ABSTRACT

KIM, ESTHER. Acculturation and Executive Function: More than the Bilingual Advantage? (Under the direction of Dr. Lynne Baker-Ward.)

Over the past decade, studies examining cognitive performance, particularly in executive function tasks, have centrally focused on bilingualism (e.g., Bialystok & Martin, 2004; Bialystok, 2010; Costa et al., 2010). While there has been research highlighting the cognitive advantages associated with bilingualism, more recently, literature has indicated inconsistent findings and addressed the importance of further investigating the association between bilingualism and cognitive performance. The current study explored the gap in the literature by integrating acculturation. The main focus of the study was to examine the association between acculturation and executive functioning (EF) among young adults with Korean cultural backgrounds, focusing on inhibitory control, attention, short-term memory, and cognitive flexibility. Overall, I hypothesized that higher acculturation would predict better performance on EF tasks, regardless of the individual's level of bilingual proficiency. A total of 58 participants (female = 65.5%; M_{age} = 29.95) residing in the United States and identifying ethnically as Korean completed the experimental tasks online via PsytoolKit and an online survey via Qualtrics. Hierarchical regression analyses assessed the predictive power of age, bilingual proficiency, and bicultural identity on the Stroop, Simon, Corsi Block, and Task Switching tasks. Results showed that bilingual proficiency significantly predicted performance in certain tasks but did not consistently explain variance across all executive function measures. Notably, cultural blendedness within bicultural identity significantly predicted Stroop task performance, underscoring the cognitive influence of acculturation. The findings highlight the nuanced relationship between bicultural experience and cognitive processing and point to the importance

of considering a multitude of factors when examining executive function in bilingual populations. The study underscores the need for further research into the mechanisms through which acculturation and bilingualism interact and influence cognitive outcomes.

Acculturation and Executive Function: More than the Bilingual Advantage?

by
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BIOGRAPHY

Esther Kim completed her BA in Psychology with a minor in Music at Skidmore College, and later pursued a Post-baccalaureate in Psychology and Social Behavior at the University of California, Irvine. Esther's academic journey has been enriched by diverse research experiences, including topics such as false memory, emotion, cultural influence on prosocial behavior, STEM education, social media's impact on mental health, and parental involvement across ethnic groups. Before joining the Doctoral program in Lifespan Developmental Psychology at North Carolina State University, Esther worked as an instructor, mentor, and translator for Korean middle school students at a study abroad program in a small town north of Vancouver, Canada. She also worked as a youth specialist and administrator at a Korean-American counseling center in southern California. Through various research and work experiences, Esther's research interests continue to span various domains within developmental psychology, including bicultural identity, bilingualism, parental socialization, memory, and well-being.

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Acculturation and Executive Function: More than the Bilingual Advantage?

Over the past decade, substantial research has explored an advantage that bilingual individuals appear to experience compared to monolinguals in tasks assessing executive functions (e.g., Bialystok & Martin, 2004; Bialystok, 2010; Costa et al., 2010). These cognitive processes involve the ability of individuals to effectively regulate their attention to meet task demands. The bilingual advantage (BA) is typically attributed to bilinguals' extensive everyday experience of inhibiting or suppressing one language in order to use the other language (Bialystok, 2017). This ongoing practice in cognitive control is presumed to result in superior executive functioning in bilinguals compared to monolingual individuals (e.g., Barac, Bialystok, Catro, & Sanchez, 2014).

Although a voluminous body of literature documents the BA (e.g., De Cat, Gusnanto, & Serratrice, 2018; Kovács & Mehler, 2009), recent literature questions whether the advantage truly stems from proficiency in two languages. Inconsistencies within the bilingual advantage literature have continuously prompted questions about the association between bilingualism and cognitive performance. Some researchers suggest that the observed advantage could reflect the generally higher socio-economic status of bilinguals compared to monolingual speakers in certain regions (Calvo & Bialystok, 2014; Naeem et al., 2018). Moreover, other investigators have posited that cultural differences linked with bilingualism, rather than the act of using two languages, might underlie the bilingual great advantage (e.g., Laketa et al., 2021; Lowe et al., 2021, Paap & Greenberg, 2013). The influence of culture, especially different cultural experiences, is receiving more attention in developmental research. Thus, research on individuals experiencing more than one culture may provide a more expansive understanding of social and cognitive development across the lifespan

Consequently, the objective of the current study was to further examine the contributions of expertise in two cultures on young adults' performance of tasks involving executive functions. I reasoned that the acculturated individuals' need to frequent shift cultural frames of reference (e.g., Hong et al., 2000; Schwartz et al., 2014) could provide a basis for enhanced executive functions. If so, acculturation should contribute to variance in executive task performance over and above the effects of bilingualism.

This dissertation begins with an overview of research on the bilingual advantage in children and adults by addressing questions derived from the literature, followed by an examination of acculturation and cultural frame switching. This research formed the framework for my own research and the rationale behind the method.

What is bilingualism?

Bilingualism is generally defined as the ability to use two languages (ASHA, 2004). However, proficiency in two languages can vary and fluctuate throughout the lifespan, depending on an individual's environment, experience, and exposure. Individuals can simultaneously acquire two languages ("crib bilinguals") or become bilingual sometime during their lifespan (e.g., Bialystok, Craik, Green, & Gollan, 2009).

Throughout the lifespan, language use shifts from how much vocabulary is stored (i.e., representational) to how efficiently language is accessed (i.e., processed; Bialystok, 2010). Language processing in bilingual individuals is unique because accessing, retrieving, and remembering linguistic materials may be similar or different between two languages. Nonetheless, the activation of the two languages has been positively examined in research.

Bilingualism in developmental research

With the rise of globalization, the interest in studying bilingualism continues to expand, generally examining the question of how bilingualism plays a role in cognition. Mainly, developmental researchers are interested in the influence of bilingualism on cognitive development across the lifespan.

Bilingual advantage in children and older adults

Over the last decade, there has been active research on the bilingual advantage in children's cognitive development. The processes addressed in this research include attention, inhibition, selection, working memory, and flexibility (see Table 1; Barac, Bialystok, Castro, & Sanchez, 2014). A bilingual advantage in switching has also been supported through research in children aged 4 and 5 years (Bialystok & Martin, 2004; Okanda, Moriguchi, & Itak, 2010). These studies used the dimensional change card sort task (DCCS; Zelazo, Frye, & Rapus, 1996), an age-appropriate version of the Wisconsin Card Sort Task, to test the participants' cognitive performance. This task is commonly used in studies with child participants; it is presented as game where images vary on two dimensions. For example, the two dimensions can be color and shape and children are asked to first sort the cards by one dimension, squares in one box and circles in the other. The switch occurs when the child is then asked to sort by color (e.g., blue in one box and yellow in the other). Results have shown that bilinguals performed significantly better on switching tasks than monolinguals did, especially when given a new set of rules.

Various studies have used executive function tasks to measure inhibition, such as the Simon task (De Cat, Gusnanto, & Serratrice, 2018). This task requires participants to press a button depending on the color of the square. Participants were told to complete congruent and incongruent trials; the congruent trial showed the square on the side of the screen that corresponds to the response button, but the incongruent trial has the square appear on the opposite side. The response time difference between the two trials was calculated. Results for this study also supported the bilingual advantage when bilingual participants were compared to monolingual individuals.

Table 1. *Types of Executive Functions*

Domains of EF	Tasks	Measures
Inhibitory control	Simon, Stroop	Reaction Time (RT), Congruent Trials
Working memory	Corsi Block	RT, Accuracy
Flexibility	Task Switching	RT, Switching
Shifting	Task Switching	RT, Switching

Furthermore, bilingual advantages in executive functions have been most consistently found in older adults (Antoniou, 2018). For example, in one study that compared bilingual adults and monolinguals using the Simon task found that bilingual older adults outperformed monolinguals. Also, when compared to middle aged adults (age range 30-58) and older adults (age range 60-80), bilingual older adults demonstrated the best performance (Bialystok, Craik, Klein, & Viswanathan, 2004).

