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Psychometric Validation of the BRIEF2 Spanish Version on a Latin Community

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by

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Abstract

Since the early 2000s, the Hispanic population residing in the United States has dramatically grown by 55% (Puente et al., 2015), which increases the importance of understanding how cultural differences may affect neuropsychological test performance. Research demonstrates that pervasive differences exist between the Hispanic community and the dominant culture (Burton et al., 2012). Thus, altering the perception of normative behavior among children (Kärtner et al., 2011). The relative differences in developmental expectations may unfairly disadvantage Hispanic children and potentially lead to the over-pathology of minorities (Burton et al., 2012). The present study aimed to address the potential differences on the BRIEF2 test performances across Spanish-speaking subgroups based on the child's age and gender, as well as their parents' country of origin, English proficiency, and education levels. The sample consisted of 41 children (ages 5-18 years) with Spanish-speaking parents residing in the United States. Results suggested that index scores and the global executive composite on the BRIEF2 Spanish Version were significantly impacted by factors including the parents' English proficiency and education levels, as well as the child's age. More specifically, parents of children

within the 8-12 age group endorsed more difficulties with cognitive regulation and global executive functioning skills than parents with children in the 5-17 and 13-18 age groups. Parents with limited English proficiency were more likely to rate their children with pathological behavioral regulation parents with bilingual or native English proficiency. Fathers with a primary school or graduate school education level were more likely tso endorse difficulties with behavioral and cognitive regulation in their children as well as global executive functioning skills, whereas mothers with a middle school education were more likely to endorse difficulties with emotional regulation and global executive functioning skills in their children. The study highlights the need to interpret the results of the BRIEF2 Spanish Version with caution and for continued research with a larger sample size.

Keywords: executive function, Latinos, Hispanic, standardized assessments, psychometric norming, BRIEF2, executive functioning.

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Chapter 1

Introduction

Performance rates of Hispanics on school based assessments are significantly lower than that of peers within the dominant population (National Center for Education Statistics [NCES], 2011;2016). Although 88% of adults residing within the United States currently hold a high school education and 33% of adults hold a bachelor's degree or higher, the average educational attainment levels within the Hispanic population continue to be the lowest percentage in the nation at 66% with a high school education and 10% with a bachelor's degree or higher (U.S. Census, 2015). Despite the pervasive cultural differences that exist between the Hispanic community and the dominant culture (Burton et al., 2012), as well as within the 26 different cultures included in the classification of *Hispanic*, children of Spanish speaking origin are continually compared with the dominant culture to determine executive functioning deficits. However, cultural differences may confound expectations of child development which may unfairly disadvantage, leading to the over-pathology of Hispanic children (Burton et al., 2012; Zamarripa & Lerma, 2013).

Hispanic and the Spanish Language

Population Growth

During the 1970s the United States entered what is commonly referred to as the global era which suggests the growth of international trade, ideas, and culture on a worldwide level. With increased global communication, came greater diversity among individuals residing within

the United States. While people of color encapsulated approximately 12.5% of the population in the 1970s, these numbers rapidly increased to just under 40% of today's society (US Census Bureau, 2008; 2017). The U.S. Census Bureau classifies the largest and fastest-growing ethnic minority within the United States as Hispanic. The Hispanic population includes approximately 18.1% of the United States (US Census Bureau, 2017), and demonstrated a rapid growth of 55% between the years of 2000 and 2012 alone (Puente et al., 2015).

The US Census Bureau (2018) indicated that 16.7 million households and 25% of all children in the U.S. identified as Hispanic. This suggests that, at the time of the survey, 18,588,304 children, ages 18 years and under, were of Spanish speaking descent (US Census Bureau, 2018). Furthermore, results from the Hispanic Heritage Month, collected by the U.S. Federal Statistical System, affirm that 40 million U.S. residents, ages 5 years and older, actively speak Spanish within their homes (US Census Bureau, 2018); this is considered a "133.4% increase since 1990 when only 17.3 million spoke Spanish domestically" (US Census Bureau, 2018, p. 4).

Hispanic? Latino? Complications

According to the U.S. Federal Statistical System, *Hispanic* is an ethnic umbrella term that includes any individual with a Spanish speaking origin and does not delineate race (US Census Bureau, 2018). A common misperception within society is that terms like *Hispanic* and *Latino* are interchangeable. However, the term *Hispanic* includes individuals with heritage from countries located in the Americas as well as Spain and Equatorial Guinea, while *Latino* generally refers to individuals with lineage from the Americas, including Central America, South America, and the Caribbean (Cole, 2018). Therefore, the ethnic minority termed *Hispanic*, encapsulating 18% of the United States population as of 2017, constitutes 26 different countries from around

the world, each differing from one another based on economic resources, educational systems, culture, and race (Bure-Reyes & Puente, 2009).

Despite the perception of the common thread of language, linguistic differences are pervasive among Spanish speaking nations. Much like the differences found between Scottish brogue and U.S. English, the Spanish spoken in Spain differs vastly from the Spanish spoken in Mexico or Puerto Rico (Carlson, 2015). Linguistic research demonstrates that although there is a standard form of Spanish that unites the Hispanic nations, the use of language differs from topics as simple as grammatical intensifiers to entirely different dialects (Carlson, 2015; Kanwit et al., 2017). For example, among Spanish in Spain, Puerto Rico, Mexico, and Venezuela exist four dissimilar words to describe a public bus (*urbano, guagua, camión*, and *autobús*). Furthermore, while the word *camión* in Mexico may signify a public bus, in Venezuela a *camión* is a flatbed truck. Although this may appear as a minor difference between the cultures, the combination of several minor linguistic differences may lead to confusion and misunderstandings between Spanish speakers. Therefore, it is likely that these linguistic differences may impact the performance of Spanish speaking populations on standardized tests.

Perceptions and Child Development Milestones

Culture, Cognition, and Perceptions

Under the umbrella of cognition resides the phenomenon of perception. Cognition is the mental processes used to transform sensory information into knowledge. Whereas, perception is not only the ability to be aware of sensory information but how individuals interpret information within their environment (Matsumoto & Juang, 2017). Key factors, including learning and culture, directly affect perception within individuals and their respective societies. Many scholars identify culture as a form of cognition as it defines the norms, values, expectations, and the

system by which individuals emphasize what is and what is not considered knowledge or intelligence (Matsumoto & Juang, 2017). Masuda and Nisbett (2001) demonstrated that the cultural emphasis on contextual and relational understanding within Japanese society directly influenced how individuals took in and interpreted sensory information when compared with American participants. Similarly, additional research demonstrated that Brazilians engage in a "holistic" thinking style that closely matches East Asian populations, rather than the "analytic" thinking style commonly associated with North Americans (De Oliveira & Nisbett, 2017). By definition, culture determines the emphasis of the learning practices and the developmental expectations that a society holds of an individual.

Domestic versus Cross-Cultural Perceptions of Child Development

Perhaps one of the most universally emphasized areas of psychology are the models of child development. These models demonstrate a series of norms and expectations of how a child *should* develop behaviorally, relationally, and cognitively within society. While forerunners such as Piaget disregarded the influence of culture on the development of the child, individuals, including Erikson, Bronfenbrenner, and Vygotsky, emphasized the understanding that "human beings are cultural animals" (Packer, 2017, p. 3). They pioneered concepts that explored the interwoven eccentricities of culture and its impact on the development of the individual, as well as the influence of the individual on its community. However, upon reviewing the literature, traditional child development theories were discovered in the observation of, what is commonly termed, a WEIRD population (Lancy, 2010; Packer, 2017). When referring to this populace, WEIRD signifies Western, Educated, Industrialized, Rich, and Democratic (Arnett, 2016). Merely studying this population, representing approximately 5% of the world, demonstrates several challenges and commonly leads to the overgeneralization of theories to other cultures and

societies (Arnett, 2016; Packer, 2017). Resultantly, European and Western scholars may unintentionally minimize cultural factors that profoundly influence the development of the child, while also overlooking the differences in perceptions commonly found in the neglected 95%.

Studies on child development research from underdeveloped countries demonstrate that modern cultural models emphasize universal needs including autonomy versus relatedness (Kärtner et al., 2011). Socialization goals within different societies were shown to vary depending on the family's socio-economic status, education levels, and collectivist versus individualist worldviews. Mexican and Costa Rican mothers often emphasize the importance that toddlers develop higher social skills rather than cognitive abilities, whereas previous studies demonstrate that American mothers emphasize the significance of cognitive skills and independence (Delgado & Ford, 1998; De Oliveira & Nisbett, 2017; Kärtner et al., 2011). Keller et al. (2010) demonstrated that Indian mothers in Delhi emphasized an autonomous relatedness model where social skills were gained through interactive play with the mother, whereas German mothers in Berlin emphasized independence. Among cultures that place a higher value on relational skills, rather than cognitive, there is also evidence of more engaged and directive forms of play with the mother (Kärtner et al., 2011).

Influence of Developmental Expectations on School-Based Assessments

Similarly to how culture influences developmental expectations within the parent-child relationship, these overarching cultural expectancies of children influence the education system (Delgado & Ford, 1998). Intelligence in several Western cultures focuses on academic and abstract problem-solving skills, whereas many industrialized and non-industrialized, non-Western, countries accentuate the importance of relational problem-solving skills (Benson, 2003; Matsumoto & Juang, 2017). However, the United States educational system faces similar

challenges to those found in research completed on a primarily WEIRD population. Unfortunately, many of the studies that aided in the development of the United States educational system highlighted child development and the expectation of milestones according to a primarily White-European, middle-class community. Bernhard (2002) asserted that it is in these dominant institutions that the "world-views of subordinated groups tend to become de-legitimized" (p 51).

According to the National Center for Education Statistics (2011; 2016), Hispanic children consistently score below that of White students on all school-based assessments. Although many within the field of psychology believe that these academic tests are absent from cultural bias, individuals like Bernhard (2002), and Benson (2003) assert that the evidence demonstrates otherwise. When compared with a primarily dominant population, Hispanic children are commonly perceived within the educational system as having less autonomy and a greater need for direct engagement than their white peers (Bernhard, 2002). However, this may be the result of differing socialization goals based on the family's cultural perspective rather than the overarching national culture (Delgado & Ford, 1998; Kärtner et al., 2011). These cultural misunderstandings consistently produce substantial errors in understanding behavior and brain development relationships within non-majority groups located in the United States (Puente & Buré, 2006).

Standardized Assessments

Norming and Influence of Culture on Assessment Validity

Within the United States, there are currently 3500 different types of assessments used to determine various diagnoses, of these only 555 are currently accessible in Spanish (Puente et al., 2015). Even more perplexing is the understanding that the most commonly used assessments on

a primarily Spanish speaking population only total 25 to 50 of the 555 assessments. Sadly, only 6 out of 25 meet all four of the fairness standards dictated by The Standards of Educational and Psychological Tests (Puente et al., 2015). “A test that is fair does not unduly advantage or disadvantage certain examinees because of individual characteristics that are irrelevant to the construct being measured” (American Educational Research [AERA], APA, & NCME, 2014, p. 209). Unfortunately, the majority of tests that we use on Spanish speakers residing within the United States can neither be regarded as free of cultural biases (Benson, 2003) nor culturally fair for Hispanics (Puente & Buré, 2006).

Although there is an ever growing knowledge within neuroscience that culture, socioeconomic factors, and even geography, influence underlying mental health, behavioral mechanisms, and brain activity (Chiao et al., 2013), many psychometricians continue to merely translate tests normed and developed for the majority culture into another language without reviewing whether the test is valid based on the population’s cultural or socioeconomic background (Benson, 2003; Chiao et al., 2013; Confresi, & Gorman, 2012; Puente & Buré, 2006). Unfortunately, several studies have demonstrated that “simply translating a test does not preserve the construct validity of the instrument” (Zapater-Raberov et al., 2016, p. viii). Although an assessment may be available in a specific language, if used to compare a minority population against the dominant culture, it often leads to varying results that can be related back to cross-cultural differences (Carballo et. al, 2014, Carlson, 2015; Findlay et al., 2014; Nijdam-Jones et al., 2017).

Despite the vast cultural, racial, socio-economic, and linguistic diversity found within Hispanics, an assumption continues to exist that all Spanish speakers perform similarly on standard neuropsychological tests regardless of country of origin (Bure-Reyes et al., 2013). As

such, the most commonly used assessments (Spanish versions) in the U.S. were normed for Spain, Mexico, or Puerto Rico (Puente et al., 2015). However, studies that focus on the validation of assessments between Spanish speaking nations accentuate the pervasive within-group differences that exist between Hispanics (Bure-Reyes et al., 2013; Carballo et al., 2014; Nijdam-Jones et al., 2017), thus further compromising the validity of the tests. (For detailed information on compromised validity see Appendix E).

Behavior Rating Inventory of Executive Function 2nd Edition

The Behavior Rating Inventory of Executive Function 2nd Edition (BRIEF2; Gioia et al., 2015) evaluates the behaviors associated with executive function within children and adolescents, both in the home and the academic environment. It is a useful self-report tool in assessing for learning disabilities, attention disorders, traumatic brain injuries, lead exposure, pervasive developmental disorders, depression, and other developmental, neurological, psychiatric, and medical conditions in children (Gioia et al., 2015). The BRIEF2 is a comprehensive norm-referenced assessment of behavioral regulation and metacognition skills needed to meet prevalent demands within society.

Normative Sample and Reliability/Validity Data for the Hispanic Population.

Overall, the English version of the BRIEF2 demonstrates high internal consistency (ranging from .87 to .91). Moreover, the BRIEF2 is currently available in Spanish, and the manual states that the Spanish versions "have shown it performs similarly to the original forms" and "have shown similar factor structure, internal consistency, reliabilities, and convergent/discriminant evidence of validity" (Gioia et al., 2015, p. 11). However, the normative sample of parent rating forms only included 265 people of Hispanic origin, a total of 18.9% of the sample. Moreover, the parent's educational levels within the BRIEF2 sample predominantly fell within 13-15 years

(28.7%) and 16+ years (34.2%). This signifies that the majority of Hispanic parents included in the sample held an associate's degree or higher, which comprises a shockingly small percentage of Latin Americans residing within the United States (Zamarripa & Lerma, 2013; US Census Bureau, 2015).

Why do Cultural Norms in the Standardized Testing of Hispanics Matter? The American Psychological Association (APA) emphatically admonishes psychologists to "acknowledge that ethnicity and culture impact behavior and to take those factors into account when working with various ethnic/racial groups" (APA, 2018, "Guidelines" 2.A), particularly when using instruments that may lead to the diagnosis of a disorder (APA, 2013; American Association on Intellectual [AAIDD], 2010). Sadly, performance rates of Hispanics on academic achievement assessments (reading and math) are significantly lower than that of peers within the dominant population (NCES, 2011; 2016). Given the pervasive differences of perceptions on milestones within the home versus the dominant culture this may lead to significantly different expectations of the child's ability to navigate their community in practical and everyday activities that require interpersonal relationships and autonomy, as well as behavioral and emotional regulation and metacognition skills (Delgado & Ford, 1998; Engel de Abreu et al., 2013; Kärtner et al., 2011). Cultural differences regarding autonomy may unfairly disadvantage these children within their academic environments and may potentially lead to over-pathology of individuals who do not reflect the dominant culture (Burton et al., 2012).

Current Study

The present study aims to address potential differences on the BRIEF2 test performances across Spanish-speaking subgroups based on age groups, country of origin, and length of residency within the United States.

Hypothesis 1

Individuals within the age range of 5-7 will demonstrate higher percentage of scores that may allude to difficulties with executive functioning (BRIEF2 Spanish version) than typical within the dominant population.

Hypothesis 2

Parents from nations outside the United States will more typically endorse responses that their children require more directives with regard to behavioral regulation, as identified by the BRIEF2 Spanish version, than typically found within the dominant population.

