns of behaviours and signals that are infant-initiated and that caregivers should be aware of and respond to, but does not describe specific concrete behaviours that reflect on these patterns. Therefore, the AMSS may provide room for flexibility in assessing a mother's behaviours that are relevant to sensitivity and may likely allow incorporating cultural values in assessing a mother's behaviours. On the contrary, all items of MBQS refer to specific concrete maternal

behaviours that have been deemed to reflect on Ainsworth's definition of maternal sensitivity by the developers. Thus, the structure of the MBQS may lend itself more readily than the structure of the AMSS to identifying cultural nuances in maternal sensitivity behaviours in South Korean, Korean American, and European American mothers.

Cultural Differences in Maternal Sensitivity as Conceptualized by the NCAFS Caregiver Total

Contrary to the hypotheses, there were no differences found between South Korean and European American mothers, or South Korean and Korean American mothers on the NCAFS Caregiver Total scores. Consistent with the hypothesis, Korean American and European American mothers scored similarly on the NCAFS Caregiver Total. It was hypothesized that a number of values of *hyo*, including *guan-sim* (attentiveness), *jung-sung* (whole-hearted devotion), *heui-saeng* (sacrifice), *guan-dae* (generosity/tolerance), and *ga-reu-chim* (parental teachings), were aligned with the aims of NCAFS, but other values of *hyo*, including *gong-gyung* (respect of parents), *seung-zee* (following parents' directions), *jull-ze* (moderating and controlling of desire), would be in contrast to the aims of NCAFS. The lack of differences on the NCAFS Caregiver Total scores found across South Korea, Korean American, and European American mothers suggested that the NCAFS Caregiver Total items may reflect well onto *guan-sim* (attentiveness), *jung-sung* (whole-hearted devotion), *heui-saeng* (sacrifice), *guan-dae* (generosity/tolerance), and *ga-reu-chim* (parental teachings). In addition, the results suggested that *gong-gyung* (respect of parents), *seung-zee* (following parents' directions), *jull-ze* (moderating and controlling of desire) may not be in contrast to the aims of NCAFS or that the aforementioned *hyo* values do not map onto the NCAFS Caregiver Total items closely, and thus not be assessed by NCAFS Caregiver Total. NCAFS' main principles in its development was the importance of the caregivers' ability to provide social-emotional and cognitive growth fostering

situations. Although the literature states that *hyo* values strongly impose South Korean mothers to be responsible for educating their children academically (Chung, 2015; Ju, 2020; Sung, 2020), and thus implies that such imposition is not as strongly made onto European American mothers who prescribe to the dominant individualistic culture in the United States, these findings reflect on the possibility that there may not be a cultural difference when it comes to mothers providing an environment that fosters social-emotional and cognitive growth fostering situations in South Korean, Korean American, and European American mothers to 5.5 month old infants.

Acculturation of Hyo Virtues Associated with Maternal Sensitivity as Measured by Western Sensitivity Assessment Tools in Korean American Mothers

Contrary to the hypotheses, no associations were found between sensitivity, as measured by AMSS, MBQS, and NCAFS, and acculturation to the United States (KAAS-II's European Identification) in Korean American mothers. It was hypothesized that positive associations would be expected between acculturation to the United States and maternal sensitivity as measured by AMSS Cooperation and Sensitivity subscales and MBQS. Also, it was hypothesized that negative associations would be expected between acculturation to the United States and maternal sensitivity as measured by AMSS Accessibility and Acceptance subscales and NCAFS. It is noteworthy to highlight the contrast across the mean-level comparison and correlation results that although a meaningful MBQS score difference was found between South Korean and European American mothers, and a statistically significant AMSS Acceptance subscale score difference was found between South Korean and European American mothers, no associations were found between sensitivity, as measured by AMSS and MBQS, and NCAFS, and acculturation to the United States. It may be possible that *hyo* values or changes in adherence to *hyo* values do not map closely onto acculturation as measured by KAAS-II. Even though the

correlation analyses revealed no statistically significant associations between measures of sensitivity (AMSS, MBQS, and NCAFS) and Korean or European Identifications (KAAS-II), trends of associations were observed. Interestingly, all associations between all AMSS subscales and MBQS, and KAAS-II's Korean Identification were negative, whereas all associations between all AMSS subscales and MBQS, and KAAS-II's European Identification were positive. The directions of associations were reversed for the relationship between NCAFS and KAAS-II's Korean and European Identifications. Provided that the mean-level comparisons found a meaningfully significant MBQS score difference between South Korean and European American mothers, with South Korean mothers scoring higher than European American mothers, the negative association found between MBQS and Korean Identification does not seem to be aligned with the aforementioned mean-level comparison finding. Similarly, the negative association found between AMSS Acceptance subscale and Korean Identification does not appear to map onto the statistically significant AMSS Acceptance subscale score difference found between South Korean and European American mothers, with South Korean mothers scoring higher than European American mothers. Although not statistically significant, the contrast between the mean-level comparison findings and trends of associations suggested that KAAS II may not be a suitable measure to assess Korean American mothers' adherence to *hyo* values during acculturation by extension.

