

EXPLORING A RELATIONSHIP BETWEEN  
SOCIAL ANXIETY DISORDER AND BILINGUALISM

by

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## **ABSTRACT**

This study investigated the possible relationship between bilingualism and social anxiety disorder. Past research has indicated developmental delays in language as increasing risk for other psychological difficulties. With the pressure to learn two languages, possibly in the drastically different environments of home, school, and/or work, individuals may be vulnerable to becoming socially anxious in conjunction with language use. This study examined a series of factors surrounding linguistic development and reports of social anxiety. Participants were divided into 4 groups: Socially Anxious (SA; n = 43) monolinguals, Non-Socially Anxious (Non-SA; n = 81) monolinguals, SA bilinguals (n = 30), and Non-SA bilinguals (n = 43). Measures of social anxiety, linguistic ability, and demographic information were collected and compared. The results of this study showed no direct link between bilingualism and SAD. However results raised other questions as there was an overrepresentation of SA bilinguals having accents when compared with Non-SA bilingual individuals.

## **DEDICATION**

To my mother, whom I would not have triumphed so much without.  
To my father, whom instilled curiosity in me, and encouraged me to reach higher.  
And, to my grandfather, for demonstrating how a human should endeavor to be.  
Thank you for being a perpetual foundation.

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## **CHAPTER ONE: INTRODUCTION**

United States immigrants are often protective of their native language while acquiring the English language. In recent years, the number of citizens who speak multiple languages has increased. Unfortunately, there has been a simultaneous lack of English education, leaving a significant proportion of the American population struggling or completely lacking the skills to effectively use the English language (Ryan, 2013). In addition to this cultural linguistic shift, there has been a demographic change in the US, with the child immigrant population growing rapidly (Mather, 2009). Thus, a large number of people in the US are learning English for the first time, yet there is little examining how the stress of learning multiple languages may affect an individual.

Social anxiety disorder (SAD – previously known as Social Phobia) is an extremely common disorder and generally arises during childhood and adolescence (Kessler et al., 2005; Ruscio et al., 2008; Silverman et al., 1999; Somers et al., 2006; Weiss & Last, 2001). Some core features of the development and maintenance of SAD are experiencing or interpreting negative social evaluation, having difficulties implementing social skills properly, and escaping social situations (American Psychiatric Association, 2013; Beidel et al., 2010; Davidson, Hughes, George, & Blazer, 1993; Del-Monte et al., 2013; Edelman & Baker, 2002; Heimberg, Hope, Dodge, & Becker, 1990; Rapee, & Lim, 1992; Turner, Beidel, Dancu & Keys, 1986; Wittchen & Beloch, 1996). These developmental and maintenance aspects of SAD may have a greater effect on linguistically vulnerable populations. Given the prevalence of SAD, its roots in childhood, the cultural shift in the American population, and the unique linguistic path these bilingual children

experience, there has been a surprising lack of research to examine the possible relationship between SAD and bilingualism.

### *Social Anxiety Disorder*

SAD is one of the most widespread mental disorders in the United States, with a lifetime prevalence of 8-13% for the general population (Kessler et al., 2005; Ruscio et al., 2008; Somers et al., 2006). The onset of SAD typically occurs between ages 11 and 15 (Kessler et al., 2005; Silverman et al., 1999; Weiss & Last, 2001). Generally, the earlier the age of onset the greater the likelihood of additional psychopathology for individuals with the disorder, including comorbid anxiety disorders, depression, substance use, and conduct problems (Beidel & Turner, 1998; Grant et al., 2005; Kessler, 2003; Lecrubier, 1998). Those who experience SAD present a persistent and intense fear of social situations in which they may be judged or scrutinized by others (DSM-V; American Psychiatric Association, 2013). In addition, those with SAD often avoid any anxiety-provoking social or performance situations (e.g., avoiding giving presentations, conversations, and/or public speaking arrangements; Turner, Beidel, Dancu & Keys, 1986). In many instances, the feared situations cause physiological and psychological reactions that result in significant distress and functional impairment during social interactions (Davidson, Hughes, George, & Blazer, 1993; Edelman & Baker, 2002; Heimberg, Hope, Dodge, & Becker, 1990; Turner et al., 1986; Wittchen & Beloch, 1996). Unfortunately, repeated avoidance of social situations over a long period of time (especially if the disorder begins early in life) may result in dysfunctional social skills (e.g., poor eye-contact, difficulty with expressive behaviors and/or maintaining clear vocal tone; Beidel et al., 2010; Del-Monte et al., 2013; Rapee, & Lim, 1992).