Chapter 2

Methods

Participants

Data were collected from Spanish-speaking parents and guardians (Mother = 39, Father = 1, Grandmother = 1) of children 5 to 18 years of age. Participants resided in the following states: Florida (*n* = 25), Idaho (*n* = 2), Louisiana (*n* = 3), Oregon (*n* = 7), and Utah (*n* = 4). The parents' nations of origin included Colombia (Mothers = 7, Fathers = 8), Ecuador (Mothers = 5, Fathers = 2), Honduras (Mothers = 5, Fathers = 7), Mexico (Mothers = 9, Fathers = 9), Nicaragua (Mothers = 1, Fathers = 1), Peru (Mothers = 2, Fathers = 0), United States (Mothers = 2, Fathers = 2), and Venezuela (Mothers = 10, Fathers = 12). For the purpose of data analysis, the grandmother was coded as a mother as she had been the sole custodian throughout the child's life. It is important to note that some parents reported on multiple children. Parents were asked to identify their and their partners' English language proficiency and then based on their statement were categorized as no proficiency (Mothers = 14, Fathers = 9), elementary level proficiency (Mothers = 2, Fathers = 5), limited working proficiency (Mothers = 3, Fathers = 4), professional working proficiency (Mothers = 3, Fathers = 3), full professional proficiency (Mothers = 10, Fathers = 10), or native/bilingual proficiency (Mothers = 9, Fathers = 10). Parents were also asked to identify their and their partners' educational background as having completed primary school (Mothers = 2, Fathers = 3), middle school (Mothers = 4, Fathers = 1), some high school (Mothers = 3, Fathers = 0), high school (Mothers = 0, Fathers = 7), some college (Mothers = 3, Fathers =

6), trade school (Mothers = 0, Fathers = 3), a bachelor's degree (Mothers = 28, Fathers = 18), or graduate school (Mothers = 1, Fathers = 3).

The data sample consisted of 41 children who were categorized into three age groups: 5-7 years (*n* = 14), 8-12 years (*n* = 15), and 13-18 years (*n* = 12). Of the 41 children, parents identified 21 as male and 20 as female. Parents also reported that 25 children were bilingual (Spanish and English), 9 monolingual English speakers, 3 monolingual Spanish speakers, and 4 had a preference for one of the two languages but a rudimentary understanding of both. Education levels of the children varied from kindergarten to 12th grade. Parents reported that 37 of the children were not currently receiving educational services, while 4 were receiving services due to ADHD (*n* = 1), Autism (*n* = 1), Speech Delay (*n* = 1), and English as a Second Language (*n* = 1). Additionally, 23 parents reported currently residing in a predominantly Latin American community whereas 18 resided in a primarily majority community.

Materials

Demographic Questionnaires

In order to gather biopsychosocial information questionnaires were given to all participants. This questionnaire, in Spanish, contained questions pertaining to the parent including nation of origin, English proficiency, educational level, age, gender, and state of residency. It also included questions pertaining to the child, including English-Spanish language proficiency, educational level, age, and gender (See Appendix A).

Informed Consent Forms

The study included informed consent forms in both Spanish and English to ensure that the potential participants were able to fully comprehend the purpose of the study and the extent of their commitment to participate (See Appendix B).

Behavior Rating Inventory of Executive Functioning 2nd Edition (BRIEF2)

Responses are gathered through a 63 item questionnaire with a 3-point response scale that indicates whether, and how frequently, the individual performs behaviors (Gioia et al., 2015). The diagnostic tool focuses on individuals ages 5 to 18 years and compares the feedback of respondents against three behavioral regulation scales (inhibit, shift, emotional control) and five metacognition scales (initiate, working memory, plan/organize, organization of materials, monitor). The Spanish version of the BRIEF2 (See Appendix C) was administered as it is commonly used within the United States educational system to determine eligibility for specialized education services based on executive function deficits (Gioia et al., 2015). This assessment was short and easy to administer.

Normative Sample and Reliability/Validity Data. Demographic rates of the BRIEF2 Spanish Version closely followed that of the U.S. population according to gender, age, race, parent education level and geographical region. Participants were obtained through direct recruitment and chosen based on being between the ages of 5 and 18 years, not having special education services, and no history of neurological disorders. The normative sample included a total of 1,400 parent rating forms completed for children within the ages stated above. The sample included 50.9% of females and 49.1% males. The norm race and ethnicity demographics are as follows: Caucasian, 56.1%, African American 14.1%, Hispanic 18.9%, and Other 10.9%. However, the BRIEF2 manual did not identify the nation of origin of the Hispanic parents. The parent's educational levels predominately fell within 13-15 years (28.7%) and 16+ years (34.2%), which is superior to the educational levels of the majority of Hispanics as identified by the US census (2015).

The English rating forms demonstrate high internal consistency for all BRIEF2 screening forms (ranging from .87 to .91) in the standardization sample, as well as in the clinical sample (ranging from .80 to .89). Inter-rater reliability within the standardization sample was moderate (ranging from r = .44 between two teacher raters to .80 between two parent raters). However, inter-rater reliability within clinical samples was consistently low (ranging from r = .13 between two teacher raters to .59 between two parent raters). Meanwhile, test-retest reliability across coefficients ranged from .79 to .87. The BRIEF2 is currently available in Spanish, and the manual states that the Spanish-speaking versions "have shown it performs similarly to the original forms" and "have shown similar factor structure, internal consistency, reliability, and convergent/discriminant evidence of validity" (Gioia et al., 2015, p. 11).

Permission to Recruit Forms

Forms in English and Spanish explaining the purpose of the study were distributed to community based programs and authority figures within these organizations. These organizations included religious establishments, cultural centers, and other culturally relevant community based organizations. The intention of the form was to empower leaders and authority figures to understand the purpose of the study to gain access to the population under their care. (See Appendix D)

Procedures

Following approval from the George Fox University IRB, participants were recruited via snowball methods through community organizations (e.g., religious organizations, recreational centers, cultural centers) and word of mouth. Permission to Recruit Forms were obtained from community based authority figures who were asked to sign the Permission to Recruit form. Upon gaining permission to recruit, community-based leaders were offered presentations, with a copy

of the informed consent, demographic questionnaires, and sample questions from the BRIEF2 (due to copyright laws). However, the vast majority of participants within this study were referred by previous participants. To reduce the possibility of coercion, all individuals referred by an organization or by word of mouth were only asked once if they would like to participate in the study. For individuals who did not respond or choose to schedule an interview at the onset, the lack of response or hesitance was interpreted as a decline.

All participants completed a 30 to 60 minute interview that included the completion of the informed consent, demographic questionnaire, and the BRIEF2 Spanish Version. The completion time varied between participants due to the number of children within the household and the number of questions posed by the guardian. All measures were conducted during the coronavirus pandemic (from May 2020 to June 2020). As such all protocols were completed virtually either through video-conferencing or phone based services. In order to decrease the likelihood of copyright infringement, all questions (i.e., BRIEF2 Spanish Version and demographic questionnaires) were read individually by the administrator. Prior to the virtual interview, participants were sent the informed consent via email at the time that the appointment was scheduled. Consent was further discussed in person during the virtual interview. To preserve the privacy of the participants, all documents were de-identified and given a number in order of the scheduled interview (i.e., 001 through 041). Participants upon completion of the paperwork were offered $20 in compensation of their time which was sent through the mail. The name and address of the participants was written on the mailed envelope and no records were maintained after the completion of the study.

Chapter 3

Results

Hypothesis 1: Age and Gender Differences

Given the hypothesis that children of Spanish-speaking parents within the age range of 5-7 years would demonstrate higher percentages of scores a MANOVA was used to evaluate the possible age and gender differences using the indices (BRI, ERI, and CRI) and Global Executive Composite (GEC) of the BRIEF2 Spanish Version.

Behavior Regulation Index (BRI)

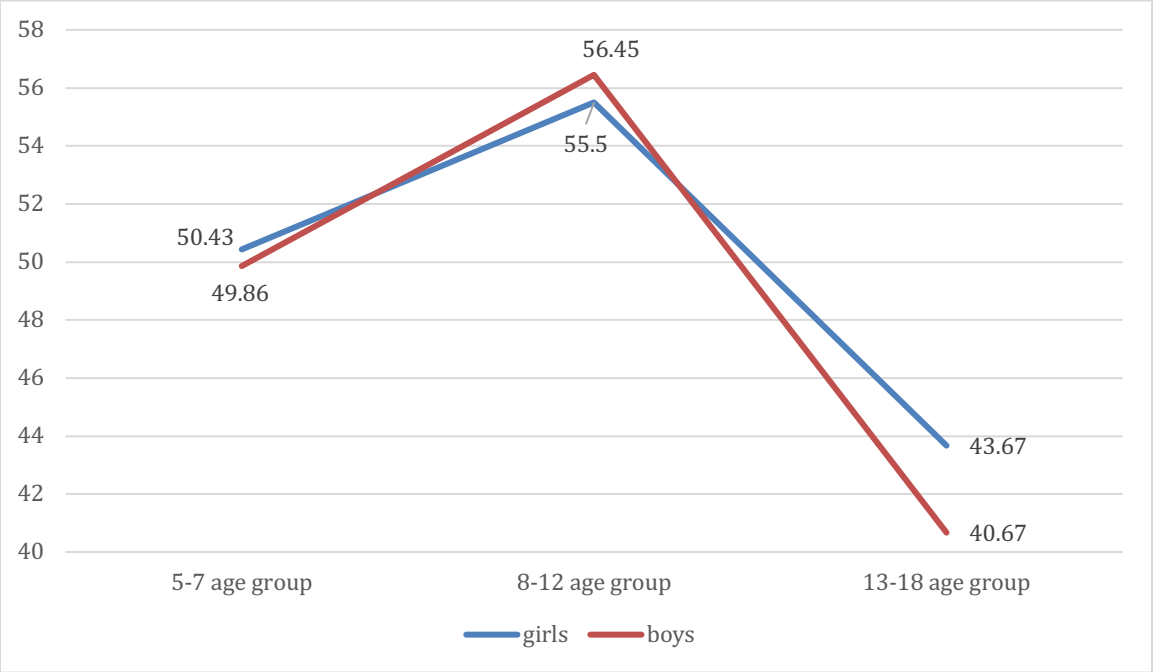
No main effect was found for age groups on the BRI, but a moderate effect size occurred ($F(2,35) = 2.361$, $p = .109$, $\eta^2 = .119$) . Post-hoc Tukey HSD tests indicated the effect was between the 8-12 group ($M = 56.00$) and the 13-18 group ($M = 45.83$, $p = .044$), which suggested that parents endorsed that children between 8-12 years old demonstrated more difficulties with behavioral regulation than children between the ages of 13-18 years.

Additionally, a MANOVA was used to evaluate the effects of age and gender on the individual scales within the BRI (Inhibit and Self-Monitor). A main effect was found for age for the Inhibit scale with a large effect size ($F(2,35) = .195$, $p = .009$, $\eta^2 = .237$). Post-hoc Scheffe' tests demonstrated that there was a significant difference between the 8-12 age group ($M = 56.20$) and the 13-18 age group ($M = 42.92$, $p = .004$). With regard to the Self-Monitor scale, there was no main effect for age ($F(2,35) = 5.445$, $p = .009$, $\eta^2 = .011$). Although there was not a

significant interaction with the age and gender for the Self-Monitor scale, the effect size was moderate ($F(2,35) = 1.154$, $p = .327$, $\eta^2 = .062$), see Figure 1.

Figure 1

Age x Gender Interaction for the Self-Monitor Scale



Note. Significant effect sizes occurred between age groups for the Self-Monitor subscale of the BRI.

Emotion Regulation Index (ERI)

With respect to the ERI, there was a main effect for gender with a moderate effect size ($F(1,35) = 4.198$, $p = .048$, $\eta^2 = .107$), between boys $M = 55.76$ and girls $M = 45.40$. This suggests that parents endorsed that boys exhibit greater difficulties with emotional regulation than girls. Additionally, while there was no main effect of age groups on the ERI, there was a moderate effect size ($F(2,35) = 1.820$, $p = .177$, $\eta^2 = .094$). Post-hoc Tukey's HSD tests

demonstrated a significant difference between the 5-7 age group (M = 46.71) and the 8-12 age group (M = 57.13, p = .040). This suggests that parents reported more difficulties with emotional regulation among children between the ages of 8-12 years old than those between the ages of 5-7 years old.

Additionally, a MANOVA was used to evaluate the effects of age and gender on the individual scales within the ERI (Shift and Emotional Control). There was no main effect for age on Shift or Emotional Control, but both demonstrated moderate effect sizes: Shift (F(2, 35) = 1.515, p = .234, η^2 = .080); Emotional Control (F(2.35) = 2.004, p = .150, η^2= .103). However, there was a main effect for gender with Shift (F(1, 35)= 5.044, p = .031, η^2= .126), between boys M = 57.95 and girls M = 46.95. This indicates that parents reported that boys displayed greater difficulties with the executive function of Shift than girls. With regard to Emotional Control, there was no main effect for gender, but the effect size was moderate (F(1, 35) = 2.127, p = .154, η^2 = .057), between boys M = 53.19 and girls M = 44.95. This suggests that parents endorsed greater difficulties with the executive function of Emotional Control among boys than girls.

Cognitive Regulation Index (CRI)

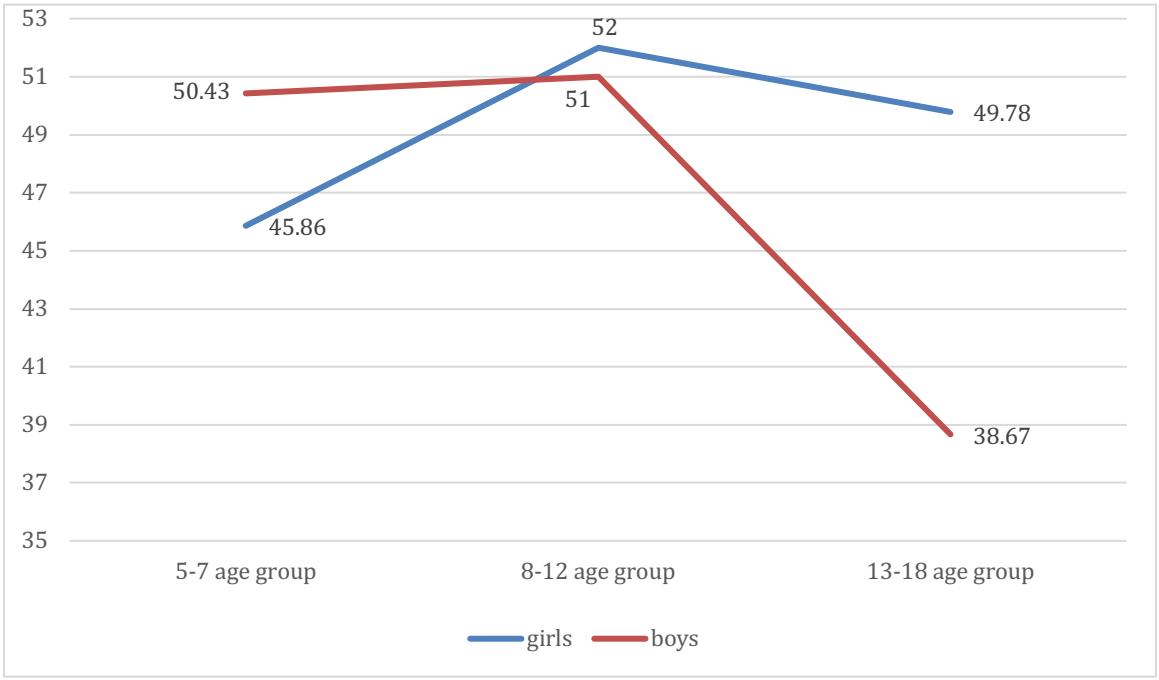
Results demonstrated a main effect for age on the CRI with a large effect size (F(2,35) = 3.455, p = .043, η^2 = .165). Post-hoc Scheffe' tests showed that the 8-12 age group (M = 53.47) was significantly different from the 13-18 age group (M = 44.83, p =.030). This suggests that parents reported greater difficulties with cognitive regulation among children within the age ranges of 8-12 than those within the 13-18 age ranges.