General Discussion

This study examined factors influencing maternal sensitivity by comparing maternal sensitivity scores across South Korean, Korean American, and European American mothers. Additionally, the study explored whether acculturation was associated with maternal sensitivity among Korean American mothers. The results of this study suggest that although differences in

maternal sensitivity scores were observed on specific measures, such as the AMSS Acceptance Subscale and the MBQS, most of the maternal sensitivity measures used in this study, including AMSS Sensitivity, Cooperation, and Accessibility Subscales, and NCAFS Caregiver Total, did not reveal significant or meaningful differences between South Korean, Korean American, and European American mothers. Thus, the results were mostly not reflective of the developmental niche (Harkness & Super, 1986) theoretical framework, in which this study was situated. These consistent findings that suggest similar scores across measures suggest that maternal sensitivity may be trans-cultural when comparing South Korean, Korean American, and European American mothers. It may be that some aspects of maternal sensitivity are relatively unaffected by cultural values such as *hyo*. For instance, this may have been due to a combination of seemingly contrasting *hyo* values cancelling each other out when considering how *hyo* may affect maternal sensitive behaviours, i.e., one *hyo* value may increase sensitivity whereas another *hyo* value may decrease sensitivity. The latter explanation may be particularly relevant when examining findings based on the AMSS Sensitivity subscale, the MBQS, and the NCAFS Caregiver Total. In the AMSS Sensitivity subscale and MBQS, *jung-sung* (wholeheartedness/devotion), *heui-saeng* (sacrifice), and *guan-sim* (attention/concern) were values that were aligned with AMSS Sensitivity subscale descriptions, whereas *gong-gyung* (respect of parents), *seung-zee* (following parents' directions), and *jull-ze* (moderation/controlling of desire) were contrasting values. In the NCAFS Total Caregiver, *jung-sung*, *heui-saeng*, *in-nae* (patience), *guan-sim*, *ga-reu-chim* (lesson), and *guan-dae* (generosity/tolerance) were values that were aligned with the aims of the NCAFS Total Caregiver, whereas *gong-gyung*, *seung-zee*, and *jull-ze* were contrasting values. Moreover, acculturation to the United States in Korean American mothers was not found to demonstrate any

associations with the maternal sensitivity measures. Thus, the results of this study appear to indicate that, overall, there may be little cultural influences on maternal sensitivity attributable to *hyo*, and that factors other than *hyo* may play a more important role in influencing maternal sensitivity.

For instance, maternal age is a factor that may impact maternal sensitivity. In this study, the age range of mothers was 23.3-33.6 years for South Korean mothers, 21.9-40.2 years for Korean American mothers, and 15.2-41.2 years for European American mothers. This study's results indicate that, with the exception of the AMSS Accessibility subscale, maternal age predicted maternal sensitivity scores across all cultural groups when comparing AMSS Sensitivity, Cooperation, and Acceptance subscales, MBQS, and NCAFS Caregiver Total. These findings were consistent with the extant research that has shown that adult mothers (>25 years old) demonstrate higher sensitivity than adolescent mothers (<20 years old) (Booth et al., 2018; Lounds et al., 2005; Firk et al., 2018; Secco & Moffatt, 2003). Additionally, this study's results were aligned with previous research that has indicated that adolescent mothers displayed less sensitivity than emerging adult mothers (20-25 years old), who displayed less sensitivity than adult mothers (Lewin et al., 2013). Previous research has shown that there are parenting differences across developmental stages, particularly that younger mothers (e.g., adolescent mothers) are typically less equipped for parenthood, including being more at risk socioeconomically, cognitively and emotionally unprepared for parenting, having limited parenting knowledge, and still needing to continue developing their own identity (Aiello & Lancaster, 2007; Borkowski et al., 2007; Firk et al., 2018; Lewin et al., 2013; Whitman et al., 2001). Except for the AMSS Accessibility subscale, maternal age was a trans-cultural predictor

for maternal sensitivity in this study across South Korean, Korean American, and European American mothers.

In addition, our results suggest that the differences in maternal sensitivity behaviours across South Korean, Korean American, and European American mothers may not be prominent when infants are 5.5 months old, as they were in this study. Perea-Velasco et al. (2023) found changes in maternal sensitivity in a sample of mother-infant/child dyads in Spain, i.e., European mothers, at infant ages of 6, 12, and 18 months, showing growing maternal sensitivity as infants became older. More specifically, an increase in the frequency of sensitive maternal behaviours from 6 months to 18 months of infant age, and a decrease in the rate of intrusive behaviours was observed from 12 months to 18 months of infant age. Perea-Velasco et al. (2023) reported that their findings might have been due to their sample of European mothers starting to foster autonomy in their infants as they become older and intervening in their child's behaviour less physically, and only when necessary, to ascertain the safety of their children. It may be possible that European American mothers of 5.5-month-old infants, as in the current study, may be expressing maternal sensitivity with less intention of instilling autonomy in their infants. Therefore, sensitivity behaviours may be more universal when infants are 5.5 months old and may look different as the infant ages, and as culturally influenced parenting values more markedly shape sensitivity behaviours.