### ***Bilingual Population***

According to the Census Bureau, just over 60.5 million Americans ages 5 and over speak languages other than English at home, equating to roughly 21% of the population (Ryan, 2013). Of these Americans, only 58.2% reported themselves as speaking English “very well,” 19.4% as “well,” 15.4% as “not well,” and 7% as “not at all” (Ryan, 2013). Thus, a significant portion of the U.S. population struggles with English, as the 22.4% who rated their English as “not well” or worse translates to approximately 13.5 million people. It is expected that this population will be at a disadvantage financially, socially, and academically, and perhaps may be more susceptible to psychopathology. In parallel, America’s child immigrant population has grown quickly in the past few decades. In 1990, one out of every seven children was from an immigrant family. That number has grown to one in every five children over twenty years, and it is estimated that this number will increase again to one out of every three children by the year 2020 (Mather, 2009).

### ***Bilingual Relation to Psychopathology***

Few studies have closely examined psychopathology in bilingual samples. The extent to which literature has examined vulnerability factors for psychopathology in bilingual and minority groups in the United States primarily lies in the Latino population. For example, Latino youth have the highest rates of depression, suicidal thoughts or attempts, and substance abuse (illegal injection drugs, ecstasy, and cocaine; Eaton et al., 2012; Zayas, Lester, Cabassa, & Fortuna 2005). Studies have also found higher levels of behavioral problems in US born Latinos (Eaton et al., 2012) and lifetime prevalence of mental disorders was much higher for US born Latinos compared to foreign-born Latinos (Alegría et al., 2007). These studies have led to inquiries about the unique vulnerability factors in Latinos relative to other ethnic groups in the



United States. Several protective factors exist for Latino children of immigrants as well, such as religious practice, community support, dual frame of reference, and high educational values (Fuligni, 2001), and many children of immigrants have shown high levels of resilience (Masten, 1994). These findings led to the notion of the “immigrant paradox” (Alegría et al., 2007; Coll, Marks, 2011; Perreira, Harris, Lee, 2006), the finding that first generation immigrants have much higher resilience, better physical health, and lower rates of depression, anxiety and substance abuse, than second and third generation US-born Latinos (Alegría et al., 2008; Bankston, & Min Zhou, 2002; Kao, & Thompson, 2003; Krause et al., 2008; Portes, & Rumbaut, 2001).

In addition to the aforementioned problems many Latino youth face, this group often must manage the process of acquiring and developing two languages. This may apply to all bilingual or multilingual individuals in addition to the Latino youth studied previously. Longitudinal studies have found that the presence of speech and/or language disorders (developmental delays, or other speech or language pathology) predict greater intensity and prevalence of psychological disorders such as Attention-Deficit/Hyperactivity Disorder, learning disorders, anxiety, and depression (Cantwell & Baker, 1991). Some European studies have found that bilingual non-native people (Turkish & Surinamese) living in a foreign country (the Netherlands) were more likely to be diagnosed with affective disorders than natives (de Wit et al., 2008). Furthermore, Toppelberg and colleagues (2002) reported higher rates of language disorders and language deficits in US child clients who were bilingual and/or immigrants compared to other child clients. A subsequent study (Toppelberg, 2006) found more support for increased language deficits in one or multiple languages, as well as warning signs for these deficits (externalization, attention, and social problems). They went on to explain the need for

more complex and comprehensive language testing for bilingual patients, given that both languages seem to play a role in development of psychopathology in bilingual children (Toppelberg, Nieto-Castañón, & Hauser, 2006; Toppelberg & Collins 2010).