Previous studies did not only demonstrate that bilingual older adults outperformed monolinguals on executive function tasks, but also supported the idea that bilingualism may be a protective factor leading to healthy cognitive aging. For example, one longitudinal study followed a large sample of older adults (age range 75-79 at pretest) over a period of 12 years (Kav´e, Eyal, Shorek, & Cohen-Mansfield, 2008). This study found that multilingualism was a better predictor of cognitive ability than other variables such as age, education, and gender. Similar to this study, another study observed a large sample of Scottish older adults and administered a cognitive test battery (Bak, Nissan, Allerhand, & Deary, 2014). After controlling for factors such as ethnicity, immigration, socioeconomic status, and participants' childhood intelligence scores, the bilingual advantage was observed for cognitive aging (i.e., the oldest group of participants but not the younger groups demonstrated the bilingual advantage). Additional research also provides evidence for the delayed onset of Alzheimer's among bilingual in comparison to monolingual adults (see Bialystok et al, 2007; Freedman et al., 2014; Woumans et al., 2015).

Bilingual advantage in young adults

Unlike studies with children, there have been fewer findings of bilingual advantages in young adults. However, Bialystok and colleagues (2014) were able to examine the bilingual advantage in young adults (age range 20-29) on the Stroop task. In this task, color words are presented in incongruent ink colors and the participant has to ignore the word and name the ink color. For example, the word BLUE is presented in red ink so the correct response would be "red." Participants also completed the recent-probe task where the participants were given a short list of items followed by a probe, and the participants had to decide if the probe was included in the list or not. According to the results, bilingual young adults performed significantly better in nonverbal processing. This finding supported the idea that bilingual young adults tend to show an advantage in nonverbal tasks but not in verbal tasks (Bialystok, Craik, & Luk, 2008).

Questions derived from bilingual advantage research

Even though there have been many studies that support the idea of bilingual advantages in the development of executive functioning, there have been conflicting findings. For example, many studies that focus on children have shown significant differences between bilingual and monolingual children, particularly in tasks involving cognitive switching (Bialystok, 1999;

Carlson & Meltzoff, 2008). These studies emphasize the potential cognitive benefits of bilingualism during formative years of cognitive development. However, some studies found no evidence of the bilingual advantage in children. For example, a study comparing bilingual and monolingual children using the Simon task showed no differences between the two groups (Morton & Harper, 2007). In discussing the inconsistent finding, researchers emphasized controlling ethnicity and SES between the bilingual and monolingual participants. Previous studies have shown differences in ethnicity and SES between the two groups. Therefore, researchers matched the bilingual and monolingual participants' ethnicity and SES. Participants were recruited from Ontario, Canada, where English is the main language, but the area includes a large number of French-speaking individuals. These individuals speak both English and French in the household and raise their children as "crib bilinguals" speaking both languages (Morton & Harper, 2007). Hence, bilingual children were proficient in English and French, while monolingual children were proficient only in English. According to the results, there was no significant relationship between EF performance and bilingualism. Instead, higher SES was associated with EF. A strength of this study is that researchers directly examined a recurring absence in the bilingual literature: the lack of attention to SES.

Other studies that used different cognitive tasks to measure EF, such as a card sorting task, the Stroop task, and a grammaticality judgment task, have also found no significant differences between bilinguals and monolinguals (Anton et al., 2014; Calvo & Bialystok, 2014). Because of the recurring inconsistency in the literature, researchers are becoming more interested in investigating other factors, such as SES and culture. The effects of culture on cognitive development are gaining more attention as some researchers find cultural differences when examining cognitive performance (Samuel et al., 2018). For example, Samuel and colleagues

(2018) compared cognitive performance in young adults from Korea and the UK and found that culture was a significant predictor, with Korean participants outperforming the UK sample. This study highlights how cultural effects may be a confounding result when comparing bilingual and monolingual individuals' executive function performance.

Acculturation Framework

Early literature on biculturalism was developed from the acculturation framework. Acculturation has been defined as the process which individuals undergo to adapt psychological and behavioral aspects of one cultural context to a second culture (e.g., Berry, 1980). The focus of early research on acculturation was built from the interest in how immigrants changed following their settlement into the new society. Therefore, acculturation was initially explicated as a unidimensional process in which the heritage and receiving cultures were viewed as two endpoints on a dimension (Gordon, 1964). According to the unidimensional model, the individual who has settled in one culture would shift their membership from their heritage culture to the majority culture. Overall, the unidimensional model proposed that individuals would lose one cultural identity (i.e., separation) to gain the other (i.e., assimilation; Gordon, 1964; Berry, 1980). In contrast, the growing literature on acculturation strategies indicated that individuals do not necessarily lose one cultural identity to "succeed" in gaining the second identity. Later, the bidimensional model was developed, which suggests that individuals can maintain both the heritage and the mainstream cultural identity (i.e., integration or biculturalism) and feel marginalized or disidentify with either group (Berry, 1997; Berry, 2003; Ryder, Alden, & Paulhus, 2000). This model highlights two issues individuals must address during the acculturation process: (1) the extent to which individuals maintain their culture of origin and (2) the extent to which individuals accept and engage with the other culture (Berry, 2003; Cheng, Lee, & Benet-Martínez, 2006).

Biculturalism

Berry's (2003) bidimensional framework has shed light on research examining individuals who experience two cultural groups. The majority of research on acculturation found biculturalism associated with the most favorable psychological outcomes (e.g., Meca, Eichas, Schwartz, & Davis, 2019). Although the bidimensional model acknowledges the importance of studying the relationship between acculturation and adjustment (Berry, Phinney, Sam, & Vedder, 2010; Chen, Benet-Martínez, & Bond, 2008; West, Zhang, Yampolsky, & Sasaki, 2017), the framework limits the concept and treats the cultural identities as independent from one another. There is a wealth of research that observed various populations other than immigrants who identify as bicultural (e.g., Benet-Martínez et al., 2014). Therefore, recent works emphasize that bicultural identities are more complex, interrelated, dynamic, and multifaceted (Huynh, Benet-Martínez, & Nguyen, 2018; Schwartz, Birman, Benet-Martínez, & Unger, 2016; van der Werf, Verkuyten, Martinovic, & Ng Tseung-Wong, 2020; West et al., 2017).

Bicultural identity has been defined in various ways in previous literature, and the concept continues to develop (e.g., Berry, 2016; Heo & Kim, 2013; Meca et al., 2019; No, Wan, Chao, Rosner, & Hong, 2011). Although studies on bicultural identity may take different approaches to examine the construct, it is clear that bicultural identity is when individuals endorse and value both the heritage and receiving culture (LaFromboise, Coleman, & Gerton, 1993; Schwartz et al., 2016). It is crucial to note that bicultural individuals are not exclusively those from non-dominant ethnocultural groups. For this current study, biculturalism refers to individuals extensively exposed to and internalizing two distinct cultural value systems (e.g., Berry, 2016; Luna, Ringberg, & Peracchio, 2008).