Additionally, a MANOVA was used to evaluate the effects of age and gender on the individual scales within the CRI (Initiate, Working Memory, Plan/Organize, Task-Monitor, and Organization of Materials). There was no main effect for age with the Initiate scale, but a

moderate effect size ($F(2.35) = 2.325$, $p = .113$, $\eta^2 = .117$). Post-hoc tests did not distinguish between the groups. A trend occurred with a large effect size for the interaction between age and gender for the Initiate scale ($F(2, 35) = 2.905$, $p = .068$, $\eta^2 = .142$), see Figure 2.

Figure 2

Age x Gender Interaction for the Initiate Scale



Note. As girls age they demonstrate greater difficulties with initiative behaviors in comparison to boys. Girls and boys within the 8-12 age group demonstrated the greatest difficulties related to initiation.

A main effect was found for age for Working Memory with a large effect size ($F(2, 35) = 3.614$, $p = .037$, $\eta^2 = .171$). Post-hoc Scheffe' tests demonstrated that there was a significant difference between the 8-12 age group ($M = 55.20$) and the 13-18 age group ($M = 45.67$, $p = .020$). There was also a main effect and large effect size found for age with the Plan/Organize scale ($F(2, 35) = 3.342$, $p = .047$, $\eta^2 = .160$). Post-hoc Scheffe' tests indicated a significant

difference between the 8-12 age group (M = 55.13) and the 13-18 age group (M = 44.58, p = .012).

No main effect found for age with the Task Monitor scale, but results exhibited a moderate effect size ($F(2,35) = 2.339$, $p = .111$, $\eta^2 = .118$). Post-hoc tests did not distinguish between the groups. With regard to Organization of Materials, no main effect was found for age but there was a moderate effect size ($F(2,35) = 1.944$, $p = .158$, $\eta^2 = .100$). Post-hoc Scheffe' tests demonstrated a significant difference between the 8-12 age group (M = 50.20) and the 13-18 age group (M = 42.58, p = .046).

It is important to note that no main effects were found for gender across all CRI scales within the CRI and that all effect sizes were trivial.

Global Executive Composite (GEC)

No main effect found for age with the GEC, but there was a large effect size ($F(2,35) = 2.924$, $p = .067$, $\eta^2 = .143$). Additionally, post-hoc Scheffe' tests demonstrated that the 8-12 age group (M = 56.33) significantly differed from the 13-17 age group (M = 45.08, p = .023). This suggests that parents reported that children within the 8-12 age range exhibited greater global executive functioning difficulties than children within the 13-17 age range.

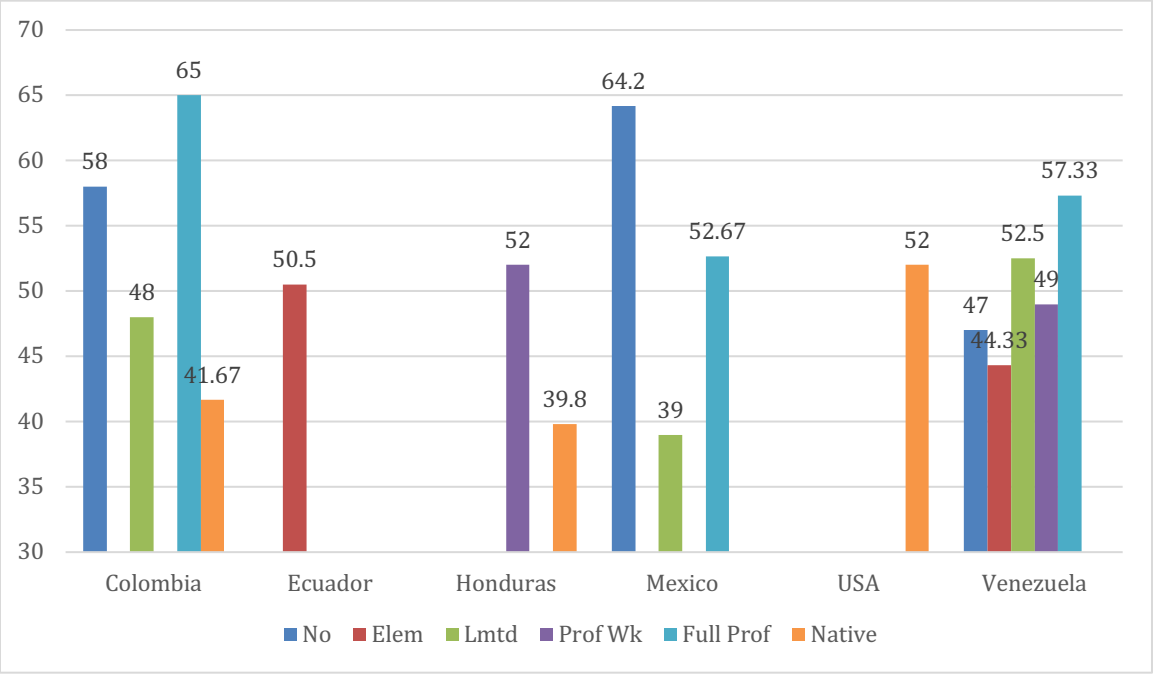
Hypothesis 2: Nation of Origin and Language Proficiency

Given the hypothesis that parents from nations outside the United States would endorse that their children require more directives with regard to behavioral regulation (BRI) than typically found within the dominant population, a MANOVA was used to evaluate the possible nation of origin and language proficiency differences using the indices (BRI, ERI, and CRI) and Global Executive Composite (GEC) of the BRIEF2 Spanish Version.

Fathers' Nations of Origin

Figure 3

Fathers' English Proficiency and Nation of Origin Interaction for BRI



Note. An interaction between fathers' English proficiency x nation of origin on the BRI was detected. However, it was unable to be calculated without excluding several participants. The figure displays the corresponding means.

Fathers' Language Proficiency

A Spearman rho Correlation was conducted using all indices of the BRIEF2 and the fathers' English proficiency level (See Table 1).

A MANOVA was used to evaluate the effects of the fathers' language proficiency on the indices of the BRIEF2 (BRI, ERI, CRI, and GEC). A main effect was found for fathers' English proficiency on BRI ($F(5, 35) = 3.445$, $p = .012$, $\eta^2 = .330$). A post-hoc Tukey HSD demonstrated that the native/bilingual proficiency group ($M = 41.67$) significantly differed from the full

Table 1

Correlations between Fathers' Proficiency in English on the BRIEF2 Domains

BRIEF2 Indices	R	*p*
BRI	-.277	.079
ERI	-.099	.539
CRI	-.197	.218
GEC	-.185	.248

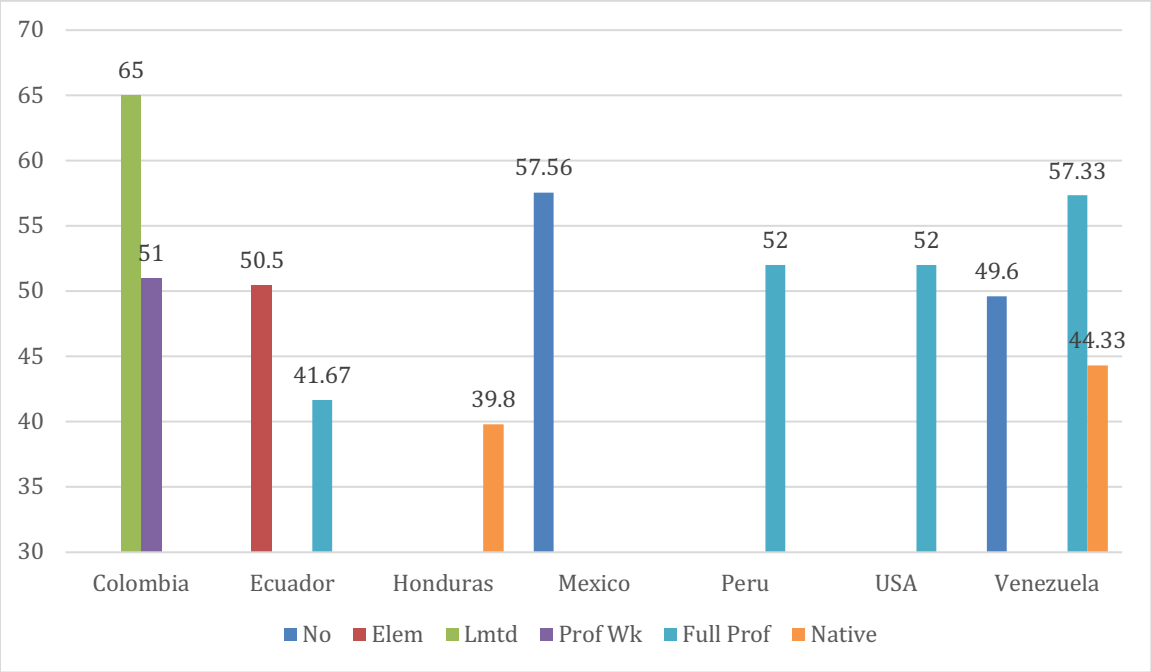
Note. Fathers' proficiency in English did not correlate with BRIEF2 Domains.

professional proficiency group ($M = 50.50$, $p = .025$) and the no proficiency group ($M = 54.71$, $p = 0.18$). This suggests that respondents reported their children exhibited greater behavioral regulation functioning when their fathers had native/bilingual proficiency than those with full professional proficiency or no proficiency.

Mothers' Nation of Origin

Figure 4

Mothers' English Proficiency and Nation of Origin Interaction for BRI



Note. An interaction between mothers' English proficiency x nation of origin on the BRI was detected. However, it was unable to be calculated without excluding several participants. The figure displays the corresponding means.

Mothers' Language Proficiency

A Spearman rho correlation was used to evaluate the indices of the BRIEF 2 and the mothers' level of English proficiency (See Table 2).

A MANOVA was used to evaluate the effects of the mothers' language proficiency on the indices of the BRIEF2 (BRI, ERI, CRI, and GEC).

Table 2

Correlations between Mothers' Proficiency in English on the BRIEF2 Domains

BRIEF2 Indices	*R*	*p*
BRI	-.408**	.008
ERI	-.262	.098
CRI	-.334*	.033
GEC	-.305	.053

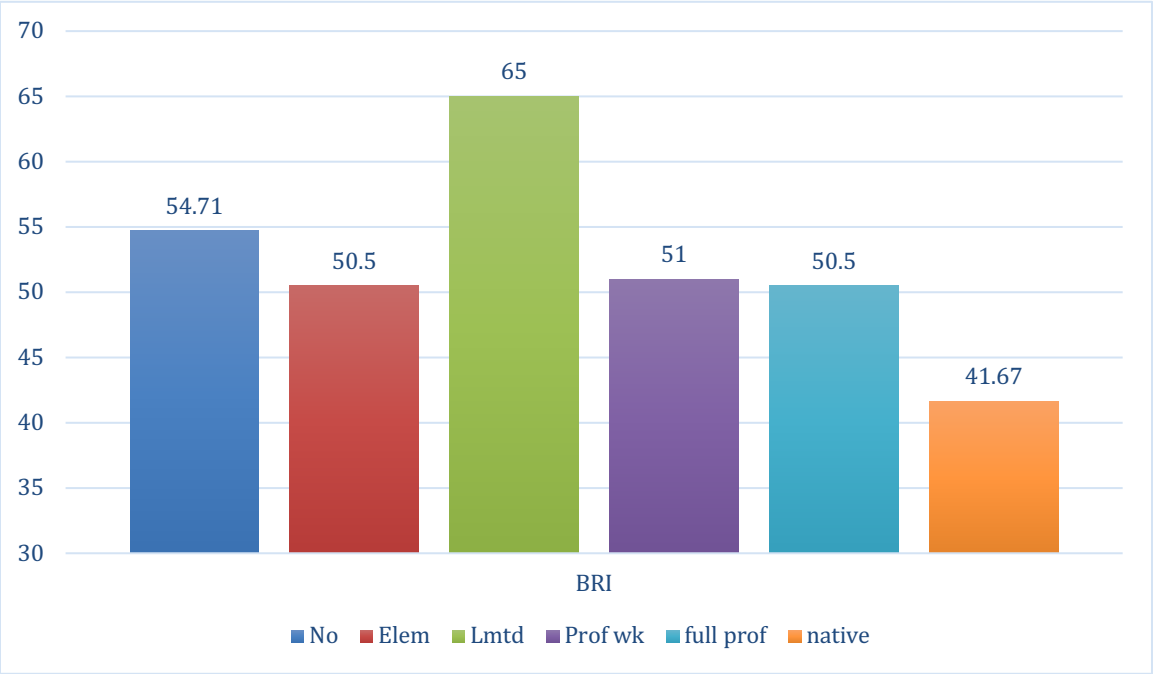
Note. Mothers' proficiency in English is correlated with CRI and BRI. **. Correlation is significant at the 0.01 level (2-tailed). *. Correlation is significant at the 0.05 level (2-tailed).

Behavior Regulation Index. A main effect and large effect size were found for the mothers' English proficiency and BRI ($F(5, 25) = 4.242$, $p = .006$, $\eta^2 = .459$). A post-hoc Tukey HSD test showed a significant difference between native/bilingual proficiency group ($M = 41.67$), no proficiency ($M = 54.71$, $p = .014$), and limited working proficiency ($M = 65.00$, $p = .004$). See Figure 5.

Emotion Regulation Index. A main effect and large effect size were found for the mothers' English proficiency and ERI ($F(5, 25) = 3.085$, $p = .026$, $\eta2 = .382$). A post-hoc Tukey HSD test showed a significant difference between native/bilingual proficiency group ($M = 42.00$) and limited working proficiency ($M = 64.67$, $p = .019$). See Figure 6.

Figure 5

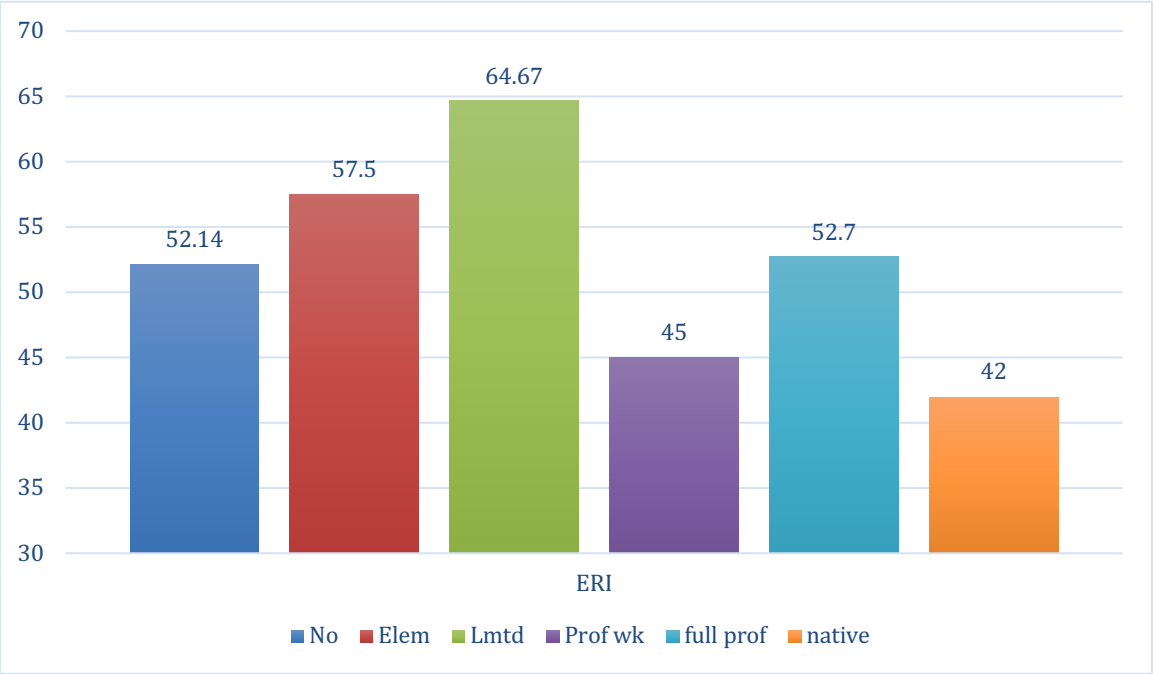
Mothers' English Proficiency and BRI



Notes. Results suggested that children exhibited greater behavioral regulation skills with mothers who had native/bilingual proficiency than those with limited working proficiency or no proficiency.