Reduced proficiency in the English language may render US immigrants vulnerable to perceiving greater negative social evaluation, a core feature of SAD. Keeping in mind the high number of individuals in the US who lack full competence in the English language, or must experience the mental and social stressors of learning multiple languages – especially as children – one can see the importance of studying any possible complications that may co-occur with this process. Despite the rapid growth of the immigrant population, little research has focused on psychopathology among young adult and adult bilingual individuals. Since SAD is one of the most prevalent disorders in the population, and relates to feelings of being evaluated in conversational or speaking situations, a possible association with this disorder was examined in this study. Past research has described a vulnerable population, detailed warning signs, interventions, and statistics; however an examination of bilingualism and psychopathology related to social development has not occurred. This study will investigate the relationship between bilingualism and SAD by looking at individual and historical differences (e.g. social anxiety, language expertise and comfort, and acculturation) in monolingual, bilingual, and multilingual individuals

## CHAPTER TWO: METHODS

This study was conducted with the purpose of exploring a possible relationship between bilingualism and SAD. This study was conducted at the University of Central Florida, and received IRB approval (SBE-14-10386) June 23<sup>rd</sup>, 2014.

### *Participants*

The participants in this study were recruited through the UCF SONA system, online forums, and the outreach of students to their friends and family, to achieve a large, more diverse sample. Participants recruited through the UCF SONA system were rewarded with SONA credits which are generally used for extra credit options in general or introductory level psychology classes at the university. Other participants were not compensated. Study participants were classified into four groups based on number of languages spoken (e.g., monolingual, bilingual; multilingual was later removed) and socially anxious (SA) or non-socially anxious (Non-SA). For the purpose of this study, monolingual individuals were only those who were English speaking, and bilingual individuals were those who spoke English and a second language, however, English was necessarily their primary language. The only exclusion criterion was if the individual is under the age of 18.

There were a total of 199 participants in the final sample. Within this sample, 21.4% qualified as SA monolinguals, 14.9% as SA bilinguals, 40.3% as Non-SA monolinguals, and 21.4% as Non-SA bilinguals. Ages of participants in this study ranged from 18 to 50. There were no significant difference between the four groups in age;  $F(3,183) = 1.36, p = .256$ . There were no significant differences between groups in sex ratio;  $X^2(3, N=194) = 2.23, p = .527$ . Each of

the four groups had more females than males. The four groups did differ significantly, however, in racial composition;  $X^2(15, N=197) = 61.75, p < .001$ . The SA Monolingual group consisted of 90.7% white, 2.3% Black or African American, 2.3% Asian, and 4.7% Hispanic or Latino. The Non-SA Monolingual group consisted of 74.1% white, 9.9% Black or African American, 2.5% Asian, and 8.6% Hispanic or Latino, with 4.9% selecting the “other” option. The SA Bilingual group consisted of 43.3% white, 6.7% Black or African American, 13.3% Asian, and 26.7% Hispanic or Latino, with 10.0% selecting the “other” option. Lastly, the Non-SA Bilingual group consisted of 34.9% white, 4.7% Black or African American, 9.3% Asian, and 48.8% Hispanic or Latino, with 2.3% selecting the “other” option. This was expected due to the grouping of bilingual and monolingual individuals. Descriptive statistics for the group frequencies can be found in Table A.

### *Hypotheses*

It was hypothesized that:

- (i) Those who are bilingual would differ significantly from monolingual individuals in levels of social anxiety.
- (ii) Bilingual socially anxious individuals would report more physiological anxiety responses than cognitive anxiety responses when compared to monolingual socially anxious individuals.
- (iii) Bilingual socially anxious individuals would be more likely to report suspicion of peers judging them for their accent when compared to bilingual non-socially anxious individuals.