Moreover, as mentioned in the previous *Cultural Differences in Maternal Sensitivity as Conceptualized by MBQS* discussion section, the structure of the AMSS may have played a role in the fact that the majority of the AMSS mean-level comparison appeared to be trans-cultural. The AMSS may be culturally adept given it is descriptive of holistic *patterns of behaviours* instead of relying on a checklist of specific concrete behaviours (Mesman, 2021). However, there

may still be cultural nuances in how maternal sensitivity behaviours are expressed. For instance, the purpose of the AMSS Cooperation Subscale is to capture the extent of the mother's interventions and initiations of interactions that interrupt her infant's ongoing activity rather than being geared in both timing and quality to her infant's state, mood, and current interests (Ainsworth, 1969). The degree of such interference may be assessed in two ways in the Cooperation Subscale: the extent of physical or verbal interference with the infant's activity, and the sheer frequency of interruptions. There are notable differences between the parenting principles that are prioritized in the AMSS Cooperation Subscale and *hyo*. These differences may contribute to diverging perspectives regarding how mothers view and interact with their infants. The assumptions underlying the AMSS Cooperation Subscale suggest that maternal interfering during mother-infant dyadic interactions is due to mothers not viewing their infant as an autonomous being, a notion that is culturally grounded in Western developmental theories. This subscale emphasizes the importance of the mother's ability to capitalize on spontaneity and interact with her infant in a cooperative manner. On the contrary, *hyo* prioritizes the need for parents to teach their children (e.g., *mo-bum*, *ga-reu-chim*) and for children to follow their parents' teachings (e.g., *seung-zee*), which in turn manifests in mothers' tendencies to view their children as extensions of parents and reflections of their family (Chung, 2015; Kim, 2006). Raters using the AMSS Cooperation Subscale as prescribed, in their descriptions, must assign lower scores to mothers who favour verbal or physical instructive modes of play than those mothers who favour spontaneity and follow their infant's lead in their interactions with the latter. Not surprisingly, mothers with a Korean cultural background who endorse *hyo* may be assigned lower scores on the scale. To illustrate these differences, consider the following observations on a South Korean mother-infant interaction used for AMSS coding:

The mother is carrying her infant in front of a large poster composed of various images. Mother and infant are both directly facing the poster. The mother instructs her infant, “let’s study”. The mother points to an image on the poster and labels it “a calf”. The mother says, “this is a man here,” and grabs her infant’s hand, putting it over the image on the poster. The mother tells her infant that a man and a woman are going somewhere fun with the calf, while engaging in hand-over-hand, directing motions with her infant’s hand, and touching various images on the poster. The mother directs her infant’s attention to a different image on the poster, describing it, and putting her infant’s hand over the image. The infant turns away from the poster. The mother redirects her infant, tapping on the poster, and says, “[Infant’s name], look over here.” The infant turns back around and faces the poster. The mother points out several birds and labels them to her infant. Her infant looks away from the poster. The mother directs her infant’s attention to a different image on the poster. The infant looks. The mother points at various images and describes them to her infant.

This mother repeatedly engaged in hand-over-hand motions to instruct her infant to touch images that the mother then labeled or counted (e.g., girl, boy, sunflower, butterfly, squirrel). The mother also verbally instructed her infant to touch images on the poster. During these repeated interactions, when the infant turned away from the poster several times, the mother redirected her infant to the images that the mother was labeling or counting in the moment. Throughout this 20 min observation, the mother also engaged in hand-over-hand play with a toy in several instances, paired with verbal instructions (e.g., “Touch this,” “You know how to do this”) directed at her infant.

Aligned with the aforementioned differences in culturally grounded parenting values, this South Korean mother-infant dyad received a score of 3, or “Interfering”, on the AMSS Cooperation Subscale. “Interfering mothers” are described in the manual as displaying either direct, forceful, physical interference or frequent milder interferences or both. The AMSS manual also states that mothers who receive scores of 3 on this subscale “may be a “training” kind of mother who is determined to shape the baby to her way of doing things”. In this illustrative case, however, the South Korean mother’s verbal and physical instructive manner in interacting with her infant may have been well-aligned with *hyo* principles, teaching, instructing, directing, and guiding her infant with the perspective that her infant is to follow and learn from these teachable moments. Interestingly, this mother may have received a higher score on the AMSS Cooperation Subscale if the scale prioritized the need for parents to teach their children and valued behaviours of caregivers that reflected on that need. The above example highlights the possibility of lower scores being assigned to mother-infant dyads that hail from cultures that endorse parenting principles which diverge from those of dominant Western cultures.