Measurement of the Construct

The examination of biculturalism has employed various metrics. Initially, researchers focused on comparing bicultural individuals, especially adolescents and young adults, with other acculturated groups (i.e., separation, assimilation, marginalization). For example, the Vancouver Index of Acculturation (VIA) scale has been extensively used to assess the acculturation process (Ryder et al., 2000). Nevertheless, numerous studies have supported the importance of examining heterogeneity among bicultural individuals (Benet-Martínez & Haritatos, 2005; Huynh, Nguyen, & Benet-Martínez, 2011; Huynh, Benet-Martínez, & Nguyen, 2018; Mok & Morris, 2009). Benet-Martínez and colleagues (Benet-Martínez & Haritatos, 2005) proposed the *Bicultural Identity Integration* (BII) framework which supports the idea that bicultural individuals can integrate cultural identities and view the two cultural identities as "compatible" and relatable (Meca et al., 2019) but also experience conflict and oppositional. According to the BII, it is possible for a group of bicultural individuals who weigh two cultures equally important may differ on the BII scale depending on how they integrate the two cultural systems (Meca et al., 2019). This model's primary focus is to examine the degree to which the individual integrates the two cultural identities (i.e., blendedness versus compartmentalized) and feel conflicted (i.e., harmony versus conflict). Blendedness here represents a socio-cognitive aspect (e.g., "I blend Korean and American cultures") while harmony represents the affective component (e.g., "I find it easy to harmonize Korean and American cultures"). Research has indicated this framework helps in understanding differences among bicultural individuals' self-construct and identity (Huynh et al., 2018).

More recently, there has been an increasing interest in how bicultural individuals navigate between the two cultures. West and colleagues (2017) developed a transformative theory which not only propose the importance of examining the influences of each cultures, but also the processes bicultural individuals undergo to shape bicultural identity. According to this framework, there are three bicultural negotiation processes which include hybridizing, integrating, and frame switching (West et al., 2017). This literature emphasizes that the processes involved are just as important as the factors (e.g., socialization, social context) that influence identity development. Moreover, experiencing two cultural systems does not make an individual bicultural. The literature emphasizes that the processes of negotiating the two cultures play an important role in the individual's experience (West et al., 2017).

Cultural Frame Switching

Research indicates that bicultural individuals can switch between cultural frames (Hong et al., 2000). Commonly, acculturating individuals switch from one cultural mindset to another. Cultural frame switching has been known to be one of the main strategies bicultural individuals use to adapt to situational cultural contexts by activating cultural systems (Hong et al., 2000). Studies have demonstrated that bicultural individuals switch between cultural frames in various domains and situations when they consider identifying with one culture over the other. Primary works on frame switching explored this process using cultural cues as primers in activating one cultural meaning system while deactivating the other (Hong et al., 2000). For example, one study indicated that bicultural individuals activated cultural knowledge and beliefs of the salient cultural system when primed with the culture-specific icon (Benet-Martínez, Leu, Lee, & Morris, 2002).

Frame switching is the backbone of biculturalism (Schwartz et al., 2016). Studies have shown that bicultural individuals can switch between cultural frames in multiple domains such as emotional experience, personality, cognitive styles, and social behavior (Haritatos & Benet-Martínez, 2002; Hong et al., 2000; Perunovic, Heller, & Rafaeli, 2007; Ramírez-Esparza, Gosling, Benet-Martínez, Potter, & Pennebaker, 2006; Wang, 2008). For instance, research has shown that bicultural individuals can access different cultural concepts of the self (Sui, Zhu, & Chiu, 2007). This study supported the prediction that bicultural individuals can shift information processing strategies (i.e., encoding and memory) in response to cultural cues. In addition, one study showed that when participants who identified as Dutch and Greek were assigned to the priming Greek condition, participants reported fewer positive evaluations of the self and more robust support of family integrity and friendship in comparison to participants primed with the Dutch referents (Verkuyten & Pouliasi, 2006).

Unlike previous models of acculturation (i.e., unidimensional and bidimensional; see REF) which focus on biculturalism as a stable structure engaging in two cultural streams, the cultural frame switching framework expands on the process of biculturalism. Recent literature proposed the importance of examining the cultural frame switching model to further understand the concept of biculturalism (West et al., 2017). First, frame switching captures the **person-by-situation framework** in which the individual's cultural knowledge is activated by the environment followed by a behavioral response. Moreover, literature shows that biculturals can obtain multiple cultural knowledge structures. Also, it is clear that frame switching is a functional process bicultural individuals use to balance different cultural domains in their everyday life (Benet-Martínez et al., 2014; Doucerain et al., 2013; West et al., 2017). For example, a bicultural individual who attends college in the U.S. may activate different cultural knowledge when in public and at home interacting with their Korean-speaking family. Bicultural individuals may deliberately use this type of cultural frame switching for the purpose of expressing the maintenance of their heritage culture in home settings.

There is rising interest in examining cultural frame switching and cultural mixing from a developmental perspective (Schwartz et al., 2020). Research indicated that individuals who were born or immigrated during childhood to the host culture might not show noticeable differences between cultural behavior in the home (i.e., heritage culture) and in public (i.e., host culture). However, individuals who immigrated during older adolescence or adulthood may show clear distinctions between cultural behavior in private versus public settings. This may indicate the importance of examining the role of cognition in bicultural identity development.

Language in cultural frame switching

According to previous studies, language has been used as a cue to activate different cultural frames (Hong et al., 2000; Luna et al., 2008). One study conducted by Luna and colleagues (2008) indicated that language-triggered frame switching occurred with only bicultural individuals and not with bilinguals who are not bicultural (i.e., monocultural individuals). Thus, this finding supports the argument that monocultural bilinguals do not carry the same experience as biculturals (Benet-Martinez et al., 2006). Specifically, researchers defined monocultural bilinguals as individuals who learned and are fluent in their second language without any particular exposure to the second language's cultural context. In addition, researchers suggest that bilingual proficiency is not required for cultural frame switching (Luna et al., 2008). The body of literature on cultural frame switching raises an essential question of whether proficiency in two languages is the primary determinant of cognitive performance.

Bilingualism and Acculturation

Based on previous literature on bilingualism and acculturation, it is clear that the two processes share similarities developmentally and cognitively (Barac et al., 2014; Hong et al., 2000; Schwartz et al., 2016). First, both bilingualism and acculturation involve continuous adaptations, adjustment, and learning over time. They are complex processes that continue to develop and also play a role in developmental trajectories (Bialystok, Craik, & Luk, 2012; Berry et al., 2006). In addition, both bilingualism and acculturation are processes that involve cognitive processes and flexibility, and require managing multiple systems (linguistic or cultural). Although previous literature examines acculturation from a social context lens, cultural frame switching involves shifting between cultural contexts (Hong et al., 2000) while bilingualism requires switching between languages. Therefore, to better understand the processes, future studies are needed to investigate acculturation from a developmental and cognitive perspective.

Study Aim

The current study aimed to examine the relationship between acculturation and executive functioning in young adults. Based on previous literature on acculturation, my research aimed (1) to examine cognitive flexibility and its association with various dimensions of acculturation and (2) to examine variability within acculturation, language proficiency, and cultural and linguistic experience, and how these factors impact executive function performance. For this study, participants were adults with Korean cultural backgrounds and experiences (see Participant section). I examined different levels of biculturalism through questionnaires and a widely used measurement (see below), as well as measures to assess language background and proficiency. The main question I investigated was: does acculturation contribute to variance in executive task performance over and above the effects of bilingualism?

Based on the research question and aims, I hypothesized that: (1) Higher levels of acculturation will predict higher scores on executive functioning tasks, (2) Regardless of bilingual proficiency, higher levels of acculturation will predict higher scores on executive functioning tasks.