(iv) Bilingual individuals who exhibited higher levels of social anxiety would report lower levels of American cultural enjoyment than those who are bilingual and report lower levels of social anxiety.

### *Measures*

#### *Bicultural Involvement Questionnaire*

The Bicultural Involvement Questionnaire (BIQ; Szapocznik et al., 1980) was used to obtain information regarding the use of languages, comfort with languages, and American and unique cultural enjoyment. The BIQ was modified to collect data from a multicultural population in addition to Hispanic-Americans, as it was intended (Szapocznik et al., 1980). The scale has been modified successfully in a number of other studies to collect data from different ethnic groups (Barrett, Sondregger, & Sondregger, 2002; Birman 1991; Birman 1998; Byington, 2001; Cook, Sandage, Hill, & Strawn, 2010; Guo, Suarez-Morales, Schwartz, & Szapocznik, 2012). The BIQ has been validated for use with various Hispanic groups by Szapocznik and colleagues (1980); and Birman (1998) has demonstrated its strong internal consistency.

#### *Social Phobia and Anxiety Inventory*

Participants also completed the Social Phobia and Anxiety Inventory (SPAI; Turner, Beidel, Dancu, & Stanley; 1989; Turner et al., 1996). This self-report measure assesses symptoms consistent with SAD using a 7-point Likert scale (rated 0 to 6: never to always). Each item assesses the frequency of an individual's difficulties in different social and performance situations. The SPAI has been shown to be a good measure for detecting probable SAD (Turner, et al., 1989) and has demonstrated good external and concurrent validity (Beidel, Borden,

Turner, & Jacob, 1989; Beidel, Turner, Jacob, & Cooley, 1989). Furthermore, the measure is sensitive to statistically and clinically significant changes due to treatment (Beidel, Turner, & Cooley, 1993). For the purposes of this study, participants' scores were divided into two groups, socially anxious (SA), and non-socially anxious (Non-SA) using a recommended cutoff SPAI score of 90.

### *Demographics and Individual Factors*

In addition to the measures establishing acculturation and social anxiety, additional basic demographic information was gathered (i.e. age, gender, and ethnicity) in addition to individual historical information (i.e. additional languages known, educational background, age of second language development, and enjoyment of American and non-American cultural groups).

### *Procedure*

Participants in the study were directed to the survey link through the UCF SONA system or a hyperlink on a social media post. After reviewing and providing an informed consent, participants completed the series of surveys. Time to complete the study ranged from fifteen to forty five minutes, times increased due to additional questions for each additional language and cultural background. At the end of the study, participants were given the contact email of the primary investigator should any questions regarding the study arise.

### *Data Analysis*

This study used SPSS version 22 (IBM Corp., 2013) to conduct statistical tests. Using G\*Power 3.1 software (Faul et al., 2007, Faul et al., 2009), Cohen's *d* effect size was calculated using data from LeSure-Lester and King's study (2004). In this study social anxiety ratings were

collected from college students and analyzed based on ethnicity. There was a large effect size between Hispanic and White students in social anxiety ratings ( $d = 0.72$ ), this was used to calculate the need of an  $n$  of 30 per group ( $N = 120$ ) to achieve a power of 0.95 with an alpha level of 0.05 for this study.

Possible outliers were identified early on using boxplots. Outliers noted for insincere data responses (identified by contradictory answers or answering entire measures with one number) were removed. Of the 312 total responses online a total of 113 cases were removed due to incomplete data or outlier responses. The remaining sample was then one hundred and ninety-nine cases ( $n=199$ ). Some outliers were included in the final data analysis as they did not appear to be insincere responses and did not respond incorrectly to specifically placed attention checking questions. While outliers may negatively effects results, these participants represent a portion of the target population and were included.