Figure 6

Mothers' English Proficiency and ERI



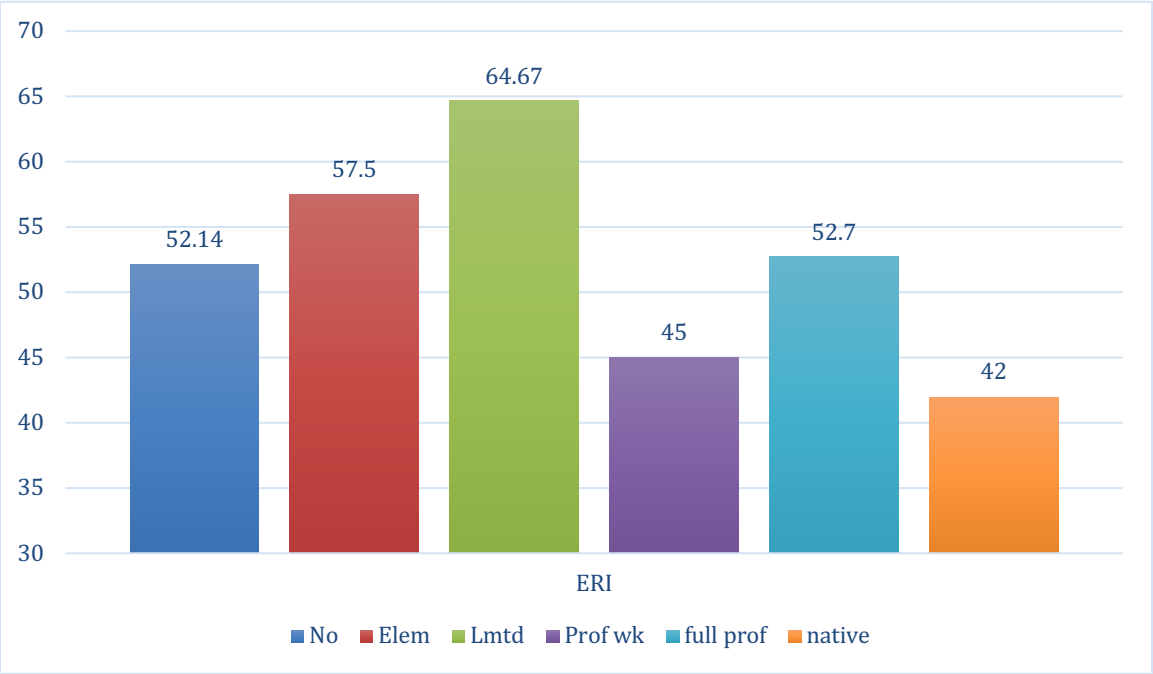
Notes. Results suggested that children exhibited greater emotional regulation skills with mothers who had native/bilingual proficiency than those with limited working proficiency.

Cognitive Regulation Index. A main effect and large effect size were found for the mothers' English proficiency and CRI ($F(5, 25) = 2.609$, $p = .050$, $\eta 2 = .343$). A post-hoc Tukey HSD test showed a significant difference between native/bilingual proficiency group ($M = 42.89$) and limited working proficiency ($M = 58.67$, $p = .029$). See Figure 7.

Global Executive Composite. A main effect and large effect size were found for the mothers' English proficiency and GEC ($F(5, 25) = 3.883$, $p = .010$, $\eta 2 = .437$). See Figure 8.

Figure 7

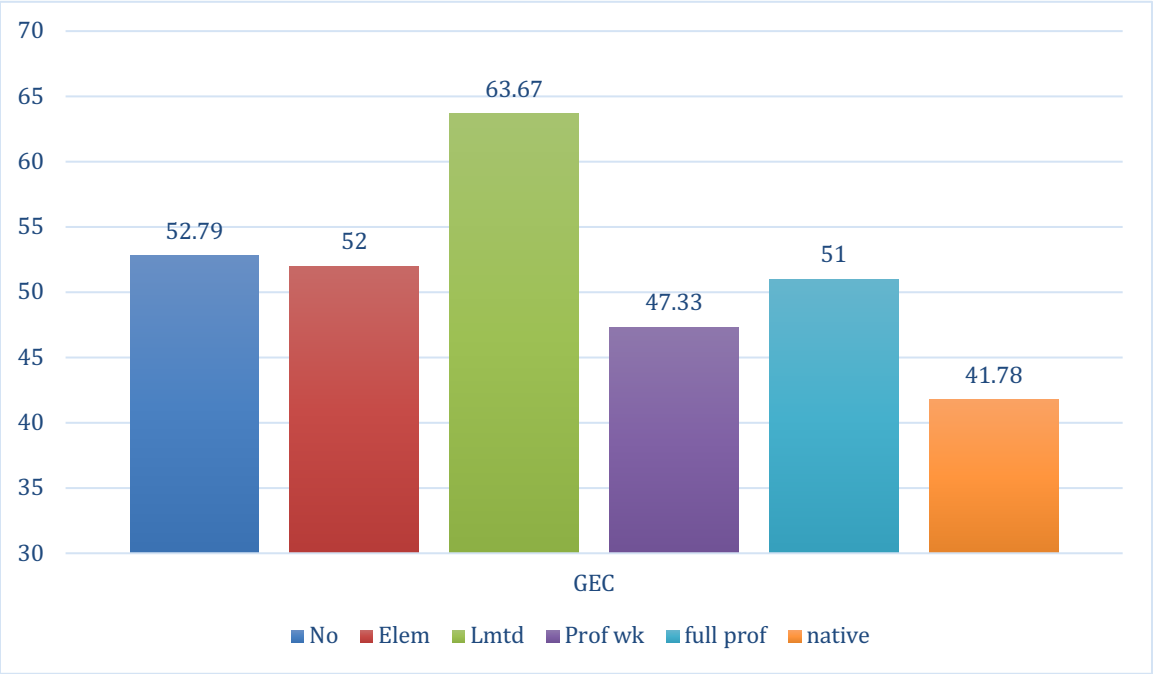
Mothers' English Proficiency and CRI



Notes. Results suggested that children exhibited greater cognitive regulation skills with mothers who had native/bilingual proficiency than those with limited working proficiency.

Figure 8

Impact of Mothers' English Language Proficiency on GEC



Note. Respondents reported that children exhibited greater executive functioning difficulties among mothers with limited working English proficiency (p = .005) and no English proficiency (p = .040) than mothers with native/bilingual English proficiency.

Additional Findings

A MANOVA was used to evaluate the influence of parental education level differences using the indices (BRI, ERI, and CRI) and Global Executive Composite (GEC) of the BRIEF2 Spanish Version.

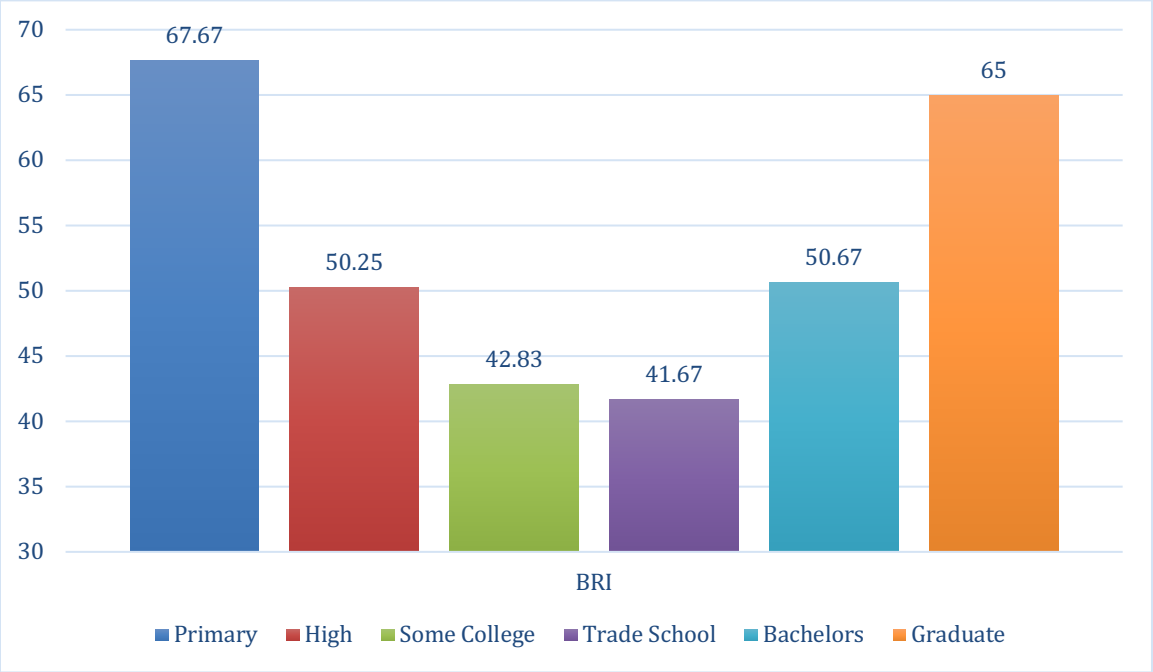
Fathers' Education Levels

A MANOVA was used to evaluate the effects of the fathers' education levels on the indices of the BRIEF2 (BRI, ERI, CRI, and GEC).

Behavior Regulation Index. A main effect and large effect size were found for the fathers' education levels and the BRI ($F(3, 35) = 5.624$, $p = .001$, $\eta 2 = .446$). See Figure 9.

Figure 9

Fathers' Education Levels and BRI

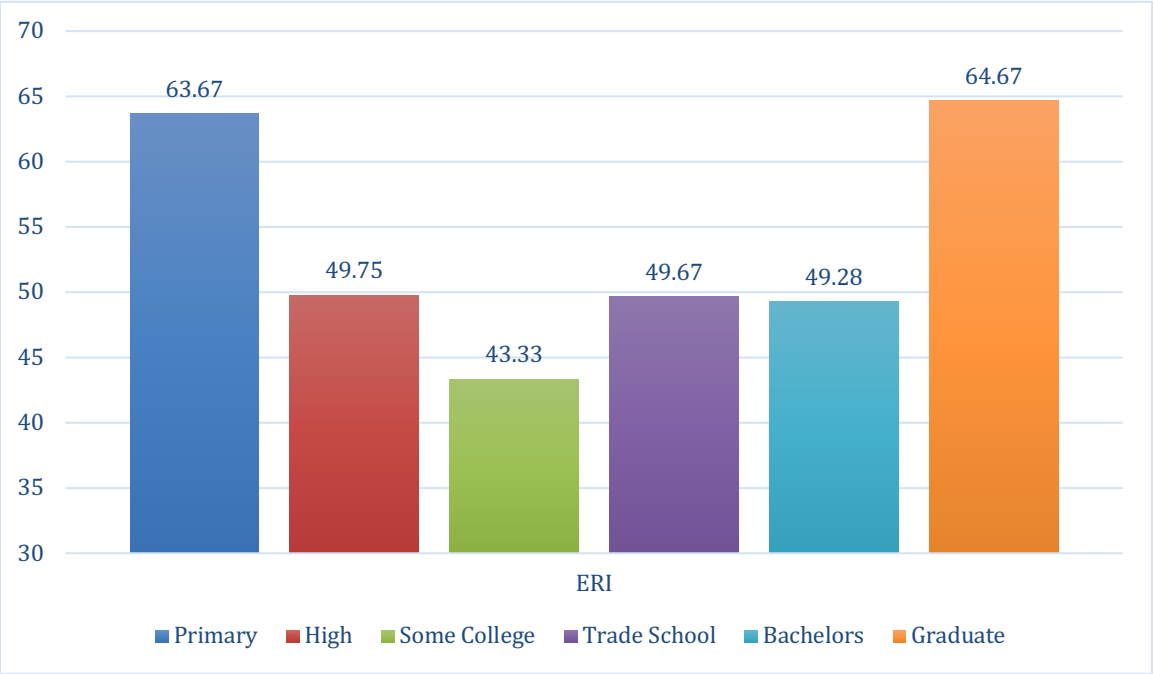


Notes. A significant difference on the BRI was found between fathers with primary school education and those with some college ($p = .015$) or trade school education ($p = .035$). There was also a significant difference between fathers with some college and graduate school ($p = .039$). A significant difference was found between fathers with a primary school education and those with a high school ($p = .019$) or bachelor's degree ($p = .036$). There was also a significant difference between fathers with a graduate school education and those with a trade school education ($p = .024$).

Emotion Regulation Index. There was a trend with a large effect size found for fathers' education levels and ERI ($F(5, 35) = 2.258$, $p = .070$, $\eta^2 = .244$). See Figure 10.

Figure 10

Fathers' Education Levels and ERI

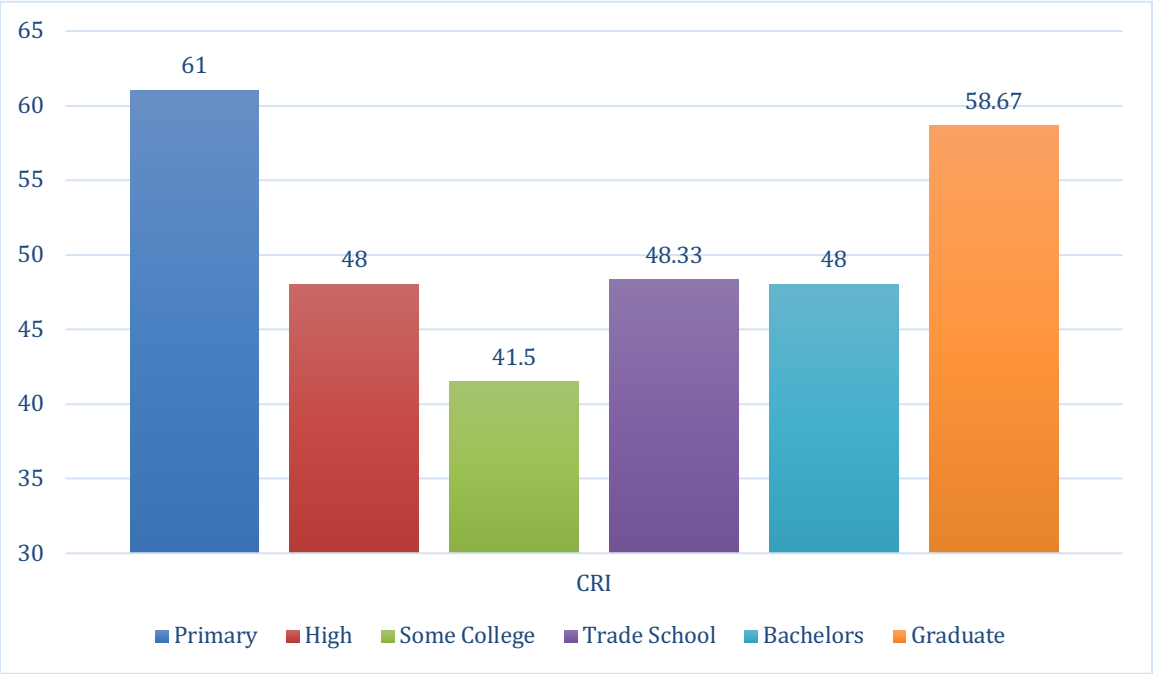


Notes. A significant difference was found on the ERI between fathers with a bachelor's degree and those with a primary school education (p = .050) or graduate school education (p = .037). A significant difference was also found between fathers with some college and graduate school education (p = .012) and those with primary school education (p = .016).