Method

Participants

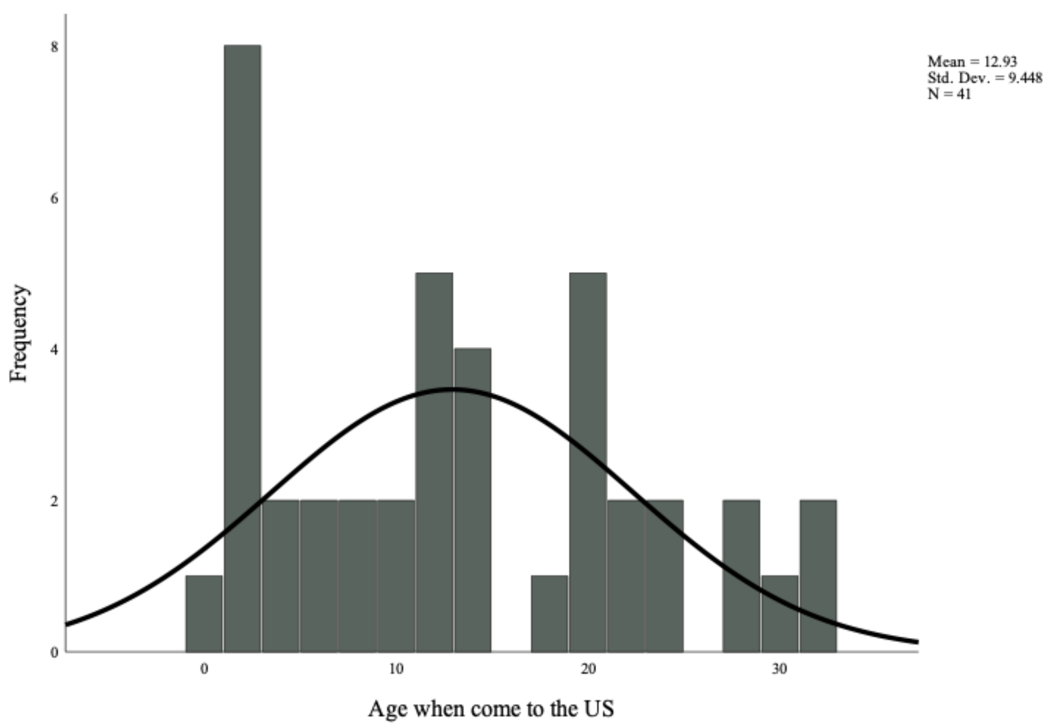
Participants were recruited nationwide across the United States from online sampling. Participants were recruited through online listservs, announcements posted in Korean-American communities and university settings, word-of-mouth, and snowball sampling. These methods have been shown to effectively reach and engage our target demographic, ensuring a diverse and relevant participant pool (Chen & Wang, 2021). The nationwide approach allowed for the inclusion of individuals from varied socioeconomic backgrounds and levels of community engagement, thereby providing a robust sample for examining the intersection of acculturation and executive function. I conducted an a priori power analysis using G*Power to determine an appropriate sample size. To achieve appropriate power, with a large to medium effect size for proposed analyses, I would need a sample of approximately 50 participants.

The participants in the present study had to meet the following criteria: (a) ages 18-40, (b) reside in the United States, and (c) ethnically Korean. To reduce variability, only individuals currently living in the United States were recruited. In addition, only a Korean sample was collected to better understand the cultural background and experiences of a racial-ethnic group residing in the US.

The final sample included 58 participants (female = 65.5%). Out of 62 participants, four were removed from the sample due to incompletion of the study (did not respond to more than

75% of the survey). Participants were adults between the ages of 18-40 (M_{age} = 29.95), and all identified as ethnically Korean residing in the United States. According to participants' responses to the survey, 70% of the sample were born in Korea; however, approximately 22% of those born in Korea moved to the US before the age of 6. Participants' reports of their highest level of education ranged from receiving a high school diploma (10.3%), a college degree (38%), a Master's degree (36.2%), and a Ph.D. or other professional degree (15.5%). Thirty-one percent of the sample reported their currently enrolled in school, with four pursuing a Bachelor's, four pursuing a Master's, and 10 pursuing a Ph.D. or other professional degree. According to the U.S. Bureau of the Census, on average, Korean immigrants have higher education and income levels compared to the total foreign-born population (U.S. Census, 2020). Therefore, participants from the current study represent the general Korean population residing in the U.S.

Figure 1. *Distribution of Age When Individuals Came to the US*



It is common to find Korean communities established throughout the United States. For instance, there are approximately 1,200 Korean ethnic language schools in the U.S. (Lee & Shin, 2008). Typically, these Korean schools meet on weekends and are administered by Korean churches. This arrangement may be attributed to many Korean immigrants being associated with Korean immigrant churches. The current study asked participants about their attendance at Korean schools. Notably, 87% of the participants affirmed that they had previously attended Korean schools in the United States or received Korean education. Participants were also asked to indicate their experience visiting or living in Korea. Eighty-nine percent of the participants responded that they had previously lived in or visited Korea. Hence, the sample as a whole appears to have had substantial exposure to Korean culture.

Measures

Demographic Questionnaire. As indicated above, all participants completed a series of demographic questionnaires adapted from instruments used in previous research (Laketa et al., 2021). Questions asked included age, gender, educational background, and income (see Appendix for details). Participants were also asked questions related to their parents' educational background.

Cultural Background and Experience.

To better understand the individual's cultural context, participants were asked questions such as the country they were born, duration in the U.S., visits and duration in Korea, and experience engaging in activities related to Korean culture and language.

Acculturation and Bicultural Identity. Given the growing perspective on acculturation being multidimensional, this study measured individuals' two cultural experiences using the Bicultural Identity Integration Scale-2 (BIIS-2; Huynh, Benet-Martinez, & Nguyen, 2018).

The BIIS-2 captures the variation of bicultural experience and how individuals cognitively and affectively perceive bicultural identity. The BIIS-2 consists of 17-items (see Appendix for details) scored on a 5-point Likert scale ranging from 1 (*strongly disagree*) to 5 (*strongly agree*). This measure includes two subscales, *cultural harmony versus conflict* and *cultural blendedness versus compartmentalization*. *Cultural harmony* has been shown to be linked to factors related to affect and emotional stability, whereas *cultural blendedness* focuses more on the cognitive and behavioral aspects of bicultural experience. Therefore, previous literature suggests examining bicultural identity on the two subscales could strengthen understanding of an individual's cultural experience. (Huynh, Benet-Martinez, & Nguyen, 2018) Example questions for *cultural harmony* included "I find it easy to balance both Korean and American cultures" and "I do not feel trapped between the Korean and American cultures" while *cultural blendedness* included "I cannot ignore the Korean or American side of me" and "I relate better to a combined Korean-American culture than to Korean or American culture alone" (Huynh, Benet-Martinez, & Nguyen, 2018). Researchers reported high internal reliability for both subscales (harmony versus conflict, $\alpha = .86$; blendedness versus comopartmentalization, $\alpha = .81$) along with adequate test-retest stability: $r_{\text{harmony}} = .77$ and $r_{\text{blendedness}} = .73$ (Huynh, Benet-Martinez, & Nguyen, 2018).

Language Background and Proficiency. Participants completed the Language Experience and Proficiency Questionnaire (LEAP-Q; Marian, Blumenfeld & Kaushanskaya, 2007), which is a self-report questionnaire addressing language acquisition, experience, proficiency, and language use patterns (see Appendix for details)**.** Example questions for language background include "Please list the amount of time you spent in each language environment: a country where Korean (English) is spoken, a family where Korean (English) is spoken, a school and/or working environment where Korean (English) is spoken". Language proficiency was measured on an 11-point Likert scale from 0 (*none*) to 10 (*perfect*). Questions asked included proficiency in speaking, understanding, and reading the language. Participants completed a series of questions for both English and Korean, and proficiency level was scored separately (English: $M = 8.57$, $SD = 1.51$; Korean: $M = 7.38$, $SD = 2.41$). Therefore, bilingualism was measured by combining the two scores ($M = 7.98$, $SD = 1.16$).