## CHAPTER THREE: RESULTS

Initial analyses revealed no unexpected demographic differences in the sample. Apart from the initial four group differences, other grouping variables were examined. A comparison of monolingual and bilingual speakers revealed no significant differences in age or gender, and the difference in ethnicity was again, expected (Table B). Dividing the population based on SA grouping or Non-SA grouping resulted in no significant differences in gender or ethnicity. There was a significant difference in age, in that the SA participants were older than the Non-SA participants;  $t(187) = -2.00, p = .048$ ; See Table C for descriptive statistics. The effect size for this analysis ( $d = 0.29$ ) was found to exceed Cohen's (1988) convention for small effect size ( $d = 0.20$ ). T tests were conducted when comparing two specific groups (i.e. just bilingual and monolingual, or just SA bilingual and SA monolingual). Analyses of variance (ANOVA) were conducted when comparing the 4 full groups of the study. Chi-squared tests were used when comparing categorical variables (such as suspicion of accent judgment, monolingual or bilingual, and anxiety grouping). Tables of means and standard deviations for tests below can be found in Tables D-G.

### *Social Anxiety*

Monolingual and bilingual participants did not differ significantly in SPAI scores;  $t(195) = .515, p = .607$ . Social Anxiety Grouping: Monolingual and bilinguals did not differ in likelihood to be socially anxious or non-socially anxious based on the SPAI cutoff score of 90;  $X^2(1, N = 197) = .812, p = .368$ . SPAI Cognitive Scale: Monolingual and bilingual participants did not differ significantly in SPAI cognitive scale scores;  $t(195) = .365, p = .715$ . SPAI



Physiological Scale: Monolingual and bilingual participants did not differ significantly in SPAI physiological scale scores;  $t(195) = .372, p = .710$ .

### ***Bilingual Only Analysis***

**Accent Evaluation:** Individuals in the SA bilingual group did not differ significantly from Non-SA bilingual individuals in likelihood to suspect other people as judging their accent;  $X^2(1, N = 73) = .012, p = .914$ . However, those who were SA bilinguals were more likely to have an accent when compared to Non-SA bilinguals;  $X^2(1, N = 73) = .012, p = .017, r = .281$ . Even so, there were no significant group differences in comfort using the English language  $t(73) = .746, p = .458$ .

**Cultural Preference:** Self-reported cultural enjoyment was collected from participants. Individuals were asked to report their enjoyment of American and any non-American cultural aspects (i.e. music, dances, oriented places, television programs, radio stations, and books and magazines). There were no difference between SA bilinguals and Non-SA bilinguals in American cultural enjoyment;  $t(73) = -1.142, p = .257$ , indicating that increased social anxiety among bilinguals did not affect their enjoyment of American and any non-American cultural aspects. However, SA bilinguals reported significantly higher levels of enjoyment of their non-American culture when compared to Non-SA bilinguals;  $t(73) = -2.458, p = .016$ . The effect size for this analysis ( $d = 0.58$ ) was found to exceed Cohen's (1988) convention for moderate effect size ( $d = 0.50$ ).

## CHAPTER 4: DISCUSSION

This was the first study to examine the relationship between bilingualism and SAD in a young adult sample. The main hypothesis of this study that bilingual individuals experience greater levels of social anxiety was not supported. The results demonstrated that, in a mostly college attending sample, the rate of SAD does not differ between monolinguals and bilinguals. This finding contradicts prior research suggesting higher level of psychological difficulties in a bilingual population (Alegría et al., 2007). This deviation from past research findings may be due to the specific sample studied, and will be discussed in the limitations.

Using the SPAI specific items, physiological and cognitive symptoms of SAD could be targeted and compared between the groups. It was expected that SA bilingual individuals would report more physiological anxiety than the SA monolingual individuals. This was based off of past research which indicated speech and/or language pathology and developmental delays as a reason for psychopathology in a bilingual population; since physiological difficulties communicating can be a factor in the development and maintaining of SAD, it was hypothesized that there may have been higher levels of physiological related difficulties in the bilingual population (Cantwell & Baker, 1991). However, this was not the case in this study, where there was no difference between SA bilingual and SA monolingual individuals with regards to cognitive or physiologically based responses to the SPAI.