Cognitive Regulation Index. A main effect and large effect size were found for the fathers' education levels and the CRI ($F(5, 35) = 4.271$, p = .004, η^2 = .379). See Figure 11.

Figure 11

Fathers' Education Levels and CRI

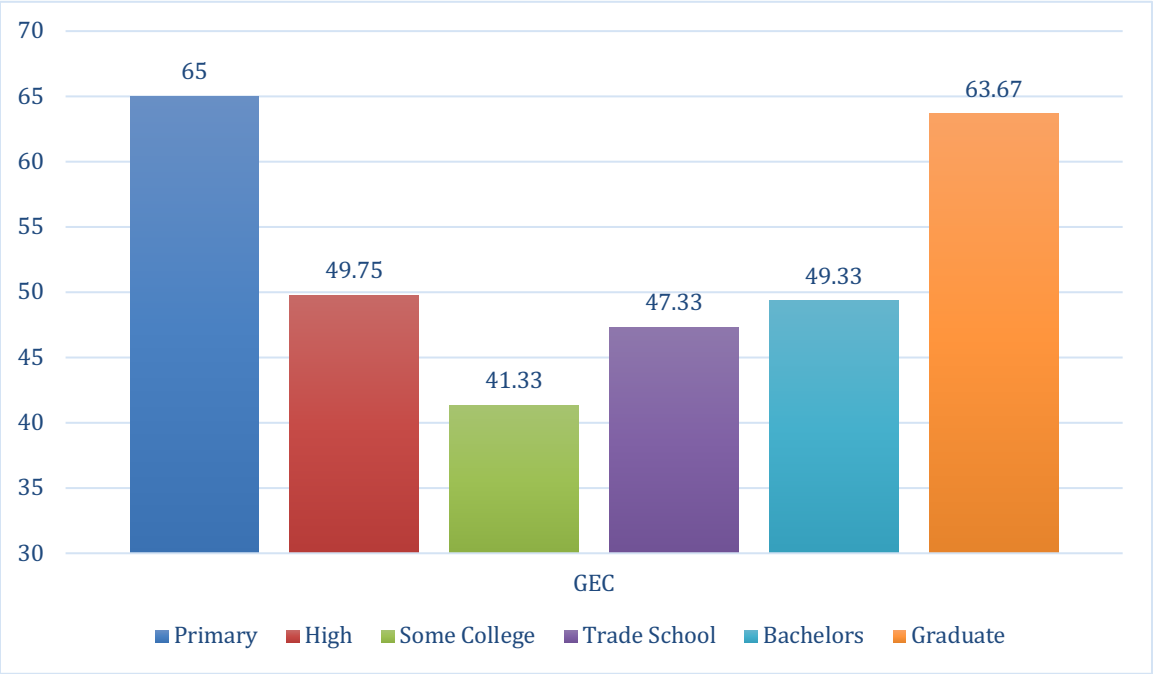


Notes. A significant difference was found on the CRI between fathers with primary school education and some college (p = .023). A significant difference was found between fathers with some college and graduate (p = .018).

Global Executive Composite. There was a main effect and large effect size for the fathers' education levels and GEC ($F(5, 35) = 4.110$, p = .005, $\eta 2$= .370). See Figure 12.

Figure 12

Fathers' Education Levels and GEC



Note. Results demonstrated a significant difference on the GEC between fathers with primary school education and some college (p = .037), as well as a significant difference between fathers with some college and graduate school education (p = .017).

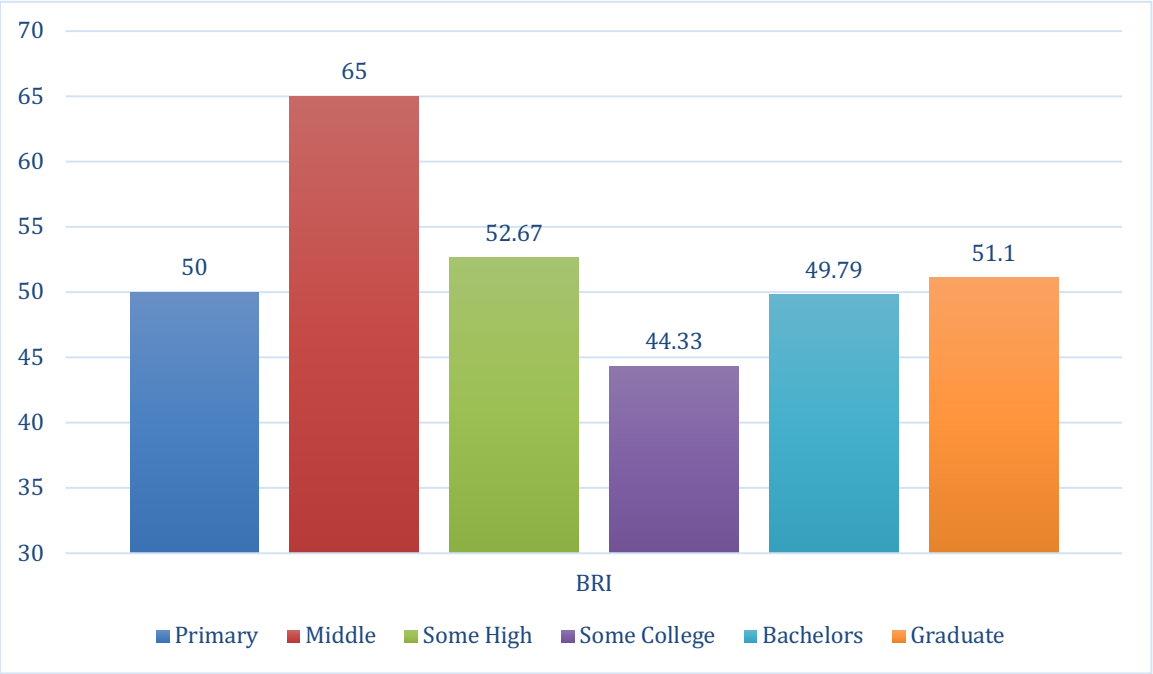
Mothers' Education Levels

A MANOVA was used to evaluate the effects of the mothers' education levels on the indices of the BRIEF2 (BRI, ERI, CRI, and GEC).

Behavior Regulation Index. There was a trend with a large effect size found for mothers' education levels and BRI ($F(4, 36) = 2.347$, p = .073, η^2 = .207). See Figure 13.

Figure 13

Mothers' Education Levels and BRI



Notes. A significant difference on the BRI was found between mothers with a middle school education and those with some college (p = .012) as well as a bachelor's degree (p = .008).

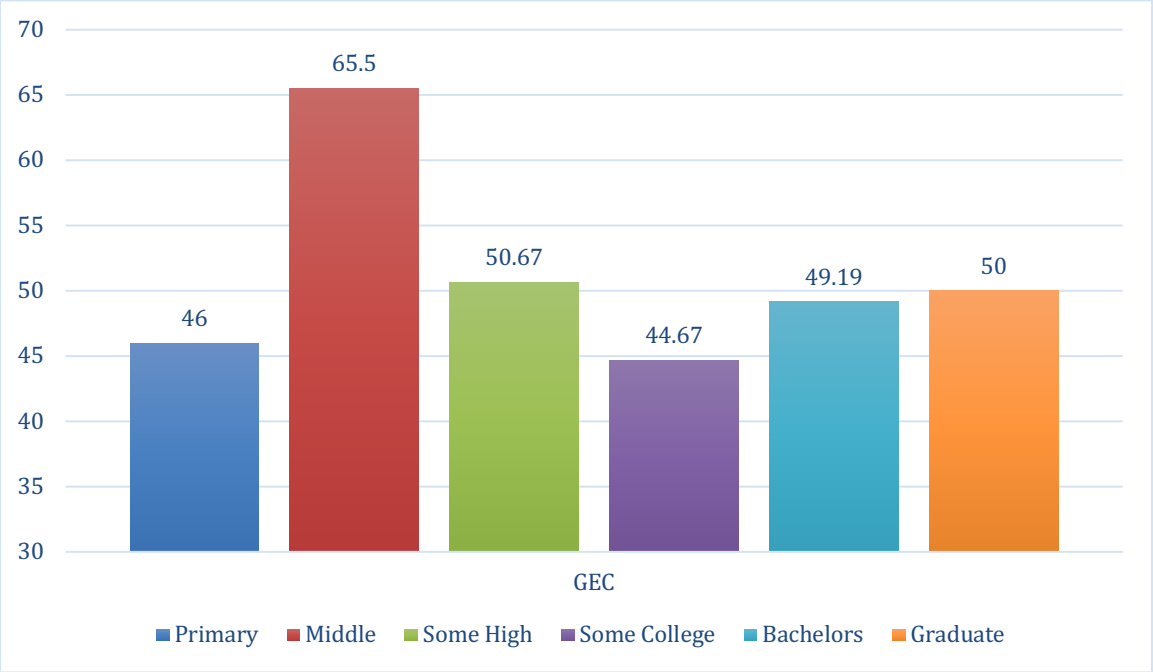
Emotion Regulation Index. A main effect and large effect size were found for the mothers' education levels for the ERI ($F(4, 36) = 3.399$, p = .019, η^2 = .274). Post-hoc Tukey's HSD tests demonstrated a significant difference between mothers with middle school education (M = 67.75) and some college (M = 40.67, p = .021) as well as a bachelor's degree (M = 50.28, p = .039).

Cognitive Regulation Index. There was no main effect found for CRI, however there was a large effect size ($F(4, 36) = 1.911$, p = .130, η^2 = .175). Post-hoc LSD tests demonstrated a significant difference between mothers with middle school education (M = 59.25) and a bachelor's degree (M = 47.55, p = .010).

Global Executive Composite. There was a main effect and a large effect size for the mothers' education levels and GEC ($F(4, 36) = 2.816$, $p = .039$, $\eta^2 = .238$). See Figure 14.

Figure 14

Mothers' Education Levels and GEC



Notes. A significant difference was found on the GEC between mothers with middle school education and primary school ($p = .029$) as well as some college ($p = .009$). A significant difference on the GEC was also found between mothers with middle school and a bachelor's degree ($p = .028$).

Chapter 4

Discussion

With the ever growing Latin American population in the United States there has been an increase in research surrounding the validity of neuropsychological assessments on this minority population. Previous studies (Burton et al., 2012; De Oliveira & Nisbett, 2017; Matsumoto & Juang, 2017) demonstrate the importance of understanding the cultural and linguistic factors that influence participant responses on standardized measures. Nevertheless, there is surprisingly little research focused on understanding how cultural and linguistic differences may impact the perception of executive functioning skills in children. Differences in early developmental areas of focus due to invisible cultural beliefs (i.e., autonomy versus relatedness) may unfairly hinder Latin American populations when compared to their majority peers (Nijdam-Jones et al., 2017; Puente et al., 2015). Given the fact that ethnically Latin children are frequently identified as presenting with academic difficulties and that the United States educational system is firmly rooted in majority culture (Benson, 2003; Bernhard, 2002), questions surrounding the accuracy of our neuropsychological measures merit further investigation.

The purpose of the present study was to explore the accuracy of the BRIEF2 Spanish Version on a US-based Spanish-speaking population. More specifically, the study aimed to determine whether cultural and linguistic factors influence the accuracy of the measure's identification of executive functioning skill deficits. The population assessed for the purpose of this research was relatively heterogeneous with regard to parent nation of origin, English

proficiency levels, current state of residency, and educational backgrounds, as well as child ages and genders. Briefly, results suggest that although the BRIEF2 is translated into Spanish, there are several factors that impact how respondents approach the completion of this assessment. These factors influenced how individuals interpreted and ultimately responded to the questions posed on the BRIEF2 Spanish Version.

Parents of children within the 8-12 age group endorsed greater executive functioning difficulties when compared with peers ages 13-18 years old. These differences were found across both behavioral and cognitive regulation indices, as well as the global executive composite as identified by the BRIEF2. This suggests that parents of preteens endorsed greater challenges with inhibition, working memory, and planning/organizing. It also suggests that Spanish-speaking parents of preteens may be at risk of over reporting metacognitive skill difficulties when using this instrument. These differences among age groups may be related to how, within western US culture, preteens begin to differentiate themselves from their family of origin's culture and closely align with the culture of their peers. This may lead to tension within the home if the family is more closely aligned with their culture of origin (Gassman-Pines & Skinner, 2017). Additionally, there was a significant difference found between genders across the emotional regulation index and shift scale. Results suggested that Spanish-speaking parents were more likely to attribute strong shifting and emotional regulation skills to girls than boys, which may be due to gender roles and gender based expectations.

Results suggested that the parent's nation of origin did not influence responses between participants. However, when compared across English proficiency levels, the study showed that the families' English proficiency significantly affected how parents responded to the BRIEF2 despite being written and administered in Spanish. More specifically, parents who identified the

mother and/or father as being a native English speaker or fully bilingual (Spanish-English) were more likely to endorse that their children were more behaviorally regulated than the majority of their peers (e.g., majority children and other Spanish-speakers). Parents with limited working proficiency and no English proficiency rated the behavior of their children as much more disruptive than when the father had native English proficiency. This difference is noteworthy and suggests that when the father is bilingual with solid English proficiency, the children's behaviors are compared differently, using different perceptions of typical behavior by the parent. There are several possible reasons for this including challenges with the Spanish language of the BRIEF2. Several parents, who identified as bilingual or native English speakers, reported confusion with regard to how specific questions were translated on the BRIEF2 Spanish Version. They mentioned being able to understand what was being asked based on how they back translated the sentence to English. Ultimately, results of this study suggested that parents with limited working English proficiency were more likely to endorse mildly elevated to potentially clinically elevated scores on the behavioral regulation index. One possibility is that families with limited English proficiency may have enough English capacity to navigate the educational system independently of an interpreter however, they may struggle to fully comprehend the breadth of what was being communicated (Delgado & Ford, 1998). On the other hand, parents of children with no English proficiency were less likely to ask questions throughout the assessment and may be likely to heavily rely on the assistance of an interpreter when navigating a school-based system.

An additional factor that influenced participant responses on the BRIEF2 Spanish Version was the parent's educational levels. Fathers' education levels significantly impacted participant responses as endorsed on the behavioral and cognitive regulation indices as well as the Global Executive Composite. Ultimately respondents of children with fathers' whose

education levels were either at a primary school (i.e., elementary school) or graduate school level were more likely to endorse scores within the mildly elevated to potentially clinically elevated ranges globally and across the indices specified above. Elevated scores among children of fathers with a graduate school education may be attributed to being more versed in majority culture developmental expectations, whereas fathers with a primary school education may approach questions at face value without understanding of the cultural considerations behind the question (e.g., emphasis on autonomy versus relatedness). With regard to mothers' education levels, results indicated that respondents of children with mothers with a middle school education were mostly likely to endorse mildly elevated to potentially clinically elevated scores globally and across all indices. Given the fact that the majority of the sample originally used to develop the BRIEF2 identified as having between 13-15 years of education (Gioia et al., 2015), it is likely that parents with lower education levels will endorse items that might suggest greater executive functioning difficulties. For example, on an item that asked whether the child takes initiative, many lower education parents queried on the meaning of initiative (e.g., definition), whereas bilingual parents with higher education levels queried on the context of the question (e.g., preferred versus non-preferred tasks, in relationship to friends versus family, in the home versus in the community/school). Given that the census (2015) identified that the Hispanic population has among the lowest percentage of education attainment in the nation, some of the questions on the BRIEF2 Spanish Version was normed on Hispanics from a higher education tier. This may lead to a misunderstanding of what is being asked and unintentional over reporting among parents with lower education attainment (Delgado & Ford, 1998).