Executive Function. Executive functioning was assessed via the PsyToolkit, an online platform renowned for its efficacy in administrating cognitive tasks (Stoet, 2010; Stoet, 2017). For the analysis, the average reaction time (RT) and percentage of error were collected for each task.

To elucidate the relationship between acculturation and executive function as outlined in the hypotheses, the current study employed a battery of cognitive tasks chosen for their validated sensitivity to executive processes. Cognitive tasks were selected based on previous research on the bilingual advantage (Lehtonen et al., 2018). According to the meta-analytic review of 152 studies on adults examining the association between bilingualism and executive function performance, studies varied on the focus of the EF domains as well as the tasks that were used. Overall, six EF domains and approximately 20 task paradigms were used to assess cognitive performance in bilingual and monolingual adults. Based on the findings, the association between bilingualism and EF varied across and within domains and tasks. Therefore, cognitive tasks used in the current study were selected based on previous literature that was commonly used (see Table 1). The Simon Task (Simon & Wolf, 1963) was selected to assess inhibitory control, a key component of executive function that may be enhanced by bilingualism and acculturation due to the necessity of managing interference from competing linguistic and cultural systems. The

Stroop Task's (Stroop, 1935) focus on attention and processing speed is expected to reveal the efficiency with which acculturated individuals navigate conflicting information, reflecting the cognitive flexibility hypothesized to be bolstered by their bicultural experience. The Corsi Block (Corsi, 1972) and Task Switching (Monsell, 2003) tasks further probe the working memory and cognitive flexibility, respectively, thus providing a comprehensive assessment of the executive function domains posited to be influenced by acculturation, beyond bilingualism alone.

Simon Task. The Simon task (Simon & Wolf, 1963) assessed participants' inhibitory control. This measurement has been commonly used in studies examining the association between bilingualism and executive function. In this task, participants saw two circles, one colored and one white. The colored one is *red* or *green.* If it is *red*, participants need to click the left circle. If it is *green,* participants need to click the right circle. Response times will automatically be recorded. This task has been widely used in studies with bilingual and monolingual participants.

Stroop Task. The Stroop task (Stroop, 1935) was used to assess attention and processing speed. In this task, participants were shown a series of words of colors on the screen. Some words matched with the color, and some did not (i.e., the word "green" printed in purple ink). Participants were given instructions to name the color of the word regardless of the color of the ink.

Corsi Block Task. The Corsi Block task (Corsi, 1972) was used to assess short term memory. The task starts with a sequence of two blocks. Once the sequence has been shown, participants heard and saw the word "go" on the screen. The main task was to click with the mouse the blocks in exactly the same order as shown before.

Task Switching Task. The task switching task (Monsell, 2003) was used to assess participants' ability to switch between tasks. Participants responded to number and letter combinations. First, participants completed two trials of task A (e.g., numbers), followed by two trials of task B (e.g., letters), and then back to task A. The results indicated how fast participants completed each task and how fast they completed doing two tasks mixed.

Procedure

Before any interactions with participation were undertaken, approval from the Institutional Review Board at the North Carolina State University was obtained (protocol #26058). This study was conducted through Qualtrics and PsyToolkit (Stoet, 2010; Stoet, 2017). As previously mentioned, participants were recruited through online listservs, Korean-American communities, university settings, word-of-mouth, and snowball sampling. All information about the study was shared via email which included an advertisement flyer and a link to access the study. Participants who accessed the link were presented with an electronic consent form through the PsyToolkit online experimental task platform. The consent was displayed with a text box with the option to select "yes" or "no." If a participant selected "no", they were brought to the end of the study. If a participant selected "yes", they were directed to an instruction page about the cognitive tasks. Participants were given specific instructions before starting each task. Participants completed four tasks and all tasks were presented in a randomized order.

After completing the cognitive assessment tasks on PsyToolkit, participants were presented with a 10-digit random code and a link to the Qualtrics survey. Participants were instructed to record the random code on a separate piece of paper. Once participants accessed the survey, they were given instructions about the survey and a box to click to continue with the study. The first question asked was to write down the 10-digit random code given via PsyToolkit (see Data Preparation and Cleaning) The survey included demographic questions and questions asking about the participants' cultural and linguistic backgrounds (see Appendix for details of each measurement).

Data Preparation and Cleaning

The 10-digit random code provided by PsyToolkit helped match and merge data from PsyToolkit and Qualtrics onto SPSS. Once the dataset was merged, there were a total of 62 participants. However, four participants completed less than thirty-five percent of the survey; therefore, the total sample size was 58 participants.

Results

All analyses were conducted using IBM's SPSS version 29.

Descriptive Statistics and Correlation

A bivariate correlation was conducted for a preliminary analysis. Table 1 (see below) shows the means, *SD*s, and correlations for all study variables including descriptive and executive function measurements. According to the results, there was no multicollinearity among the independent variables: age, bilingual proficiency, and bicultural identity.

Table 2. *Descriptive Statistics and Correlations for Variables Included in Analysis on Executive Function*

Variables	*M*	*SD*	1	2	3	4	5	6	7	8	9	10	11	12
1. Age	29.95	5.19	-											
2. Bilingual Proficiency (1-10)	7.98	1.16	.08	-										
3. Bicultural- Cultural Harmony (1-5)	3.05	0.65	.14	-.01	-									
4. Bicultural- Cultural Blendedness (1-5)	3.80	0.91	-.14	.05	-.04	-								
5. Corsi Block – Reaction Time (ms)	246.49	65.90	.05	-.09	-.01	-.06	-							
6. Corsi Block - Percentage of Error	32.81	8.05	.29*	-.12	-.23	-.02	.01	-						
7. Simon – Reaction Time (ms)	856.14	143.74	.06	.31*	.12	-.10	.07	.04	-					
8. Simon – Percentage of Error	3.16	8.17	.08	.02	.01	.04	.01	.38**	.10	-				
9. Stroop – Rection Time (ms)	972.06	177.84	.36**	.14	.08	-.31*	.11	.19	.48**	.01	-			
10. Stroop – Percentage of Error	6.03	8.70	-.06	-.16	-.03	-.05	.06	.19	.02	.05	.34**	-		
11. Task Switch – Reaction Time (ms)	958.86	176.47	.08	.28*	-.05	-.22	.08	.03	.45**	-.18	.63**	.12	-	
12. Task Switch – Percentage of Error	4.04	4.72	.05	-.23	-.02	-.04	-.17	.36**	.16	.72**	.04	.20	-.15	-

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

Hierarchical Regression Analyses

Hierarchical regression analyses were conducted to investigate the contribution of acculturation to variance in executive function task performance beyond the effects of bilingualism across four tasks: Stroop task, Simon task, Corsi Block, and Task Switching. Each task was examined based on reaction time and accuracy. Model 1 included age and bilingual proficiency, and Model 2 incorporated the bicultural identity subscales: cultural harmony and cultural blendedness.

Executive Function Performance Reaction Time

In the final step of the regression analysis for the Stroop task, including bicultural identity subscales in Model 2 revealed that the cultural blendedness subscale significantly contributed to Stroop task performance ($\Delta R^2 = 0.71$, $\Delta F(2, 53) = 2.48$, $p = 0.01$, $\beta = -0.27$, $t(53) = -2.22$, $p = 0.03$). The overall model was significant for Stroop task reaction time, $F(4, 53) = 3.68$, *adjusted* $R^2 = 0.16$, explaining 15.8% of the variance accounted for by the predictor variables. Notably, younger age and higher blendedness between cultures were significantly associated with faster reaction time in the Stroop task. These findings suggest that, beyond age and bilingual proficiency, acculturation factors, specifically cultural blendedness, play a role in predicting reaction time in the Stroop task (see Table 3).