When examining factors among bilingual individuals, it was observed that individuals with an accent were more likely to be in the SA group than the Non-SA group; however, the groups did not differ in their subjective determination of whether their accents are judged by

others. Both SA and Non-SA bilingual groups were equally comfortable speaking English as well. Further examination of the bilingual groups showed that the groups shared neutral to positive views of their non-American cultures similarly. Conversely, the SA bilinguals showed significantly more enjoyment of American cultural activities, generally leaning towards a strong enjoyment of all cultural aspects. The Non-SA group was neutral to positive in their enjoyment of the American culture.

### *Implications*

The results of this investigation do not indicate any specific link between bilingualism and SAD among college-attending individuals. These results are inconsistent with past research that has examined psychological disorders in a bilingual population (Cantwell & Baker, 1991; de Wit et al., 2008; Eaton et al., 2012; Toppelberg et al., 2002; Toppelberg, 2006; Toppelberg, Nieto-Castañón, & Hauser, 2006; Zayas, Lester, Cabassa, & Fortuna 2005). These results are more clearly understood in the context of differing sample characteristics. The majority of prior investigations of bilingual populations used child or immigrant samples, while the sample of the present study consisted mostly of college-attending young adults. It is encouraging that these individuals do not present a disproportionate level of social anxiety for reasons specific to bilingualism. This may imply that social anxiety, if present and at all linked to the childhood experience of bilingual individuals, can be overcome by individuals who are resilient enough to pursue a college education, or that people with severe SAD are less likely to go to college.

Results regarding cultural enjoyment in this study were also encouraging. The finding that SA bilingual individuals shared the same non-American cultural enjoyment, and held

significantly more enjoyment of American culture when compared to Non-SA bilingual individuals, implies that social anxiety does not preclude bilingual individuals from acculturating successfully in the US. These bilingual socially anxious individuals with strong non-American cultural backgrounds appear to be well-adjusted enough to function, succeed, and excel at a state university within the American cultural setting.

The findings that SA bilingual individuals were more likely to have an accent, but not more likely to perceive negative judgment from others for their accent than Non-SA bilinguals, raises questions as to which aspects of bilingualism may potentially be linked to SAD. Though there were no differences between SA bilinguals and monolinguals with regards to physiological and cognitive items on the SPAI, and both groups reported being equally comfortable speaking English, it is possible that the attribute of growing up with an accent may lead to a vulnerability to SAD through alternative routes (e.g. stereotype bias or speech anxiety). Furthermore, it is interesting that both groups reported the same level of suspicion of others judging their accent, when it would be expected that a socially anxious individual would be more prone to negatively framing how others perceive their social performance. At this time, this subject raises questions for future research in the area to address.

### *Limitations*

This study contains several limitations. The majority of individuals in this study were on-campus, class-taking college students, which means that these individuals are at least to some

extent socially active in classes (attending them in person), and have shown academic achievement enough to be accepted to a state university. This sample is also older, thus at this point in their life they may have already worked past, or never encountered, social anxiety. Past research on topics relating to bilingual populations usually focus on child to adolescent individuals. Future research of this kind should seek to study a sample of adolescents, the period of development during which SAD is most likely to begin (Kessler et al., 2005; Silverman et al., 1999, Weiss & Last, 2001). By selecting a younger population, this may also alleviate the bias of a population of matured and academically successful individuals. A second large limitation to this study was the online survey based approach used. This paradigm allowed a large sample and did not necessitate a large staff or resources. However, even with the large sample size, there was still a lack of individuals reporting their method of second language acquisition from diverse enough methods to allow analysis. Future studies could advance the current protocol by including clinician-administered diagnostic interviews for SAD. Additionally, participants were not asked to report immigrant generation; therefore, the “immigrant paradox” (Alegria et al., 2007; Coll, Marks, 2011; Perreira, Harris, Lee, 2006) was not explored. Another area for future research is the relationship between the presence or magnitude of an accent and social anxiety, which was not explored here due to a lack of accent-related survey questions. A wider range of questions regarding the individual should be explored such as subjective judgment of self-accent, opinion on accents, or whether individuals feel they are misunderstood due to their accent. In addition to accent questions, measures evaluating dialect may be useful to examine possible third-factor variables involved in this process. Finally, further research in this area should seek to explore cultural enjoyment in a more varied bilingual population.