Another possible explanation for this study’s findings that suggest that maternal sensitivity may be trans-cultural when infants are 5.5 months old is that even if *hyo* values continue to be strongly rooted in modern South Korea, the ways that *hyo* values are expressed in behaviours may have partially started to change in South Korea (Chung, 2015; Ju, 2020). More specifically, acculturation to the U.S. parenting values about optimal parenting may have infiltrated South Korea due to rapid industrialization and gaining exposure to Western ideas and practices. Currently, it is unclear which *hyo* values in South Korea may have been influenced or to what extent they have been influenced by Western parenting values and practices but there appears to be a change occurring in the practice of *hyo* overall, being viewed as less pervasive

than previously in South Korea (Ju, 2020). This change may be leading to more varied approaches to parenting and sensitivity (e.g., a combination of parenting that combines *hyo* and Western values) in modern South Korea than has been seen historically.

Furthermore, the results of this study, which revealed few cultural differences regarding maternal sensitivity across South Korean, Korean American, and European American mothers, suggest the possibility that maternal sensitivity may be more trans-cultural across South Korean, Korean American, and European American mothers than has been previously thought. Existing research has indeed suggested that mothers' beliefs regarding maternal sensitivity may be quite universal in that, cross-culturally, there is a strong convergence between maternal beliefs about "the ideal mother" and typical descriptions of maternal sensitivity (Mesman et al., 2016).

Although cross-cultural differences have been found in previous research studies regarding various parenting constructs (e.g., Chae & Aqua, 2009; Lee et al., 2016; O'Brien et al., 2020), maternal sensitivity may be a construct that is more driven by evolutionary needs to ensure the infant's survival rather than a construct that is driven by cultural ideals (Mesman, 2018). The current study further supports the latter thesis.

Limitations and Future Directions

There are several important limitations to the current study. Missing data in this study may have introduced bias. Because video coding to measure maternal sensitivity using AMSS, MBQS, and NCAFS was performed on secondary data, randomly missing data resulted in observed mother-infant dyadic interactions not meeting key coding criteria required by AMSS, MBQS, and NCAFS. For instance, AMSS and MBQS could not be used with several filmed observations due to there being more interactions between the infant and other family members than between the infant and the mother. Additionally, NCAFS could not be used with number of

filmed observations due to the absence of a feeding episode in the mother-infant dyadic interactions. Furthermore, there were some missing sociodemographic data due to incomplete questionnaires or questionnaires lost in the mail. It was established through a sensitivity analysis that treating missing data via complete-case analysis VS multiple imputation revealed negligible estimate differences.

This study used an existing data set, which may have introduced time lag issues. Data on South Korean, Korean American, and European American mother-infant dyads were collected at different time points. Data on South Korean mother-infant dyads were collected in 2003. Data on Korean American mother-infant dyads were collected from 2004-2010. Data on European American mother-infant dyads were collected from 1988- 1997. Thus, there was little overlap of time in data collection, as well as delays between when data were originally collected and when they were analyzed for the current study. There likely have been shifts in parenting values and practices over time in South Korea and in the United States (Chung, 2015; Ju, 2020; Minkin & Horowitz, 2023; Sung, 2020). Thus, results should be interpreted taking these time lag issues into consideration.

In order to assess the impact that culture and acculturation may have on maternal sensitivity in South Korean, Korean American, and European American mothers, European American mothers were chosen as the point of reference, which is not ideal as doing so presumes that European American mothers represent the culture of destination in the United States. Given that South Korean culture is nearly homogenous, South Korean and Korean American mother samples were homogeneous in this study. Although European American mothers are not a homogeneous group like South Korean and Korean American mothers, European American

mothers were chosen because they are the majority cultural group that holds autonomous parenting values in the United States.

Furthermore, mother-infant dyads were recruited in metropolitan areas in Seoul, South Korea and Washington, United States, which may have introduced a selection bias of motivated and interested mothers. Provided that the Seoul metropolitan area especially has undergone a rapid industrialization and globalization, even more than other areas of South Korea (Chun & Kim, 2022), recruitment of South Korean mothers in metropolitan Seoul area may have resulted in selecting mothers who are more likely to have been exposed more to Western values than in other areas of South Korea. Although various recruitment strategies were employed, including mass mailings, hospital birth notifications, medical group patient lists, and newspaper birth announcements and advertisements, recruited mothers may have been representative of mothers who are more invested and motivated to learn about their parenting practices than other mothers, which may have positively skewed the outcome scores. In addition, it is possible that families who may be experiencing difficulties may have been less likely to participate in research studies. It is likely that recruiting more broadly, including mother-infant dyads that reside in non-metropolitan areas, would provide a more inclusive reflection of maternal sensitivity in South Korean, Korean American, and European American mothers and may result in different findings.