This research demonstrated important practical implications for assessing culturally and linguistically diverse children's executive functioning skills as identified by parent responses.

The current study showed that parent responses on the BRIEF2 Spanish Version were influenced by several factors including children's ages as well as parents' English proficiency and educational levels. Furthermore, it indicated that although the BRIEF2 has been translated to Spanish, it continues to present as linguistically English-ladened based on the fluctuation of scores surrounding parents' English proficiency levels. This may occur when an assessment is not back-translated (e.g., from Spanish back to English) to check for accuracy. It may also occur when sentences are translated verbatim according to the grammatical structure of the original language which can miss cultural nuances and inadequately convey the intended message to nonprofessionals (Dubois, 2018). Therefore, this study further indicates needed caution when using this assessment within a parent population that has limited English proficiency and lower education levels as scores may be clinically inflated.

The study also presented a number of limitations. One to be noted was the small sample size and particularly limited number of Mexican and Mexican American parents residing on the west coast. Given the snowball method used to gather participants, the vast majority of respondents were located in Miami, FL. As such, many participants presented with higher English proficiency and educational levels than originally anticipated. Additionally, due to IRB requirements, we were unable to gather information surrounding the family's length of stay in the US which impacted the ability to determine acculturation levels among respondents. Finally, although the BRIEF2 Spanish Version is normed as a self-report measure, due to COVID it was administered virtually (e.g., over a phone or video conferencing platform). This allowed an opportunity for families to ask questions with regard to wording and interpretation; however this likely changed how they responded to specific questions.

Conclusions

Determining the accuracy of neuropsychological measures is crucial as the nation moves toward greater levels of ethnic, racial, and linguistic diversity. Understanding how self-report questionnaires like the BRIEF2 Spanish Version may be linguistically and culturally laden is imperative to interpreting the results and appropriately advocating for children and families. This research suggested that key factors influence the accuracy of this measure. It determined that parent education levels may place children at risk of being identified as having executive functioning deficits in comparison to peers. Similarly, children within the preteen years (8-12 age group) were more likely to be identified as having difficulties with cognitive and behavioral regulation when compared with peers of different age groups. Finally, a parent's English proficiency heavily influenced how parents responded to this measure. Those with higher English proficiency may be associated with underreporting behavioral regulation skills, whereas those with limited working English proficiency may be associated with over reporting. Understanding the factors that influence the endorsement of executive functioning skill difficulties on the BRIEF2 Spanish Version may be imperative in decreasing the over-pathologizing and improving the access to care of first and second generation Latin Americans residing in the United States.

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Appendix A

Demographic Information

Demographic Survey

Please respond to each item below as accurately as possible. None of this information will be released to any federal agency. This is solely for the purposes of research.

General:

1. I am completing this survey about my
    a. biological child
    b. adopted child
    c. foster child
    d. grandchild
    e. other _____

2. What is your child's birth month? _____

3. What is your child's birth year? _____

4. Does your child currently live with you? YES NO

5. Which of the following is true for your child?
    a. Only speaks English? YES NO
    b. Only speaks Spanish? YES NO
    c. Is bilingual (Spanish and English) YES NO

6. What gender is your child? _____

7. What is the ethnicity of your child? _____

8. Do you live within a Latin-American community? YES NO

Education level:

9. What is the current grade level of your child? _____

    a. Does your child receive special education services? YES NO
    b. If yes, at what age did the services begin? _____
    c. What is the diagnosis under which your child is eligible for special education services? _____

Biological Parents:

10. What is the nation of origin of the child's biological mother?
    a. United States YES NO
    b. Spain YES NO
    c. Equatorial Guinea YES NO
    d. South American Nation YES NO
       If yes, which one _____
    e. Central American Nation YES NO
       If yes, which one _____

11. What is the nation of origin of the child's biological father?
    a. United States YES NO
    b. Spain YES NO
    c. Equatorial Guinea YES NO
    d. South American Nation YES NO
       If yes, which one _____
    e. Central American Nation YES NO
       If yes, which one _____

12. Does the child's biological mother speak English? YES NO
    If yes, how well _____

13. Does the child's biological father speak English? YES NO
    If yes, how well _____

14. What was the highest education level was completed by the child's biological mother?
    a. Elementary school
    b. Middle school
    c. Some high school
    d. High school
    e. Come college
    f. Trade school
    g. College
    h. Graduate school

15. What was the highest education level was completed by the child's biological father?
    a. Elementary school
    b. Middle school
    c. Some high school
    d. High school
    e. Come college
    f. Trade school
    g. College
    h. Graduate school

16. What was the health of your child's biological mother during pregnancy?
    a. good health with no problems
    b. good health with minor difficulties
    c. poor health (e.g. sick often)
    d. struggled with medications
    e. struggled with substance use.

17. What the pregnancy full term? YES NO

18. What was the age of the biological mother at the birth of this child? _____

19. Were there any complications at birth? YES NO
    If yes, please explain _____

20. Has your child ever experienced a traumatic brain injury? YES NO

21. Has your child ever been diagnosed with a developmental or mental health diagnosis?
    YES NO
    If yes, please explain _____

Thank you for your time and sharing information with us about your child.

Appendix B

Informed Consent Form

Experiment: *Psychometric Validation of the BRIEF2 Spanish Version on a Latin Community*
Principal Investigator: Natalia Rich-Wimmer and Glena L. Andrews, Ph.D.

DESCRIPTION OF STUDY AND INSTRUCTIONS TO PARTICIPANT

This study is to assess the legitimacy of the Behavior Rating Inventory of Executive Functioning 2nd Edition (BRIEF2) Spanish versions on a Latino community. This test is commonly used to assess executive functioning, the skills needed to execute complex tasks through to completion. The data will be used to determine whether cultural factors influence the validity of the tests in order to gauge whether the assessment is free of cultural bias.

One demographic survey and one behavioral trait survey will be completed. Both can be completed in approximately 45 minutes. The demographic survey provides information about the child and her or his parents, including culture of origin, age, and education. The *Behavior Rating Inventory of Executive Functioning 2nd Edition* (BRIEF2), is designed for children to assess the behavioral traits associated with metacognitive skills, such as multitasking, emotional regulation, and inhibition.

This study involves no known risk. All information will be kept confidential. No information received from participants will be released to any local or federal agencies. Data collected will be de-identified, and studied and reported in groups, not individually. Ethical guidelines as detailed by APA are being heeded. This study is being conducted by Natalia Rich-Wimmer, a doctoral student, under the supervision of Glena L. Andrews, Ph.D., ABPP, licensed Clinical Psychologist/neuropsychologist.

Participation in this study is for the purpose of furthering scientific knowledge. You may withdraw from the study at any time. The experimenters are willing to answer questions you may have at any point in the study.

STATEMENT OF AGREEMENT TO PARTICIPATE

In signing this form, I agree to serve as a participant and complete the surveys described above. I have read/been read the description and have been informed as to the nature of this study and procedures involved. I understand the study involves no known risks and I may withdraw at any time without prejudice.

_____ _____
Signature of Participant Date

_____ _____
Signature of Experimenter Date

Appendix C

Permission to Recruit

Experiment: *Psychometric Validation of the BRIEF2 Spanish Version on a Latin Community*
Principal Investigator: Natalia Rich-Wimmer and Glena L. Andrews, Ph.D.

Dear [NAME OF ORGANIZATION CONTACT],

I would like to request permission to invite Spanish-speaking parents of children within your [ORGANIZATION, SCHOOL DISTRICT, PROGRAM] to participate in a research opportunity. This study is to assess the legitimacy of the Behavior Rating Inventory of Executive Functioning 2nd Edition (BRIEF2) Spanish versions on a Latino community. This test is commonly used to assess executive functioning, the skills needed to execute complex tasks through to completion. The data will be used to determine whether cultural factors influence the validity of the test in order to gauge whether the assessment is free of cultural bias. Families who would like to participate in the study will be asked to complete one demographic survey and one behavioral trait survey. Both surveys can be completed in approximately 45 minutes. The demographic survey provides information about the child and her or his parents, including culture of origin, age, and education.

This study involves no known risk. All information will be kept confidential. No information received from participants will be released to any local or federal agencies. Data collected will be de-identified, and studied and reported in groups, not individually. Ethical guidelines as detailed by APA are being heeded. This study is being conducted by Natalia Rich-Wimmer, a doctoral student, under the supervision of Glena L. Andrews, Ph.D., ABPP, licensed Clinical Psychologist/neuropsychologist.

Participation in this study is for the purpose of furthering scientific knowledge. Families may withdraw from the study at any time. The experimenters are willing to answer questions you may have at any point in the study. We look forward to partnering with [NAME OF ORGANIZATION] to bolster the local Hispanic community. Your signature confirms your permission to invite the Spanish-speaking families with students within your [ORGANIZATION, PROGRAM, ETC] to be part of the study.

Sincerely,

Glena Andrews, Ph.D.
Natalia Rich-Wimmer, M.A.
George Fox University, GDCP

I have read the explanation of the research on Latino communities and agree the researcher can recruit volunteers from my [CHURCH ORGANIZATION SCHOOL].

_____	_____
Signature of Organizational Leader	Date
_____	
Printed Name of Organization Leader	
_____	_____
Signature of Researcher	Date

Appendix D

Samples of Spanish Language Tests with Compromised Results

Bure-Reyes, A., Hidalgo-Ruzzante, N., Vilar-López, R., Gontier, J., Sánchez, L., Pérez-García, M. & Puente, A.E. (2013). Neuropsychological test performance of Spanish speakers: Is performance different across different spanish-speaking subgroups? *Journal of Clinical and Experimental Neuropsychology 35*(4), p.404-412.

The study found that Spanish speakers from 4 different nations (Chile, Dominican Republic, Puerto Rico, and Spain) scored significantly different from each other on the Verbal Fluency Test and Serial Learning Test. Whereas their scores more similarly matched on the Rey– Osterrieth Complex Figure Test, the Stroop Color and Word Test, and the Trail Making Test. Results from the study demonstrated that between group differences exist within Spanish speaking populations.

Carballo, J.L., Carter Sobell, L., Dum, M., Sobell, M.B., Fernández-Hermida, J.R., Secades-Villa, R., & García-Rodríguez, O. (2014). Self-change among Spanish speakers with alcohol and drug use disorders in Spain and the United States. *Addictive Behaviors 39*(1), pp.225-230.

Researchers investigated the cross-cultural differences regarding the self-change process among Spanish speaking substance abusers located in Spain and the United States. The results of the study suggested that even though materials used were in Spanish, the language was not enough to mitigate cultural differences.

Nijdam-Jones, A., Rivera, D., Rosenfeld, B., & Arango-Lasprilla, J.C. (2017). A cross-cultural analysis of the test of memory malingering among Latin American Spanish-speaking adults. *Law and Human Behavior 41*(5), pp.422-428.

While exploring the use of the TOMM in 8 Latin American countries (Argentina, Bolivia, Chile, Colombia, Mexico, Paraguay, Peru, and Puerto Rico), researchers discovered significant variability of scores between nations. Researchers highlighted that cultural biases would impact test performance.

Appendix E

Additional Findings

Fathers' language proficiency on the indices of the BRIEF2 (BRI, ERI, CRI, and GEC). No main effect was found for language proficiency with GEC, ERI, or CRI. However, each had large effect sizes. ERI and CRI demonstrated patterns in the same dispersion.

Appendix F

Curriculum Vitae

Education

PsyD Graduate School of Clinical Psychology **Anticipated Graduation: May 2022**
George Fox University
Dissertation: Psychometric Validation of the BRIEF2 Spanish Version on a Latin American Community
Committee: Glena Andrews, Ph.D. (chair), Elizabeth Hamilton, Ph.D., Sabrina Gomez, Ph.D.

MS Graduate School of Clinical Psychology **May 2019**
George Fox University, Newberg, OR

BS Department of Psychology and Counseling **December 2012**
Simpson University, Redding, CA

Clinical Experience

Practicum 3 Student Assessment Administrator, Epilepsy Neuropsychological Clinic **Sept. 2020 – May 2021**
Child Development Rehabilitation Center – OHSU, Portland, OR

- Provided assessment services for children and youth, ages 3-21, with previous and ongoing medical histories related to epilepsy and other neurodevelopmental disabilities.
- Assessed how complex medical conditions and treatment histories impact the emotional and behavioral health of children and youth.
- Developed a flexible battery informed by a hypothesis approach based on the referral question and diagnosis of the patient.
- Completed pre-surgical evaluation to assist the interdisciplinary team determine potential long-term effects of surgery.
- Consulted with child and family to identify emotional, behavioral, and neurocognitive learning issues and made recommendations to increase quality of life.
- Conducted neuropsychological and behavioral evaluations to better understand the impact of complex medical and developmental history on the child's problem solving skills, executive functioning, memory, and adaptive skills.
- Crafted individualized recommendations for outpatient therapy related to ongoing areas of concern.
- Wrote integrated neuropsychological reports to empower families to effectively access academic and community based supports.
- Gained competency in the Stanford Binet 5th Edition, Child and Adolescent Memory Profile, Children's Memory Scale, Memory Validity Profile, and Wechsler Individual Achievement Test 3rd Edition.
- Due to COVID conducted off site neuropsychological assessment learning (i.e., conducted thorough chart reviews, selected individualized batteries based on referral question and diagnosis, observed administration of assessments, scored evaluations, interpreted results, provided virtual feedback to families, and wrote reports).
- Attended and actively participated in weekly neuropsychological didactics covering topics such as subcortical damage, neuroanatomy, brain-behavior relationships, feedback and professional behavior, and influence of culture in neuropsychological assessments.
- Received direct supervision (2 hours a week) from Dr. Emily Olsen, in addition to in-person, live supervision throughout in-person testing.

Supplemental Practicum Student Therapist and Program Development Specialist, Pediatric Primary Care and Long-Term Therapy **February 2020 – May 2021**

Children's Medical Clinic in Newberg, OR

- Provided evidence-based interventions (i.e. CBT, TF-CBT, ACT, Person-Centered, Multicultural, Interpersonal, and Psychodynamic) among children and adolescents referred by the primary care physician for therapeutic and behavioral health services.
- Collaborated with the medical clinic to develop an evidence-based behavioral health care unit within the primary care structure to bolster the mental health of the local pediatric community.
- Developed treatment plans assisting children (ages 6 to 13) to effectively address negative emotions, decrease behavioral struggles, navigate family systems, and cope with school stressors.
- Conducted suicidal assessments to identify risk and protective factors among at-risk children (i.e., low income communities, trauma histories, and developmental disabilities).
- Developed age-appropriate risk management plans in line with organizational policies and procedures to mediate potential self-harm.
- Collaborated with parents and guardians to increase parenting skills within the home and decrease aberrant behaviors.
- During COVID-19, directed and oversaw the program development of telehealth (intervention based) services in collaboration with the medical clinic.
- Coordinated resources and administrative tools to develop a standard of care for incoming clinicians.
- Received direct supervision (1 hour a week) from Dr. Glena Andrews.