In Model 1, which included age and bilingual proficiency as predictors, bilingual proficiency emerged as a significant predictor for the Simon task ($\beta = 0.31$, $p = 0.019$) and Task Switching ($\beta = 0.28$, $p = 0.036$). However, it is important to note that the overall models for both tasks did not reach statistical significance (Simon task: $F(2, 55) = 3.05$, $p = 0.056$; Task Switching: $F(2, 55) = 2.48$, $p = 0.093$), suggesting that the combined effect of age and bilingual proficiency did not significantly explain the observed variance in reaction time.

In Model 2 for the Simon task, including cultural harmony and cultural blendedness, cultural blendedness did not contribute significantly to the model ($p > 0.05$), and the overall model remained non-significant ($F(4, 53) = 1.91$, $p = 0.122$). Similarly, in Model 2 for Task Switching, the addition of cultural harmony and cultural blendedness did not enhance the overall model's explanatory power ($F(4, 53) = 2.17$, $p = 0.085$).

Furthermore, for the Corsi Block task reaction time, neither age nor bilingual proficiency emerged as a significant predictor in Model 1 ($p > 0.05$), and the addition of cultural harmony and cultural blendedness in Model 2 did not improve the model's explanatory power. ($p > 0.05$). These results indicate that age and bilingual proficiency may not significantly contribute to the observed reaction time in the Corsi Block task, and the additional acculturation factors did not alter this pattern.

In summary, while bilingual proficiency demonstrated significance as an individual predictor for the Simon task and Task Switching reaction time, and cultural blendedness emerged as significant in the Stroop task, the overall models suggest a nuanced relationship between age, bilingual proficiency, acculturation factors, and executive function task performance. These findings might suggest the importance of considering the holistic model and the interplay of various factors in explaining the observed outcomes.

Table 3. *Hierarchical Regression on Executive Function Reaction Time*

Predictors	Stroop Task			Simon Task			Corsi Block			Task Switching		
	β	R^2	ΔR^2	β	R^2	ΔR^2	β	R^2	ΔR^2	β	R^2	ΔR^2
Model 1		.14	.14*		.10	.10		.01	.01		.08	.08
Age	.35**			.04			.04			.05		
Bilingual Proficiency	.12			.31*			-.09			.28*		
Model 2		.22	.07*		.13	.03		.01	.01		.14	.06
Age	.31			.002			.04			.03		
Bilingual Proficiency	.13			.32*			-.09			.29*		
Cultural Harmony	.02			.11			-.01			-.06		
Cultural Blendedness	-.27*			-.12			-.05			-.24		

*$p < .05$; **$p < .01$

Executive Function Performance Accuracy

In examining accuracy across executive function tasks, a series of hierarchical regression analyses were conducted (see Table 4). Model 1, incorporating age and bilingual proficiency, demonstrated a nonsignificant overall impact on Stroop task accuracy ($F(2, 55) = 0.77$, $p = 0.467$). The subsequent inclusion of cultural harmony and blendedness in Model 2 did not significantly strengthen the explanatory power of the model ($\Delta F(2, 53) = 0.09$, $p = 0.911$). Notably, none of the individual predictors reached significance in either model, suggesting that age, bilingual proficiency, and acculturation factors may not significantly contribute to Stroop task accuracy performance.

Similarly, for the Corsi Block task, Model 1 did not show a significant overall effect ($F(2, 50) = 2.57$, $p = 0.087$). The inclusion of cultural factors in Model 2 did not increase statistical significance ($\Delta F(2, 48) = 0.07$, $p = 0.942$). Individually, none of the predictors reached significance in either model, indicating that age, bilingual proficiency, and acculturation factors may not be significant predictors of Corsi Block accuracy performance.

In the context of the Simon Task, Model 1 exhibited a nonsignificant overall impact on accuracy ($F(2, 55) = 1.72$, $p = 0.189$). The addition of cultural factors in Model 2 did not significantly enhance the model's explanatory power ($\Delta F(2, 53) = 0.03$, $p = 0.973$). None of the individual predictors reached significance in either model, suggesting that age, bilingual proficiency, and acculturation factors may not significantly contribute to Simon Task accuracy.

For the Task Switching task, Model 1 did not show a significant overall impact on accuracy ($F(2, 55) = 1.83$, $p = 0.072$). The inclusion of cultural factors in Model 2 did not significantly enhance the model's explanatory power ($\Delta F(2, 53) = 0.06$, $p = 0.505$). None of the individual predictors reached significance in either model, indicating that age, bilingual proficiency, and acculturation factors may not be significant predictors of Task Switching accuracy.

In summary, the findings suggest a lack of significant associations between age, bilingual proficiency, acculturation factors, and accuracy in executive function tasks across Stroop, Corsi Block, Simon Task, and Task Switching.

Table 4. *Hierarchical Regression on Executive Function Accuracy*

Predictors	Stroop Task			Simon Task			Corsi Block			Task Switching		
	β	R^2	ΔR^2	β	R^2	ΔR^2	β	R^2	ΔR^2	β	R^2	ΔR^2
Model 1		.03	.03		.01	.01		.09	.09		.06	.06
Age	-.05			.08			.28*			.07		
Bilingual Proficiency	-.16			.02			-.12			-.24		
Model 2		.03	.01		.01	.01		.17	.08		.06	.01
Age	-.05			.09			.33*			.07		
Bilingual Proficiency	-.15			.01			-.11			-.24		
Cultural Harmony	-.03			-.002			-.28*			-.03		
Cultural Blendedness	-.05			.05			.02			-.02		

*$p < .05$

Discussion

The purpose of the current study was to investigate the interplay between acculturation and cognitive performance in executive function tasks among individuals navigating two cultures. Exploring acculturation and bicultural identity unfolds a compelling narrative in the domain of cognitive developmental processes. As indicated by numerous studies, the association between bilingualism and advantages in executive functions has been a subject of considerable interest and debate in psycholinguistic and cognitive development research (Bialystok, 2017; Costa & Sebastián-Gallés, 2014). The present study was conducted to broaden the understanding of this relationship by not only examining bilingual proficiency but also incorporating an exploration of acculturation and bicultural identity. Specifically, I examined individuals who had navigated and adapted to two cultures, aiming to understand the cognitive implications of such bicultural experiences. This exploration is particularly timely, as globalization and migration continue to create diverse, multicultural societies, thereby increasing the number of individuals who identify with more than one culture (Ozer, Kunst, & Schwartz et al., 2021). In this discussion section, I will further explain and explore the findings. Based on the current study, I will present strengths, limitations, and implications for future research.

Aims and Findings

In conducting regression analyses in this study, I examined the relationship between acculturation factors and executive function (EF) performance based on reaction time (RT) and accuracy on the Stroop, Simon, Corsi Block, and Task Switching tasks. To date, the research has focused primarily on the linkage between bilingualism and EF. The tasks listed above appear frequently in the literature as measures of EF.

Reaction Time

For the Stroop task, the inclusion of bicultural identity subscales (cultural harmony and cultural blendedness) in Model 2 was significant ($\Delta R^2 = 0.07$, $\Delta F = .09$ $p = 0.010$). Specifically, cultural blendedness was a significant predictor of Stroop task performance, suggesting an intricate link between bicultural identity and cognitive processing. Bilingual proficiency emerged as a notable predictor for both the Simon task and Task Switching in the initial model. However, the overall models did not reach statistical significance, which indicates that other unexamined variables could contribute to executive function performance. This complexity resonates with the findings of Paap and Greenberg (2013), who indicated that the bilingual advantage is not a ubiquitous phenomenon. Neither age nor bilingual proficiency was a significant predictor for the Corsi Block task reaction time, and the inclusion of acculturation factors did not alter this outcome. This finding could indicate that the task's demands may not be sensitive to the variables examined in this study.