Another limitation in this study is that it was not feasible for all coders to be blinded to the hypotheses due to the difficulty in obtaining coders who are bilingual, bicultural, and trained or suitable to be trained in AMSS, MBQS, and NCAFS. Even though it would have been a more rigorous research practice to obtain bilingual, bicultural Korean coders in this study, acceptable inter-coder reliability between the two bilingual, bicultural Korean coders was obtained, which did help circumvent this obstacle this study. Future studies involving administering AMSS,

MBQS, and NCAFS to South Korean or Korean American mother-infant dyads should obtain bilingual, bicultural Korean coders who are completely blind to the study hypotheses.

Moreover, although this study's hypotheses were determined based on how values of *hyo* may influence behaviours of maternal sensitivity in South Korean and Korean American mothers, no direct measure of *hyo* values was used to assess these mothers' subscription to *hyo* values in this study; it was simply assumed that any Korean or Korean born mother would have been influenced by this important cultural value. Because this study used an existing data set, it would not have been possible to introduce a new measure. Future research regarding the impact of cultural values in parenting in parents of South Korea descent may benefit from including a measure that can assess someone's adherence to *hyo* values.

Another consideration for this study is that some *hyo* values that were hypothesized to be underlying maternal sensitivity behaviour in South Korean and Korean American mothers based on previous literature, *hyo* may not have been as relevant for the mothers of 5.5-month-old infants in this study. Given that there is evidence that maternal sensitivity behaviours increase as infants become older (Perea-Velasco et al., 2023), maternal sensitivity behaviours may be trans-cultural, at least across South Korean, Korean American, and European American mothers, when their infants are younger compared to when they are older. Future research investigating culture specificity and culture universality of maternal sensitivity behaviours directed towards older infants and children are warranted.

This study examined the role that acculturation may have in maternal sensitivity using a cross-sectional design, which is not an ideal method to study the changes in parenting values that may occur during the acculturation process (Bornstein, 2017a). Longitudinal studies are more effective in exploring changes during the acculturation processes. More longitudinal studies in

assessing the process of acculturation and its relevant factors, and its impact on maternal sensitivity in the future are warranted.

The current study focused solely on examining mothers' sensitivity towards their infants. In many families, although there may be one primary caregiver, there is often more than one caregiver who forms relationships with infants. It would be beneficial for understanding optimal development in infancy to gain more insight into sensitive behaviours of other caregivers, including fathers and grandparents.

Research and Clinical Implications

Despite multiple limitations, this study's results have research and clinical implications for furthering the understanding of maternal sensitivity in different cultural contexts, including South Korea, the United States, and acculturation of South Korean parenting values in the United States. This study provides insight into maternal sensitivity behaviours in South Korean, Korean American, and European American mothers in different cultural contexts.

With the exception of the AMSS Acceptance subscale and MBQS, the remaining maternal sensitivity measures (AMSS Sensitivity, Cooperation, Accessibility subscales, and NCAFS Caregiver Total) scores did not differ across South Korean, Korean American, and European American mothers, suggesting that many aspects of maternal sensitivity may be more trans-cultural than showing culturally influenced differences when infants are 5.5 months old. When contrasted with extant cross-cultural parenting literature on South Korean, Korean American, and European American mothers that has suggested cultural differences in parenting values and behaviours (Bornstein et al., 2019; Cote et al., 2015), this study's results appear to suggest some limited cultural differences on maternal sensitivity depending on the assessment measure employed. Our findings highlight the importance of having a clear understanding of the

aims of the maternal assessment tools when choosing them to implement them in research studies or clinical settings.

Although the majority of the maternal sensitivity measures did not yield cross-cultural differences between South Korean, Korean American, and European American mothers, it is notable that there was a statistically significant difference on the AMSS Acceptance subscale scores and a meaningful difference on MBQS scores between South Korean and European American mothers, with South Korean mothers scoring higher than European American mothers. These findings are particularly interesting because the score differences were in the favour of South Korean mothers on observational maternal sensitivity measures that have been developed in the Western part of the world with prioritizing Western values that differ from *hyo* values in some aspects of parenting. The findings of this study contribute to the growing body of more inclusive research with underrepresented cultural groups.

Given that this study's findings showed a mixture of mostly trans-cultural and few culturally influenced differences of maternal sensitivity behaviours depending on the maternal sensitivity measure used and an absence of apparent impact of acculturation on maternal sensitivity, it is unclear to what extent *hyo* values may influence maternal sensitivity behaviours in South Korean or Korean American mothers of 5.5-month-old infants. Therefore, researchers and clinicians should exercise caution in evaluating maternal sensitivity behaviours in South Korean or Korean American mothers of very young infants, taking into consideration that *hyo* values may or may not impact observable maternal sensitivity behaviours at that stage of dyadic development.