### *Conclusion*

This study explored a possible link between bilingualism and SAD. The results of this study conflict with past research in that no relationship was found between bilingualism and self-reported physiological and cognitive aspects of social anxiety. The increased likelihood for SA bilinguals to have an accent, in contrast to Non-SA bilinguals raises questions as to a possibly vulnerability specifically involving accents in social settings. An increased enjoyment of American culture was found in SA bilingual individuals; however, this did not appear to impact their enjoyment of their own culture negatively.

**APPENDIX A: TABLE A**

*Table A*

*Demographics of four anxiety and linguistic groups.*

	SA Monolingual (n = 43)	Non-SA Monolingual (n = 81)	SA Bilingual (n = 30)	Non-SA Bilingual (n = 43)
	M(SD)	M(SD)	M(SD)	M(SD)
<b>Age</b>	21.95(6.18)	20.77(4.23)	21.68(4.91)	20.10(3.10)
<b>Gender</b>	<i>n</i> (%)	<i>n</i> (%)	<i>n</i> (%)	<i>n</i> (%)
Male	14(32.6)	24(30.0)	5(17.9)	14(32.6)
Female	29(67.4)	56(70.0)	23(82.1)	29(67.4)
<b>Race</b>				
White	39(90.7)	60(74.1)	13(43.3)	15(34.9)
Black or African-American	1(2.3)	8(9.9)	2(6.7)	2(4.7)
Asian	1(2.3)	2(2.5)	4(13.3)	4(9.3)
Hispanic / Latino	2(4.7)	7(8.6)	8(26.7)	21(48.8)
Other	0(0.0)	4(4.9)	3(10.0)	1(2.3)



**APPENDIX B: TABLES B-C**

*Table B*

*Demographics of Monolingual and Bilingual Groups*

	Monolingual (n = 123)	Bilingual (n = 71)
	M(SD)	M(SD)
<b>Age</b>	21.16(4.97)	20.73(3.97)
<b>Gender</b>	<i>n</i> (%)	<i>n</i> (%)
Male	38(29.7)	19(26.8)
Female	85(69.1)	52(73.2)
<b>Race</b>		
White	99(79.8)	28(38.4)
Black or African-American	9(7.3)	4(5.5)
Asian	3(2.4)	8(11.0)
Hispanic / Latino	9(7.3)	29(39.7)
Other	4(5.2)	4(4.1)

*Table C*

*Demographics of Socially Anxious (SA) and Non-Socially Anxious (Non-SA) groups*

	SA (n = 73)	Non-SA (n = 123)
	M(SD)	M(SD)
<b>Age</b>	21.91(5.61)	20.53(3.87)
<b>Gender</b>	<i>n</i> (%)	<i>n</i> (%)
Male	20(27.4)	38(30.9)
Female	53(72.6)	85(69.1)
<b>Race</b>		
White	54(72.0)	75(60.5)
Black or African-American	3(4.0)	10(8.1)
Asian	5(6.7)	6(4.8)
Hispanic / Latino	10(13.3)	28(22.6)
Other	3(4.0)	5(4.0)

**APPENDIX C: TABLE D**

Table D

*Descriptive Statistics for Monolingual and Bilingual groups in regards to Anxiety*