Accuracy Performance

Across the tasks examined for accuracy performance, the hierarchical regression analyses suggested that age, bilingual proficiency, and acculturation factors did not significantly predict performance. This uniform lack of significance across tasks might indicate the need for a broader examination of factors influencing executive function accuracy. The analyses for the Stroop and Corsi Block tasks highlighted a consistent pattern where neither demographic variables nor bicultural identity scales contributed significantly to the accuracy of task performance. As was the case with the Stroop and Corsi Block tasks, no significant associations were found for the Simon Task and Task Switching. The absence of significant predictors across all tasks suggests that task accuracy may be influenced by factors beyond those included in the current models.

The results of this study suggest a complex picture of the relationship between bilingualism, bicultural identity, and executive function. While certain aspects of bicultural identity appear to be related to aspects of cognitive performance, such as reaction time in the Stroop task, this relationship does not extend uniformly across all tasks or outcome measures. It is evident that the interplay between these variables and executive function is nuanced, possibly moderated by other individual differences or methodological factors not captured in this study.

Strengths

Sample Characteristics

One of the main strengths to the present study is the diverse and well-defined sample. At the end of data collection, there were only four participants excluded from data analysis due to incompletion of study. As a result, the sample consisted of 58 participants, with no missing data across the observed variables. Overall, the participants exhibited diverse and well-defined characteristics, including a range of ages, educational backgrounds, and lengths of residence in the United States. The mean age of 29.95 years reflects a balanced representation across the young to mid-adult life stage. Additionally, the sample encompassed participants with varying degrees of bilingual proficiency, offering an interesting exploration of language abilities. According to participants' reports on language proficiency, some individuals reported high levels of English proficiency while being low in Korean proficiency, and vice versa. There were also individuals who reported being proficient in both languages. Unlike previous literature that indicates EF ceiling effect in young adults, this sample's performance on the EF tasks showed variability in distribution. Also, this study took a unique approach by examining various levels of language proficiency within bilingual individuals, while previous studies examined the association between language and EF by comparing bilingual and monolingual individuals (Lehtonenetal, 2018).

Comprehensive Acculturation Measurement and Design

An additional strength of the study lies in the comprehensive measure of acculturation. The study went beyond the simplistic dichotomy of bilingual proficiency to include dimensions of bicultural identity. The inclusion of the cultural harmony and blendedness subscales (Huynh, Benet-Martinez, & Nguyen, 2018) provided a more detailed picture of individuals' acculturation experiences, allowing for a differentiated understanding of how individuals navigate their dual cultural contexts. This approach acknowledges the complexity of acculturation as a dynamic and multi-faceted process, capturing a range of experiences that may influence cognitive outcomes (West et al., 2017).

The cross-sectional design of the study, while typically seen as a limitation, can also be a strength. It provided a snapshot of the interplay between acculturation and cognitive performance, which is essential for establishing preliminary associations that can inform longitudinal research. The findings lay the groundwork for future studies to explore these relationships over time, thus contributing to a foundational understanding of acculturation and cognitive development.

Limitations and Future Studies

Despite its strengths, the study is not without limitations. First, the sample size, while adequate for statistical power, may not capture the full diversity of individuals who experience two cultures. To better understand the process of acculturation and developmental factors, it would be important to examine a wide range of individuals, including those who experience and identify with two or more cultures. Also, the reliance on self-report measures for bilingual proficiency and bicultural identity could introduce subjective biases. As mentioned in the measurement section, bilingualism was scored by averaging participants' reports on English and Korean proficiency. Although the language proficiency scale (LEAP-Q) measured various domains of language experience and proficiency in English and Korean, there could have been limitations in interpreting bilingualism. Therefore, future studies might benefit from incorporating objective measures of language proficiency and cultural engagement. Additionally, the cross-sectional design of the study precludes conclusions about the directionality of the observed relationships. Longitudinal research could provide insights into how acculturation and bilingualism interact over time to influence cognitive outcomes. This approach would help clarify whether the cognitive benefits of biculturalism emerge at certain life periods or occur progressively as individuals become more adept at navigating multiple cultural contexts.

Another limitation concerns the sensitivity of the executive function tasks used. While these tasks are standard in cognitive research, they may not capture the full range of cognitive abilities influenced by acculturation and bilingualism. The lack of significant findings across accuracy measures suggests that alternative tasks or additional cognitive assessments could be necessary to detect subtle effects of biculturalism on cognitive processes. Incorporating a broader range of cognitive tasks, particularly those that may be more ecologically valid or relevant to daily bicultural experiences, could provide a richer understanding of how acculturation relates to cognitive functioning.

Implications

The implications of this study are multifaceted, shedding light on the potential cognitive benefits associated with bicultural identity. The significant predictor of cultural blendedness in the Stroop task reaction suggests that individuals who seamlessly integrate aspects of both cultures may exhibit enhanced cognitive flexibility and control. This can have potential implications for educational and organizational settings, where such cognitive abilities are highly valued. For example, in the workplace, these findings can provide insight into culturally diverse environments where bicultural individuals can utilize their cognitive strengths.

Educational programs and interventions could be designed to support individuals who are navigating two cultural identities. Educators and clinicians should be aware of the cognitive profiles associated with biculturalism, as they may influence learning styles and cognitive strategies. Moreover, the findings have societal implications, highlighting the cognitive resilience that may come with acculturation and bilingualism, which can be assets in an increasingly globalized world.

Conclusion

The exploration of acculturation's impact on cognitive performance revealed intriguing possibilities that extend beyond traditional expectations. An unexpected yet compelling finding was the potential inverse relationship between cultural harmony and performance on tasks, particularly in tasks that assess inhibitory control.

Cultural harmony typically implies a lack of conflict between cultural identities, which may lead to less engagement with the inhibitory control required to negotiate between two cultural frameworks. Thus, individuals with high cultural harmony might experience fewer instances where inhibitory control is necessary, potentially resulting in less practice and lower performance in tasks where inhibition is required. Conversely, individuals experiencing less cultural harmony might often find themselves in situations requiring and exercising inhibitory control more regularly. Therefore, frequent activation of inhibitory processes could enhance their performance in EF tasks that demand such skills.

While this study did not directly investigate the relationship between cultural harmony and EF tasks, the emergent data provides a preliminary foundation to examine various processes of acculturation. Further analysis might involve more detailed exploration of the types of cultural conflicts encountered by bicultural individuals and the specific cognitive strategies they employ to manage these challenges. Addressing this aspect could significantly enrich our understanding of the adaptive cognitive abilities fostered by diverse cultural experiences.

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APPENDIX

Appendix: Measures

Bicultural Identity Integration Scale-Version 2 (BIIS-2)

Please circle *one* of the numbers to the right of each question to indicate your degree of agreement or disagreement.