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Table 1

Summary of Expected Mean-Level and Pairwise Group Rating Differences Hypotheses

Measures	Group comparisons		
	South Korean mother-infant dyads (SK) versus European American mother-infant dyads (EA)	Korean American mother-infant dyads (KA) versus European American mother-infant dyads (EA)	South Korean mother-infant dyads (SK) versus Korean American mother-infant dyads (KA)
AMSS			
Sensitivity	SK < EA	KA < EA	SK = KA
Cooperation	SK < EA	KA < EA	SK = KA
Accessibility	SK > EA	KA = EA	SK > KA
Acceptance	SK > EA	KA = EA	SK > KA
MBQS	SK < EA	KA < EA	SK = KA
NCAFS Caregiver Total	SK > EA	KA = EA	SK > KA

Table 2*Sociodemographic Characteristics of South Korean, Korean American, and European American Mother-Infant Dyads*

Variable	South Korean mother-infant dyads <i>n</i> = 57		Korean American mother-infant dyads <i>n</i> = 74		European American mother-infant dyads <i>n</i> = 50		<i>F</i> (2, 160)	η^2_p
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>		
Infant age ^a (months)	5.33 _a	0.16	5.65 _{ab}	0.54	5.38 _b	0.24	6.91*	.08
Infant birth weight (g)	3316.27	396.52	3449.61	519.76	3467.45	444.66	1.77	
Infant gender	50.9% daughters		51.4% daughters		50% daughters		0.04	
Mother age ^a (years)	29.06 _a	2.18	31.60 _{ab}	3.75	27.48 _b	6.92	9.83**	
Mother education ^{ab} (%)	5.68 _a	0.85	6.18 _b	1.14	5.06 _{ab}	1.54	10.61**	.12
had not completed high school	0		2.8		18			
had completed high school	12.3		5.4		16			
had completed college partially	19.3		9.5		20			
had completed college or university	56.1		29.7		26			
had completed university graduate programs	12.3		48.6		20			
Socioeconomic Status ^a (Hollingshead, 1975)	49.90 _a	7.14	57.72 _{ab}	7.61	48.39 _b	13.93	14.80**	.16

Notes. ANOVAs were followed by *t*-tests with Bonferroni's correction. Means with the same subscript within a row were significantly different at $p < .05$.

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

^a Covariates.

^b Hollingshead (1975) 7-point scale where 4 = *high school graduate or GED*, 5 = *some college or completed specialized training*, 6 = *standard college or university graduate*, 7 = *completed graduate degree*.

Table 3

Coder Reliabilities for AMSS, MBQS, and NCAFS in South Korean, Korean American, and European American Mother-Infant Samples

Sensitivity measures	Coders 1 & 2 reliabilities
AMSS	.75 - .85 ^a
MBQS	.75 - .85 ^a
NCAFS	> 90% ^b

Notes. All coders achieved reliability as outlined by the authors of the sensitivity measures.

^a Coder reliability is determined by calculating interrater reliability of global scores using intraclass correlations.

^b Coder reliability is determined by a percentage of agreement based on the total items of agreement. A percentage agreement score of 90% equals a total of 69 items of agreement.

Table 4*Intraclass Correlation Coefficients (ICC) of AMSS, MBQS, and NCAFS Caregiver Total*

Sensitivity Measures	South Korean mother-infant dyads		Korean American mother-infant dyads		European American mother-infant dyads	
	ICC	% of sample used to compute ICC	ICC	% of sample used to compute ICC	ICC	% of sample used to compute ICC
AMSS		28.1%		25.7%		20%
Sensitivity	.80		.78		.88	
Cooperation	.74		.75		.85	
Accessibility	.86		.83		.89	
Acceptance	.89		.84		.88	
MBQS	.84	28.1%	.92	25.7%	.97	22%
NCAFS Caregiver Total	.87	23.8%	.92	20.4	.62	24%

Table 5*Study Variables' Internal Consistency*

	South Korean mother-infant dyads	Korean American mother-infant dyads	European American mother-infant dyads			
AMSS						
Sensitivity						
Cooperation						
Accessibility						
Acceptance						
MBQS						
	Cronbach's α	McDonald's ω	Cronbach's α	McDonald's ω	Cronbach's α	McDonald's ω
NCAFS						
Sensitivity to Cues	.83	.85	.75	.77	.76	.79
Response to Distress	.78	.83	.78	.81	.80	.82
Social-Emotional Growth Fostering	.83	.85	.78	.80	.70	.73
Cognitive Growth Fostering	.87	.89	.87	.89	.82	.84
Total Caregiver						
KAAS-II						
			Cronbach's α			
Korean Identification			.88			
American Identification			.90			

Note. Empty cells indicate that Cronbach's α or McDonald's ω was not applicable. Cronbach's α and McDonald's ω were used to assess NCAFS Sensitivity to Cues, Response to Distress, Social-Emotional Growth Fostering, and Cognitive Growth Fostering

subscales' internal consistency. Cronbach's α was used to assess KAAS-II Korean Identification and American Identification subscales. KAAS-II was not administered to South Korean or European American mother-infant dyads.