Practicum 2 Student Assessment Administrator, Hematology/Oncology Neuropsychological Clinic **Aug. 2019 – Sept. 2020**

Child Development Rehabilitation Center – OHSU, Portland, OR

- Provided assessment services for children and youth, ages 3-21, with previous and ongoing medical histories related to cancer and blood related diseases (e.g., sickle cell disease).
- Assessed how medical and treatment histories may impact the emotional and behavioral health of a children and youth.
- Provided consultation with child and family on emotional, behavioral, and neurocognitive learning issues and made recommendations to increase quality of life.
- Formulated a flexible, hypothesis driven, battery based on the individual patient's medical or developmental history.
- Conducted neuropsychological and behavioral evaluations to better understand the impact of treatment on the child's problem solving skills, executive functioning, memory, and adaptive skills.
- Provided individualized recommendations for outpatient therapy related to ongoing areas of concern.
- Wrote integrated neuropsychological reports to empower families to effectively access academic and community based supports.
- Gained competency in the Wechsler Intelligence Scale for Children 5th Edition, Wechsler Adult Intelligence Scale 4th Edition, Wechsler Abbreviated Scale of Intelligence 2nd Edition, Wechsler Nonverbal Scale of Ability, Leiter International Performance Scale 3rd Edition, Peabody Picture Vocabulary Test 4th Edition, Wide Range Assessment of Memory and Learning 2nd Edition, California Verbal Learning Test 2nd Edition, Developmental NEuroPSYchological Assessment 2nd Edition, The Beery-Buktenica Visual-Motor Integration 6th Edition, Wide Range Assessment of Visual Motor Abilities, Rey Complex Figure Test and Recognition Trial, Grooved Pegboard, Child Behavior Checklist, Behavior Rating of Executive Functioning Inventory 2nd Edition, Rey15-Item Test, Pediatric Quality of Life Screener, and Wide Range Achievement Test 5th Edition.

- Received direct supervision (2 hours a week) from Dr. Justin Lee, in addition to in-person, live supervision throughout testing.
- Due to COVID conducted off site neuropsychological assessment learning (i.e., conducted thorough chart reviews, selected individualized batteries based on patient needs, observed administration of assessments, scored evaluations, interpreted results, and wrote reports).
- During COVID-19 quarantine attended optional practicum student didactics and neuropsychological didactics up to twice a week that were presented by faculty and interns virtually through the CDRC.
- Volunteered as virtual case presenter and didactic lecturer under the supervision of Dr. Justin Lee, Dr. Skylar Leonard, and Dr. Emily Olsen.
- Collaborated with Dr. Justin Lee on neuropsychological research pertaining to the correlation of the Functional Status Scale and neuropsychological outcome of brain tumors in partnership with medical professionals through OHSU.

Practicum 1 Student Therapist, Rural Child and Adolescent Psychological Services **Sept. 2018 – June 2019**

George Fox University, Newberg, OR

- Provided evidence-based interventions (i.e. CBT, ACT, Person-Centered, Multicultural, and Interpersonal) among 13 students at Yamhill-Carlton High School.
- Developed treatment plans assisting students to effectively address negative emotions, manage difficult family systems, and cope with school stressors.
- Conducted suicide inquiries and risk assessments to identify risk and protective factors among students with suicidal ideation.
- Developed age-appropriate suicide assessment and risk management plans in line with organizational policies and procedures to mediate potential self-harm.
- Assessed and developed psychological reports for IEP, 504, and TAG recommendations for Yamhill-Carlton Intermediate School and Carlton Elementary School.
- Gained competency in the Woodcock Johnson 4th Edition Achievement and Cognitive Assessments, the Behavior Assessment System for Children 2nd Edition, the Adaptive Behavior Assessment System 3rd Edition, the Roberts Apperception Test for Children 2nd Edition, House-Tree-Person Test, Wide Range Intelligence Test, Wide Range Achievement Test, and Delis-Kaplan Executive Function System.
- Received direct supervision (3 hours) from Dr. Elizabeth Hamilton, Dr. Andrew Kenagy, and Graduate Teaching Assistants, Dylan Seitz, M.A, Lynsey Fringer, M.A, and Daniel Soden, M.A.

Pre-practicum Student, Graduate School of Clinical Psychology **Jan. 2018 – May 2018**

George Fox University, Newberg, OR

- Conducted 10 – 50-minute sessions for 2 undergraduate simulated clients.
- Developed treatment plans addressing presenting issues and client goals.
- Conducted intake interviews and developed intake reports to effectively document client history.
- Maintained weekly documentation following sessions, including progress notes in TherapyNotes.
- Reviewed recorded sessions for continued education and improvement of therapeutic techniques.
- Received direct supervision (1.5 hours) from Dr. Glena Andrews, and Graduate Teaching Assistant, Arielle Marston, M.A.

Depression Support Group Liaison **Sep. 2017 – Dec. 2017**

George Fox University, Newberg, OR

- Facilitated weekly group discussions following the curriculum of *Nedley Depression & Anxiety Recovery Program.*

- Established supportive environment among 4-8 individuals experiencing depression and anxiety.
- Received direct supervision (1.5 hours) from Dr. Tami Rodgers, Dr. Glena Andrews, and Graduate Teaching Assistant, Courtney Chapin, M.A.

Bilingual Service Coordinator **May 2015 – March 2017**
Far Northern Regional Center, Redding, CA

- Coordinating vital services and supports for individuals with Developmental Disabilities, primarily among the Hispanic community.
- Advocated and managed a primary caseload of 73 cases, as well as assisted in the maintenance of an additional 27 vacant bilingual cases from October 2015 to October 2016.
- Acted as the primary bilingual service coordinator in Redding throughout Person Centered Pilot.
- Collaborated with multi-disciplinary teams (academic, in home services, social security, child protective services, adult protective services, department of rehabilitation, etc) to provide exemplary support for families and individuals of families with developmental disabilities.
- Increased expertise and understanding in Social Security Administration, MediCal, In-Home Health Services and other generic resources in order to bolster the Latin American Community throughout Tehama and Shasta Counties.

Research Experience

Psychometric Validation of the BRIEF2 Spanish Version on a Latin American Community **September 2018 – April 2021**

- Collaborated with Dr. Glena Andrews, Dr. Elisabeth Hamilton, and Dr. Sabrina Gomez to assess the psychometric validity of the Behavior Rating Inventory of Executive Function - 2nd Edition (*Spanish Version*)
- Coordinated collaboration with local and national organizations that provide services to Spanish-speaking parents of children ages 5 to 18 years of age.
- Due to COVID-19, virtually gathered data (i.e., demographic questionnaires) and administered parent questionnaires (BRIEF2 Spanish Version) to consenting participants (41 Spanish-speaking parents) over zoom and phone.
- Individually scored BRIEF2 Spanish Version questionnaires and inputted data (i.e., BRIEF2 results and demographic questionnaires) into SPSS.

Developing a Culturally Sensitive Neuropsychological Battery for Evaluating Brazilian Children with Zika-related and other Brain Anomalies **January 2019 – May 2021**

- Partnered with IRC5, George Fox University (Newberg, OR), and D'Or (Rio de Janeiro, Brazil) on international research.
- Collaborated with Dr. Glena Andrews, Dr. Lynn K. Paul, Dr. Fernanda Tovar Moll, Dr. Myriam Monteiro within the United States and Brazil to develop a culturally sensitive neuropsychological battery for evaluating Brazilian children with ACC, and Zika-related brain anomalies.

Serial Neuropsychological Assessment Toward a Reliable Concussion Protocol **May 2019 – December 2019**

- Collaborated with Dr. Glena Andrews and Daniel Soden, M.A., 4th year student to gather information for a dissertation on creating a reliable neuropsychological assessment battery for athletes who undergo concussions.
- Administered neurological assessments including Test of Memory Malingering (TOMM), Hopkins Verbal Learning Test-Revised (HVLT-R), Brief Visuospatial Memory Test-Revised (BVMT-R), select subtests from Wechsler Adult Intelligence Scale 4th Edition (WAIS-IV), Controlled Oral Word

Association Test, Ruff 2 & 7 Selective Attention Test, Trails A & B, STROOP Color Word Test Adult Version, and Symbol Digit Modalities Test.
- Scheduled undergrad participants

The Biopsycho-Spiritual Influence of Meditation on Executive Functioning, George Fox University **August 2018 – January 2019**
- Collaborated with Dr. Glena Andrews, Dr. Mark McMinn and Sean Robertson, 2nd year student, to gather information for dissertation regarding biopsycho-spiritual influence of Christian meditation on executive functioning.
- Administered neurological assessments including Electroencephalogram and Galvanic Skin Response
- Scheduled undergrad participants

Effect of Solution-Focused Therapy on Resilience in Athletes: An EEG Study, George Fox University **February 2018 – May 2018**
- Collaborated with Dr. Glena Andrews, Dr. Roger Bufford, and Lori Napier, M.A.,3rd year student to gather information for a dissertation regarding decreasing stress levels in athletes.
- Administered neurological assessments including Electroencephalogram and Galvanic Skin Response
- Scheduled undergrad participants

Diversity and Inclusion Specialist, Far Northern Regional Center **March 2017 – June 2017**
- Collaborated with multicultural families to address the disparity of services among African Americans, Latin Americans, Eastern Indians, Asians (primarily Hmong population), and Native Americans Indians.
- Gathered pertinent information to advocate for the establishment of culturally sensitive resources for individuals and families of individuals with Developmental Disabilities.
- Collaborated with the Association of Regional Center Agencies (ARCA) in advocating for the redistribution of funds on a legislative level.

Bilingual Research Team Member, Far Northern Regional Center **October 2015 – November 2016**
- Acted as the primary bilingual service coordinator in Redding throughout Person Centered Pilot.
- Gathered pertinent information to determine whether new software would increase effectiveness among case management and service coordinators.

Teaching Experience

Teaching Assistant **June - July 2020**
George Fox University, Newberg, OR
- Child Neuropsychology 585, Graduate School of Clinical Psychology
  - Assisted in the development and implementation of instructional plans for a pediatric neuropsychology multi-year (i.e., 1st through 4th year students) elective class
  - Provided constructive feedback and grading to students on in class assignments.
  - Promoted individualized educational development on an as needed basis with students.
  - Collaborated with teacher and students to identify structural issues within the course structure and aided in the development of appropriate solutions.

Virtual Guest Lecturer **June 2020**
George Fox University, Newberg, OR
- Child Neuropsychology 585, Graduate School of Clinical Psychology

- Revised the 1-hour lecture created for the CDRC Practicum Student Didactics (*Childhood Cancer: Treatment, Late-Effects, and the Kitchen Sink*) to a 2-hour lecture for a split class (multi-year elective class with 1st through 4th year students).
- Facilitated conversations surrounding different types of treatment (i.e., chemotherapy, radiation, bone marrow transplants, and resections)
- Identified research surrounding possible long-term effects associated with specific types of childhood cancers (e.g., leukemia, gliomas, medulloblastomas, neuroblastoma, and nephroblastoma).
- Through scaffolding associated how different structures within the body and brain (e.g., hematologic system, central nervous system, endocrine system, and urinary system) may be impacted according to treatment types.
- Bracketed how impact to specific brain and body structures may impact cognition and behavior.

Virtual Volunteer Lecturer **May 2020**
Child Development and Rehabilitation Center, Oregon Health and Science University

- *Childhood Cancer: Treatment, Late-Effects, and the Kitchen Sink*, Practicum Student Didactics
  - Under the supervision of Dr. Justin Lee created a 1-hour lecture on childhood cancer treatment and late-effects (i.e., neuropsychological and psychosocial) to present to practicum students and neuropsychology supervisors.
  - Facilitated conversations surrounding different types of treatment (i.e., chemotherapy, radiation, bone marrow transplants, and resections) as well as research surrounding possible long-term effects associated with specific types of childhood cancers (e.g., leukemia, gliomas, medulloblastomas, neuroblastoma, and nephroblastoma).

Virtual Guest Speaker **April 2020**
George Fox University, Newberg, OR

- Multicultural Psychotherapy 541, Graduate School of Clinical Psychology
  - Provided 2nd year students with a brief historic and cultural understanding of Latin American communities residing within the United States.
  - Identified cultural differences within Latin American populations that may influence treatment.
  - Facilitated group conversation surrounding how cultural factors influence perception and cognition within the Latin American population in contrast to majority US.

Volunteer Tutor **Jan. – May 2020**
George Fox University, Newberg, OR

- Facilitated weekly private meetings with students to review course content and acquire a better understanding within targeted weak areas as well as the subject as a whole.
- Adapted teaching style to unique needs of students.
- Effectively communicated student needs to the teaching professor(s).
- Subjects included Bio Basis Behavior PsyD 509 and Neuropsychology Assessment Interpretation PsyD 528.

Co-Chair, Multicultural Committee **Dec. 2018 – May 2021**
George Fox University, Newberg, OR

- Developed position descriptions and reorganization of committee leadership to create effective and sustainable structure.
- Co-Coordinated events with leadership team to promote clinical growth and community engagement with topics of multiculturalism including, but not limited to, racial & ethnic equity discussions, religious & spiritual diversity, ableism & disability, leadership from differing cultural perspectives, and immigration.

- Managed budget and expenditure requests between committee and student council to ensure adequate funding for activities.
- Coordinated logistics and communications with guests and department through attention to detail and time management.
- Designed various marketing materials for print and digital media that match that represent a committee culture.
- Collaborated on event structure, the facilitated communication between guest speakers and interdepartmental entities.
- Facilitated peer advocacy and support.

Student Editor and Writing Coach **Sept. – Dec. 2019**
George Fox University, Newberg, OR
- Facilitated weekly meetings with a student to review, amend, and edit reports.
- Supported incoming first year students through weekly peer mentorship meetings.

Teaching Assistant **Sept. – Dec. 2019**
George Fox University, Newberg, OR
- Integration, School of Clinical Psychology
  - Facilitated small group conversations to address the integration of religious and spiritual faith perspectives in therapy.
  - Explored how complex cultural factors, including race, ethnicity, SES, gender and sexual identity, may influence self-concepts and how therapists relate to clients.

Substitute Teacher **Feb. 2018**
George Fox University, Newberg, OR
- Culture and Psychology 353, Undergraduate Psychology Department, College of Behavioral and Health Sciences
  - Substitute taught class on Chapter 5: Culture and Cognition
  - Facilitated small group conversations to address how cultural influences perception and cognition.

Teaching Assistant **Jan. – June 2018**
George Fox University, Newberg, OR
- Racial Healing, Undergraduate Psychology Department, College of Behavioral and Health Sciences
  - Facilitated small group conversations to address cultural understandings on race, ethnicity, and topics of racial healing.

Guest Lecturer **August 2013**
AZ Schools of Ministry, Tucson, Phoenix, Cottonwood, Prescott, Goodyear, and Gilbert, AZ
- Developed curriculum for Integration of Christianity and Sensitivity to Cross-Culturalism.
- Presented as circuit speaker at regional schools throughout Arizona.

Workshop Presenter **Feb. 2012**
Bethel Church, Managua, Nicaragua
- Trained local population in themes of *Valuing the Perspectives of the Youth, Foundational Principles for an Effective Children's Program, and Emotional Healing.*

Workshop Presenter **Mar. 2011**
Bethel Church, Vladivostok and Nahotka, Russia

- Coordinated and presented an all-day training featuring lectures on *Cultural Humility*, *Emotional Healing*, *The Goodness of God*, and *Hearing God's Voice*.

Workshop Presenter **Mar. 2010**
Bethel Church, Sao Paolo, Brazil
- Presented a lecture exploring *Cultural Humility / Gender-Roles and Ageism* at a Pastoral Conference.