Many of these questions will refer to your *heritage culture*, meaning the original culture of your family (other than American). It may be the culture of your birth, the culture in which you have been raised, or any culture in your family background. If there are several, pick the one that has influenced you *most* (e.g. Korean, Chinese, Filipino, Mexican). If you do not feel that you have been influenced by any other culture, please name a culture that influenced previous generations of your family. Your heritage culture (other than American) is:

____

Strongly Agree (1) – Disagree Strongly (5)

1. I find it easy to harmonize ______________ and American cultures.

   1 2 3 4 5

2. I rarely feel conflicted about being bicultural.

   1 2 3 4 5

3. I find it easy to balance both _______________ and American cultures.

   1 2 3 4 5

4. I do not feel trapped between the ________________ and American cultures.

   1 2 3 4 5

5. I feel torn between _____________ and American cultures.

   1 2 3 4 5

6. Being bicultural means having two cultural forces pulling on me at the same time.

   1 2 3 4 5

7. I feel that my ________________ and American cultures are incompatible.

1 2 3 4 5

8. I feel conflicted between the American and ______________ ways of doing things.

1 2 3 4 5

9. I feel like someone moving between two cultures.

1 2 3 4 5

10. I feel caught between the ___________ and American cultures.

1 2 3 4 5

11. I cannot ignore the _____________ or American side of me.

1 2 3 4 5

12. I feel _______________ and American at the same time.

1 2 3 4 5

13. I relate better to a combined _____________-American culture than to ____________ or American culture alone.

1 2 3 4 5

14. I feel _________________-American.

1 2 3 4 5

15. I feel part of a combined culture.

1 2 3 4 5

16. I do not blend my ______________ and American cultures.

1 2 3 4 5

17. I keep ______________ and American cultures separate.

1 2 3 4 5

Language Experience and Proficiency Questionnaire (LEAP-Q)

Please name the cultures with which you identify. (Examples of possible cultures include US-American, Korean, Jewish-Orthodox, etc.)

- ○ Culture 1 (1) ________________
- ○ Culture 2 (2) ________________
- ○ Culture 3 (3) ________________
- ○ Culture 4 (4) ________________
- ○ Culture 5 (5) ________________

Year of immigration to the USA, if applicable.

____

If you have ever lived in another country, please provide name of country and duration of stay.

____

Age when you...

- ○ began acquiring English (1) ______
- ○ became fluent in English (2) ______
- ○ began reading in English (3) ______
- ○ became fluent reading in English (4) ______

Please list the amount of time you spent in each language environment (specify years, months):

- ○ A country where English is spoken (1) ______
- ○ A family where English is spoken (2) ______
- ○ A school and/or working environment where English is spoken (3) ______

On a scale from zero to ten, please select your level of **proficiency** in speaking English:

- ○ 0 - none (1)
- ○ 1 - very low (2)
- ○ 2 - low (3)
- ○ 3 - fair (4)
- ○ 4 - slightly less than adequate (5)
- ○ 5 - adequate (6)
- ○ 6 - slightly more than adequate (7)

- 7 - good (8)
- 8 - very good (9)
- 9 - excellent (10)
- 10 - perfect (11)

On a scale from zero to ten, please select your level of **proficiency** in understanding spoken language English:

- 0 - none (1)
- 1 - very low (2)
- 2 - low (3)
- 3 - fair (4)
- 4 - slightly less than adequate (5)
- 5 - adequate (6)
- 6 - slightly more than adequate (7)
- 7 - good (8)
- 8 - very good (9)
- 9 - excellent (10)
- 10 - perfect (11)

On a scale from zero to ten, please select your level of **proficiency** in reading English:

- 0 - none (1)
- 1 - very low (2)

- 2 - low (3)
- 3 - fair (4)
- 4 - slightly less than adequate (5)
- 5 - adequate (6)
- 6 - slightly more than adequate (7)
- 7 - good (8)
- 8 - very good (9)
- 9 - excellent (10)
- 10 - perfect (11)

Age when you...

- began acquiring Korean (1) ________________
- became fluent in Korean (2) ________________
- began reading in Korean (3) ________________
- became fluent reading in Korean (4) ________________

Please list the amount of time you spent in each language environment (specify years, months):

- A country where Korean is spoken (1) ________________
- A family where Korean is spoken (2) ________________
- A school and/or working environment where Korean is spoken (3) ________________

On a scale from zero to ten, please select your level of **proficiency** in speaking Korean:

- 0 - none (1)
- 1 - very low (2)
- 2 - low (3)
- 3 - fair (4)
- 4 - slightly less than adequate (5)
- 5 - adequate (6)
- 6 - slightly more than adequate (7)
- 7 - good (8)
- 8 - very good (9)
- 9 - excellent (10)
- 10 - perfect (11)

On a scale from zero to ten, please select your level of **proficiency** in understanding spoken language Korean:

- 0 - none (1)
- 1 - very low (2)
- 2 - low (3)
- 3 - fair (4)
- 4 - slightly less than adequate (5)
- 5 - adequate (6)
- 6 - slightly more than adequate (7)
- 7 - good (8)

- 8 - very good (9)
- 9 - excellent (10)
- 10 - perfect (11)

On a scale from zero to ten, please select your level of **proficiency** in reading Korean:

- 0 - none (1)
- 1 - very low (2)
- 2 - low (3)
- 3 - fair (4)
- 4 - slightly less than adequate (5)
- 5 - adequate (6)
- 6 - slightly more than adequate (7)
- 7 - good (8)
- 8 - very good (9)
- 9 - excellent (10)
- 10 - perfect (11)

Demographic Questionnaire

What is your age to the closest year? ________

What gender do you identify as?

- Male
- Female
- Non-binary
- Other (please describe) ___________________________________
- Prefer not to say

What is the highest level of education you have completed?

_ Elementary and/or Middle School

_ High School Graduate/GED

_ Technical or Community College Completion (2 year degree or program completion)

_ Bachelor’s degree

_ Education beyond bachelor’s degree

What is the highest level of education your parents completed?

_ Elementary and/or Middle School

_ High School Graduate/GED

_ Technical or Community College Completion (2 year degree or program completion)

_ Bachelor’s degree

_ Education beyond bachelor’s degree

Are you currently enrolled in school?

◯ Yes

◯ No

What degree are you pursuing?

__ Bachelor’s (B.A. or B.S.)

__ Master's (M.A. or M.S.)

__ Ph.D.

__ Other professional degree (e.g., MD, JD, etc.)

What is your approximate yearly average personal income?

◯ Less than $25,000

◯ $25,000 - $49,999

◯ $50,000 - $74,999

◯ $75,000 - $99,999

◯ $100,000 - $149,999

◯ $150,000 - $199,999

◯ $200,000 or more

What is your approximate yearly average household income?

◯ Less than $25,000

○ $25,000 - $49,999

○ $50,000 - $74,999

○ $75,000 - $99,999

○ $100,000 - $149,999

○ $150,000 - $199,999

○ $200,000 or more

Were you born in the U.S.?

__Yes

__No; Where were you born?_______ When did you come to the US? ______ (age in years)

Have you lived anywhere for more than six months other than in the U.S.?

__Yes; If yes, indicate the countries and duration (age in years) for each

__No

Have you been to Korea?

__ Yes; If yes, indicate the duration and age in years for each visit

__ No

What was the ZIP code of the community in which you lived for most of your childhood?______

What is the ZIP code of the community of your current primary residence? _________

What language(s) were spoken in your childhood home? ___________________

Have you attended Korean School?

__Yes; If yes, from grade _____________ through grade ________

__No

Growing up, were you engaged in any activities related to Korean culture and language?

___ Yes

___ No

Please list up to three activities in which your parents encouraged you to participate.

Please list up to three activities that you felt were important to participate.

Was your parent (#1) born in the U.S.?

__Yes

__No; Where were they born?_______ When did they come to the US? ______ (age in years)

Was your parent (#2) born in the U.S.?

__Yes

__No; Where were they born?_______ When did they come to the US? ______ (age in years)

How would Is your parent (#1) fluent in English?

__Yes

__No

Is your parent (#1) fluent in Korean?

__Yes

__No

Is your parent (#2) fluent in English?

__Yes

__No

Is your parent (#2) fluent in Korean?

__Yes

__No

Do you consider yourself to be bilingual (using more than one language in daily life)?

□ Yes

□ No

How would you best describe yourself?

- I am Korean
- I am American
- I am Korean-American
- Other: ____________________