Table 6

Summary of Information Regarding NCAFS Feeding Episodes in South Korean, Korean American, and European American Mother-Infant Dyads

	Percentage of feeding episodes occurring in filmed dyadic interactions (%)	Percentage of method of feeding in filmed dyadic interactions (%)				Length of feeding episodes (min)		Percentage of feeding episodes overlapping with the first 20 min of filmed dyadic interactions (%)
		Breast	Bottle	Solid	No feeding	<i>M</i>	<i>SD</i>	
South Korean mother-infant dyads	67	19.4	30.6	17.7	32.3	6.57	4.12	45
Korean American mother-infant dyads	60	14.9	29.7	21.6	33.8	11.00	19.19	39
European American mother-infant dyads	100	16	64	20	0	7.44	3.00	76

Table 7*Descriptive Statistics for Study Variables*

Variables	Possible range of scores	South Korean mother-infant dyads			Korean American mother-infant dyads			European American mother-infant dyads		
		<i>M</i>	<i>SD</i>	Range	<i>M</i>	<i>SD</i>	Range	<i>M</i>	<i>SD</i>	Range
AMSS										
Sensitivity	1-9	4.67	2.50	1-9	4.72	2.40	1-9	3.82	2.35	1-8
Cooperation	1-9	4.88	2.20	1-9	5.04	1.79	2-9	4.14	2.47	1-9
Availability	1-9	5.47	2.38	2-9	5.51	2.21	1-9	4.58	2.45	1-9
Acceptance	1-9	5.82	2.13	1-9	6.18	1.77	2-9	4.6	2.74	1-9
MBQS	-1.0-1.0	0.04	0.65	-0.87-0.88	0.08	0.59	-0.84-0.93	-0.22	0.60	-0.90-0.80
NCAFS		40.00	3.36	33-48	40.14	4.46	24-48	39.66	5.62	24-48
Total Caregiver	0-50									
KAAS-II										
Korean Identification	1-5				3.41	0.74	1.82-4.71			
American Identification	1-5				3.69	0.78	2.08-4.85			

Note. Unfilled cells indicate that the statistic is not applicable. KAAS-II was not administered to South Korean or European American mother-infant dyads.

Table 8

Multiple Linear Regression Results for South Korean (SK), Korean American (KA), and European American (EA) Mother-Infant Dyads on the AMSS Sensitivity Subscale

	<i>B</i>	<i>SE</i>	<i>t</i>	<i>p</i>	95% CI
Mean-level comparisons					
SK versus EA	0.60	0.47	1.28	.204	[-0.34, 1.54]
KA versus EA	0.06	0.49	0.13	.896	[-0.92, 1.05]
Covariates					
Infant age	0.01	0.02	0.57	.572	[-0.02, 0.04]
Maternal age	0.13	0.05	2.50	.014	[0.03, 0.23]
Maternal education	0.10	0.20	0.47	.640	[-0.37, 0.56]
Socioeconomic status (Hollingshead, 1975)	0.01	0.03	0.40	.687	[-0.04, 0.06]

Note. European American mother group was designated as the reference group.

Table 9

Multiple Linear Regression Results for South Korean (SK), Korean American (KA), and European American (EA) Mother-Infant Dyads on the AMSS Cooperation Subscale

	<i>B</i>	<i>SE</i>	<i>t</i>	<i>p</i>	95% CI
Mean-level comparisons					
SK versus EA	0.57	0.46	1.26	.210	[-0.34, 1.49]
KA versus EA	0.24	0.45	0.53	.596	[-0.66, 1.14]
Covariates					
Infant age	0.003	0.01	0.22	.829	[-0.02, 0.03]
Maternal age	0.11	0.04	2.56	.011	[0.02, 0.20]
Maternal education	-0.04	0.18	-0.20	.844	[-0.39, 0.32]
Socioeconomic status (Hollingshead, 1975)	0.02	0.02	0.81	.417	[-0.03, 0.07]

Note. European American mother group was designated as the reference group.

Table 10

Multiple Linear Regression Results for South Korean (SK), Korean American (KA), and European American (EA) Mother-Infant Dyads on the AMSS Accessibility Subscale

	<i>B</i>	<i>SE</i>	<i>t</i>	<i>p</i>	95% CI
Mean-level comparisons					
SK versus KA	0.43	0.45	-0.95	.342	[-1.34, 0.47]
SK versus EA	0.68	0.47	-1.46	.147	[-1.61, 0.25]
Covariates					
Infant age	0.01	0.02	0.47	.636	[-0.02, 0.04]
Maternal age	0.10	0.05	1.95	.053	[-0.003, 0.20]
Maternal education	0.08	0.21	0.36	.722	[-0.35, 0.50]
Socioeconomic status (Hollingshead, 1975)	0.01	0.03	0.38	.707	[-0.04, 0.06]

Note. South Korean mother group was designated as the reference group.