Relevant Experience

Diversity and Inclusion Specialist **March 2017 – June 2017**
Far Northern Regional Center, Redding, CA
- Established new diversity position for a state and federally funded program to address disparity of access of resources within the minority populations.
- Collaborated closely with service coordinators and upper management to develop a plan on how to best serve the minority populations located throughout the 9 counties served by Far Northern Regional Center.
- Created and hired staff for additional programs developed to help overcome linguistic and cultural barriers for our Spanish-speaking families.
- Developed curriculum to increase cross-cultural emphasis among Developmental Disability programs in Northern California.
- Offered trainings among Developmental Disability Centers to increasing diversity and integration between multicultural families receiving services and case management providers.
- Facilitated family specific trainings to bilingual families who were previously unable to receive resource training due to language deficits.
- Collaborated with Disabilities Rights of California and Office of Clients' Rights Advocacy (OCRA) to provide small group trainings for parents of children with developmental disabilities. Specific trainings focused on Individualized Educations Plans (IEP) and parent's rights within the educational system, Navigating In-Home Health Services (IHSS), Legal practices of conservatorship, and Navigating Social Security Administration (SSA) and accessing benefits.
- Collaborated with the Sikh Temple and Mosque to coordinate the 2017 Vaisakhi festival (festival of non-violence) and offer diversity education to the rural county of Shasta.

Bilingual Service Coordinator Person Centered Pilot Trainer **Nov. 2016 – Mar. 2017**
Far Northern Regional Center, Redding, CA
- Trained service coordinators in new software implementation.
- Trained new employees on Person Centered interviewing.

Cell-Life-Group Ministry Leader **Jan. 2014 – Dec. 2014**
New Thing Fellowship, Homestead, FL
- Reorganized structure and facilitated cross-cultural relations between nonprofit organization and community.
- Supervised nurturing environment catering to individuals of diverse cultural and religious backgrounds.

Director of Children's Program **Jan. 2013 – Nov. 2013**
The Upper Room, Tucson, AZ
- Coordinated and implemented an inner-city children's mentoring program for grades K-5th.
- Determined a budget for recreational program
- Designed and implemented age appropriate curriculum, including teachings, games and arts and crafts.
- Identified, recruited, and trained potential volunteers.
- Supervised instructional staff.

International Team Leader **Feb. 2012**
Bethel Church, Managua, Nicaragua
- Gathered and trained small team in cross-cultural perspectives.
- Established relationship with local leaders.
- Bridged gap between international and national liaisons.
- Collaborated with several local entities including religiously affiliated organizations and community-based programs working with at risk youth.
- Developed curriculum for children's program within local orphanages.
- Translated on national television for international circuit speaker.

International Team Leader **Mar. 2011**
Bethel Church, Vladivostok and Nahotka, Russia
- Co-led a three-week outreach team counseling within 2 Russian organizations.
- Oversaw and mentored small team of internationals.
- Established relationship with local leaders.
- Bridged gap between international and national liaisons.
- Collaborated with several local entities including religiously affiliated organizations and community-based programs working with at risk youth and substance abuse rehab clients.

Mentor and Interpreter **Mar. 2010**
Bethel Church, Sao Paolo, Brazil
- Translated for a three-week outreach team of internationals.
- Worked closely with orphanages in several Brazilian ghettos developing curriculum for children's programs.
- Established relationship with local leaders.
- Bridged gap between international and national liaisons.
- Collaborated with several local entities including religiously affiliated organizations and community-based programs working with at risk youth.

International Food and Art Festival Co-Leader **May 2010**
Bethel Church, Redding, CA
- Designed and facilitated a 3-day International Food and Art Festival from which proceeds went to Feed Mozambique (Iris Ministries).

Presentations and Publications

Journal Papers in Preparation

Soden, D., Andrews, G., Chakara, F., Seitz, D., Eddy, K., Rich-Wimmer, N., Gibson, A. (In Preparation). Serial Neuropsychological Testing toward a Reliable Concussion Protocol.

Conference Presentations

NAN 40th Annual Conference Virtual Edition Poster Presenter **October 2020**
1st author and poster presenter at virtual conference in Chicago, IL
- Completed research surrounding gender-related behavioral differences in children with partial and complete agenesis of the corpus callosum with an emphasis on exploring attention, rule breaking, and aggressive behaviors identified by the CBCL from archival data collected by Dr. Glena Andrews.
- Conducted a repeated measures MANOVA with attention problems, rule-breaking, and aggressive behavior for gender, age, and diagnosis (i.e., partial or complete ACC) as identified by the CBCL.

- Created audio recording for student poster session on results indicating that females with partial ACC exhibit worsening attention problems with age, while males with partial ACC decrease over time. Additionally, how females with partial ACC exhibited significant reductions in aggressive behaviors over time.

INS Brazil Conference Poster Presenter **July 2019**
2nd author and poster presenter in Rio de Janeiro, Brazil

- Completed research surrounding neurophysiological responses to interpersonal conflict from archival data collected by Dr. Kylie Coleman and Dr. Glena Andrews.
- Conducted a meta-analysis of research articles that address neurophysiological and neuropsychological effects of domestic violence among Latin Americans.
- Presented during a student poster session on the prevalence rates of domestic violence among Latin Americans residing in the United States and limited understanding of effects on this population.

INS Brazil Conference Poster Presenter **July 2019**
1st author and poster presenter in Rio de Janeiro, Brazil

- Completed research surrounding the physiological responses to masculinity and shame from archival data collected by Dr. Christopher Spromberg, Dr. Nancy Thurston, and Dr. Glena Andrews.
- Conducted research surrounding multicultural perceptions of masculinity norms and neurophysiological responses to shame.
- Presented during a student poster session how race and ethnicity plays a role in how individuals respond physiologically to shame.

NCSPP Student Delegate **Jan. 2019**
Poster presentation at NCSPP MidWinter Conference, New Orleans, LA.

- Researched and completed meta-analysis on the application of assessments translated into Spanish.
- Presented poster on disrupting the assumptions that all Spanish language assessments are applicable within the Latinx population residing in the United States.

Caribbean Conference **Nov. 2018**
3rd author on poster presented at the Caribbean Conference, Kingston, Jamaica.

- Assisted in the research of FAS BeST: Creating Awareness in Other Cultures
- Translation of poster into Spanish language.

Professional Trainings

Lee, J. (October 2020). *Subcortical Case Presentation.* Oregon Health and Science University, Child Development and Rehabilitation Center Practicum Student Didactics, Portland, OR (virtual)

Duvall, D. (October 2020). *Subcortical Neuroanatomy Review.* Oregon Health and Science University, Child Development and Rehabilitation Center Practicum Student Didactics, Portland, OR (virtual)

Olsen, E. & Leonard, S., (September 2020). *Neurodevelopment.* Oregon Health and Science University, Child Development and Rehabilitation Center Practicum Student Didactics, Portland, OR (virtual)

Olsen, E., (September 2020). *Brain Development and Plasticity.* Oregon Health and Science University, Child Development and Rehabilitation Center Practicum Student Didactics, Portland, OR (virtual)

Leonard, S. (June 2020). *Diversity Considerations in Neuropsychological Assessment.* Oregon Health and Science University, Child Development and Rehabilitation Center Practicum Student Didactics, Portland, OR (virtual)

Turner, E. (May 2020). *Assessment of Medical Decision Making Capacity.* Oregon Health and Science University, Child Development and Rehabilitation Center Practicum Student Didactics, Portland, OR (virtual)

Hall, C.B. (May 2020). *Bridging System to Support Success for All Learners.* Oregon Health and Science University, Doernbecher Children's Hospital Neuropsychological Didactics, Portland, OR (virtual)

Leonard, S. & Olsen, E. (May 2020). *Behavioral Treatment of Psychogenic Nonepileptic Seizures (PNES).* Oregon Health and Science University, Child Development and Rehabilitation Center Practicum Student Didactics, Portland, OR (virtual)

Barnard, E. (May 2020). *Agenesis of the Corpus Callosum.* Oregon Health and Science University, Child Development and Rehabilitation Center Practicum Student Didactics, Portland, OR (virtual)

Lee, J. (April 2020). *Visual Systems.* Oregon Health and Science University, Doernbecher Children's Hospital Neuropsychological Didactics, Portland, OR (virtual)

Williams, C.N. (April 2020). *Survive and Thrive: Longitudinal Management of Pediatric Traumatic Brain Injury.* Oregon Health and Science University, Doernbecher Children's Hospital Neuropsychological Didactics, Portland, OR (virtual)

Stolwyk, R., Hammers, D., Harder, L., Cullum, M. (April 2020). *Teleneuropsychology (TeleNP)in Response to COVID-19: Practical Guidelines to Balancing Validity Concerns with Clinical Need.* International Neuropsychological Society (INS) Webinar

Fombonne, E. (Dec. 2019). *The Autism-Vaccine Controversy.* Oregon Health and Science University, Department of Psychiatry Grand Rounds, Portland, OR.

Sibley, M. (Oct. 2019). *Late-Onset ADHD: Fact or Fiction?* Oregon Health and Science University, Department of Psychiatry Grand Rounds, Portland, OR.

Forster, C. (Oct. 2019). *Intercultural Communication*. George Fox University, Graduate School of Clinical Psychology, Fall Colloquia, Newberg OR.

Worthington, E. (Sept. 2019). *Forgiveness*. George Fox University, Graduate School of Clinical Psychology Fall Colloquia, Newberg, OR.

Vasterling, J. (July 2019). *Neuropsychological Assessment in Posttraumatic Stress - Avaliação Neuropsicológica no Estresse Pós-Traumático*, INS Rio de Janeiro, Brazil.

Calvo, B. (July 2019). *New Developments in Neuropsychological Assessment - Novos Desenvolvimentos na Avaliação Neuropsicológica*, INS Rio de Janeiro, Brazil.

Ostorsky, F. (July 2019). *Child Abuse: Emotional Processing in Typical and Atypical Conditions - Abuso Infantil: Processamento Emocional em Condições Típicas e Atípicas.* INS Rio de Janeiro, Brazil.

Anderson, V. (July 2019). *Precision Medicine, Autism, and Social Disorder: The Role of Neuropsychology - Medicina de Precisão, Autismo e Transtorno Social: O Papel de Neuropsicologia.* INS Rio de Janeiro, Brazil.

Fernández, A. (July 2019). *Transcultural Neuropsychological Tests - Testes Neuropsicológicos Transculturais.* INS Rio de Janeiro, Brazil.

Haase, V. (July 2019). *School-based Neuropsychology: Diagnosis of Dyscalculia - Neuropsicologia Escolar: Diagnóstico de Discalculia.* INS Rio de Janeiro, Brazil.

Arango, J.C. (July 2019). *INS Arthur Benton Award for Intermediate Career Research - Prémio INS Arthur Benton para Pesquis de Carreira Intermediária.* INS Rio de Janeiro, Brazil.

Kessels, R. (July 2019). *Learning From Your Mistakes? Efficacy and Mechanisms of Learning Without Errors in Aging and Brain Injuries - Aprendizagem a Partir Dos Seus Erros? Eficácia e Mecanismos da Aprendizagem Sem Erros no Envelhecimento e Nas Lesões Cerebrais.* INS Rio de Janeiro, Brazil.

Flores, R. (July 2019). *Culture and Neuropsychology - Cultura e Neuropsicologia.* INS Rio de Janeiro, Brazil.

Paz Fonseca, R. (July 2019). *Cognitive Reserve in Aging, CCL, and Mild Dementia: Executive Functions, Episodic Memory, and Neural Correlates - Reserva Cognitiva no Envelhecimento, no CCL e na Demência Leve: Funções Executivas, Memória Episódica e Correlatos Neurais.* INS Rio de Janeiro, Brazil.

Millkey, A., & Safi, D. (Feb. 2019). *Forensic Psychology*. George Fox University, Graduate School of Clinical Psychology Spring Colloquia, Newberg, OR.

Ginsberg, A., Studwell, K. (Jan. 2019). *Advocacy Applied: APA Interactive Advocacy Skills Worskshop.* (1.25 CE) NCSPP MidWinter Conference, New Orleans, LA.

Hill, L., Palmer, B. (Jan. 2019). *Naming It Podcast: De Disruptive – Innovative Tools for Enhancing Learning.* (1.25 CE) NCSPP MidWinter Conference, New Orleans, LA.

Bobova, L. (Jan. 2019). *Encouraging and Empowering Faculty and Administrators to Become More Effective Instructors, Mentors, Allies, and Advocates for Linguistically Diverse Doctoral Students.* (2 CE) NCSPP MidWinter Conference, New Orleans, LA.

Metzger, L.H.J., Nadkarni, L., Alexander, A. (Jan. 2019). *On Fish, Water, and What We Don't Know We Don't Know: Distrupting Privilege in Graduate Clinical Training.* (2 CE) NCSPP MidWinter Conference, New Orleans, LA.

Baca, L., Bashah, E. (Jan. 2019). *Application of New Multicultural Guidelines to Improve Training Programs for Latinx Immigrant Justice in Treatment, Assessment and Research.* (2 CE) NCSPP MidWinter Conference, New Orleans, LA.

Hill, L., Palmer, B. (Jan. 2019). *Embodying the 5th Force Cultivating our Professional Identify as Agents of Change through Social Justice and Social Media.* (1.25 CE) NCSPP MidWinter Conference, New Orleans, LA.

Pengally, S. (Oct. 2018). *Old Pain in New Brains.* George Fox University, Graduate School of Clinical Psychology Fall Grand Rounds, Newberg, OR.

McMinn, L., McMinn, M. (Sept. 2018). *Spiritual Formation and the Life of a Psychologist: Looking Closer at Soul-Care.* George Fox University, Graduate School of Clinical Psychology Fall Colloquia, Newberg, OR.

Sordahl, J. (Nov. 2017). *Tele-health.* Colloquium presentation at George Fox University, Graduate School of Clinical Psychology Fall Colloquia, Newberg, OR.

Gil-Kasiwabara, E. (Oct. 2017). *Using community based participatory research to promote mental health in American Indian/Alaskan Native children, youth, and families.* Colloquium presentation George Fox University, Graduate School of Clinical Psychology Fall Grand Rounds, Newberg, OR.

Dunn, D. (Sept. 2017). *Leadership Training Workshop*. Eight hour presentation at George Fox University, Graduate Department of Clinical Psychology, Newberg, OR.

Health and Human Services. (May 2017). *Cultural diversity within the human service world.* Eight hour presentation with Health and Human Services. Chico, CA.

Candela, K. (Aug. 2016). *Office of client's rights – assisting families to understand their legal rights in an IEP.* Far Northern Regional Center, Redding, CA.

Candela, K. (June 2015) *Office of client's rights – IEP and 504 training.* Far Northern Regional Center, Redding, CA.

Professional Affiliations

INS (International Neuropsychological Society) Graduate Student Member since June 2019
NAN (North American Neuropsychological) Graduate Student Member since April 2019
APA (American Psychological Association) Graduate Student Member since 2017

Committee and Community Service

Multicultural Committee Executive Board, George Fox University	**Sept. 2019 – May 2021**
Student of Color Leadership Team, George Fox University	**Nov. 2017 – May 2021**
Neuropsychology SIG (Special Interest Group), George Fox University	**Sept. 2017 – May 2021**
Student Council, First Year Representative, George Fox University	**Oct. 2017 – Oct. 2018**

Scholarships, Awards, Honors, and Grants

- Multicultural Scholarship Award, Graduate School of Clinical Psychology — **2017-2021**
  George Fox University
- Special Commendation, Graduate School of Clinical Psychology — **May 2019**
  George Fox University
- Alpha Sigma Lambda Honor Society — **2012-Present**
  Simpson University
- Phi Theta Kappa Scholarship — **2006-2009**
  Palm Beach Community College
- Phi Theta Kappa Honor Society — **2006-2009**
  Palm Beach Community College
- PBCC Honors Society — **2006-2009**

Palm Beach Community College

Technical Skills

- Working Proficiency in Microsoft Office (Word, Excel, PowerPoint, Publisher)
- Working Proficiency in Google Programs (Docs, Sheets, Forms)
- Working Proficiency in MAC iOS
- Working Proficiency in SPSS
- Knowledge in Prezi

Language Skills

- Spanish (Fluent)
- Portuguese (Conversational: Limited Working Proficiency)