Table 11

ANCOVA Results for South Korean (SK), Korean American (KA), and European American (EA)

Mother-Infant Dyads on the AMSS Acceptance Subscale

Variable	<i>F</i> ratio	<i>df</i>	η^2	<i>p</i>
Culture	8.54	2, 168	.03	<.001
Infant age	0.03	1, 168	.0002	.872
Maternal age	18.20	1, 168	.04	<.001
Maternal education	0.42	1, 168	.001	.513
Socioeconomic status (Hollingshead, 1975)	0.14	1, 168	.001	.708

Pairwise Comparisons	Estimate	<i>SE</i>	<i>df</i>	95% CI	<i>t</i>	<i>p</i>
SK versus KA	-0.12	.42	168	[-0.95, 0.72]	-0.28	.780
SK versus EA	-0.98	.43	168	[-1.82, -0.14]	-2.30	.023*

Note. South Korean mother group was designated as the reference group.

Table 12

Multiple Linear Regression Results for South Korean (SK), Korean American (KA), and European American (EA) Mother-Infant Dyads on the MBQS

	<i>B</i>	<i>SE</i>	<i>t</i>	<i>p</i>	95% CI
Mean-level comparisons					
SK versus EA	.20	.12	1.63	.104	[-0.04, 0.44]
KA versus EA	.11	.13	0.88	.380	[-0.14, 0.36]
Covariates					
Infant age	.001	.004	0.27	.788	[-0.006, 0.01]
Maternal age	.03	.01	2.21	.029	[0.003, 0.05]
Maternal education	.03	.52	0.49	.624	[-0.08, 0.13]
Socioeconomic status (Hollingshead, 1975)	.003	.007	0.52	.606	[-0.01, 0.02]

Note. European American mother group was designated as the reference group.

Table 13

Multiple Linear Regression Results for South Korean (SK), Korean American (KA), and European American (EA) Mother-Infant Dyads on the NCAFS Caregiver Total

	<i>B</i>	<i>SE</i>	<i>t</i>	<i>p</i>	95% CI
Mean-level comparisons					
SK versus KA	-0.13	1.01	-0.13	.898	[-2.15, 1.89]
SK versus EA	0.42	0.86	0.49	.622	[-1.30, 2.15]
Covariates					
Infant age	-0.05	0.04	-1.32	.188	[-0.13, 0.03]
Maternal age	0.23	0.11	2.08	.040	[0.01, 0.44]
Maternal education	0.52	0.43	1.22	.224	[-0.34, 1.38]

Note. South Korean mother group was designated as the reference group.

Table 14

Spearman's rho Correlations Between Sensitivity Measures Scores and Acculturation Measure Scores

	KAAS II Revised	
	Korean Identification	European Identification
AMSS		
Sensitivity		
ρ	-.100	.081
ρ_p	-.101	.075
Cooperation		
ρ	-.112	.069
ρ_p	-.144	.093
Accessibility		
ρ	-.071	.034
ρ_p	-.072	.023
Acceptance		
ρ	-.106	.194
ρ_p	-.113	.210
MBQS		
ρ	-.078	.084
ρ_p	-.105	.104
NCAFS Caregiver Total		
ρ	.073	-.175
ρ_p	.065	-.180

Note. Spearman's rho (ρ) and partial rho (ρ_p) controlling for infant age, mother age, mother education, and socioeconomic status (Hollingshead, 1975).

Table 15

Summary of Mean-Level and Pairwise Group Rating Differences Hypotheses and Results

Measures	Group comparisons		
	South Korean mother-infant dyads (SK) versus European American mother-infant dyads (EA)	Korean American mother-infant dyads (KA) versus European American mother-infant dyads (EA)	South Korean mother-infant dyads (SK) versus Korean American mother-infant dyads (KA)
AMSS Sensitivity			
Hypothesis	SK < EA	KA < EA	SK = KA
Result	SK \nless EA	KA \nless EA	SK = KA
AMSS Cooperation			
Hypothesis	SK < EA	KA < EA	SK = KA
Result	SK \nless EA	KA \nless EA	SK = KA
AMSS Accessibility			
Hypothesis	SK > EA	KA = EA	SK > KA
Result	SK \ngtr EA	KA = EA	SK \ngtr KA
AMSS Acceptance			
Hypothesis	SK > EA	KA = EA	SK > KA
Result	SK > EA ^a	KA = EA	SK \ngtr KA
MBQS			
Hypothesis	SK < EA	KA < EA	SK = KA
Result	SK > EA ^b	KA \nless EA	SK \neq KA
NCAFS Caregiver Total			
Hypothesis	SK > EA	KA = EA	SK > KA
Result	SK \ngtr EA	KA = EA	SK \ngtr KA

^a The null hypothesis was rejected but the statistically significant difference was not meaningfully different.

^b The null hypothesis was not rejected but the mean difference was meaningful.