	Monolingual (n = 124)	Bilingual (n = 73)
	M(SD)	M(SD)
<b>SPAI Overall Score</b>	81.91(28.08)	79.58(36.27)
<b>SPAI Subscales</b>		
Physiological	2.99(1.34)	2.91(1.46)
Cognitive	4.06(1.15)	3.99(1.54)
<b>SPAI Group</b>	<i>n</i> (%)	<i>n</i> (%)
Socially Anxious	43(34.7)	30(41.1)
Non-Socially Anxious	81(65.3)	43(58.9)

## **APPENDIX D: TABLES E-G**

*Table E*

*Descriptive Statistics for Bilingual groups in regards to Cultural Comfort*

	SA Bilinguals (n = 27)	Non-SA Bilinguals (n = 48)
	M(SD)	M(SD)
<b>English Comfort</b>	4.67(0.71)	4.81(0.67)
<b>Cultural Enjoyment</b>		
American	4.35(0.75)	4.05(1.24)
Non-American	3.94(0.93)	3.17(1.46)

*Table F*

*Descriptive Statistics for Bilingual Anxiety groups in regards to Accents*

	SA Bilinguals (n = 30)	Non-SA Bilinguals (n = 43)
<b>Accent</b>	n(%)	n(%)
Has Accent	19(63.3)	15(34.9)
Does not have Accent	11(36.7)	28(65.1)

*Table G*

*Descriptive Statistics for Bilingual Anxiety groups in regards to Accent Judgment*

	SA Bilinguals With Accent (n = 19)	Non-SA Bilinguals With Accent (n = 15)
<b>Accent Judgment Suspicion</b>	n(%)	n(%)
Suspicion	13(68.4)	10(66.7)
No Suspicion	6(31.6)	5(33.3)

**APPENDIX E: IRB APPROVAL LETTER**



University of Central Florida Institutional Review Board  
Office of Research & Commercialization  
12201 Research Parkway, Suite 501  
Orlando, Florida 32826-3246  
Telephone: 407-823-2901 or 407-882-2276  
[www.research.ucf.edu/compliance/irb.html](http://www.research.ucf.edu/compliance/irb.html)

### Approval of Exempt Human Research

From: UCF Institutional Review Board #1  
FWA00000351, IRB00001138

To: Deborah Casamassa Beidel and Co-PI: Nicholas T James

Date: June 23, 2014

Dear Researcher:

On 6/23/2014, the IRB approved the following activity as human participant research that is exempt from regulation:

Type of Review: Exempt Determination  
Project Title: Exploring a Relationship between Social Anxiety Disorder and Bilingualism  
Investigator: Deborah Casamassa Beidel  
IRB Number: SBE-14-10386  
Funding Agency:  
Grant Title:  
Research ID: N/A

This determination applies only to the activities described in the IRB submission and does not apply should any changes be made. If changes are made and there are questions about whether these changes affect the exempt status of the human research, please contact the IRB. When you have completed your research, please submit a Study Closure request in iRIS so that IRB records will be accurate.

In the conduct of this research, you are responsible to follow the requirements of the Investigator Manual.

On behalf of Sophia Dziegielewski, Ph.D., L.C.S.W., UCF IRB Chair, this letter is signed by:

A handwritten signature in black ink that reads 'Kanielle Chay'.

IRB Coordinator



## **APPENDIX F: INFORMED CONSENT**



**Title of Project:** Exploring Anxiety and Bilingualism  
**Principal Investigator:** Deborah Beidel, Ph.D., ABPP  
**Co-Investigator:** Nicholas James  
**Sub-Investigator:** Franklin Mesa M.S.

You are being invited to take part in a research study. Whether you take part is up to you.

**Purpose of the research study:** The purpose of this study is to determine if anxiety may be related in any way to linguistic ability.

**What you will be asked to do in the study:** This study is conducted entirely online through Qualtrics.

You will be asked to read the informed consent document. If this consent is accepted, you will then fill out a series of questionnaires which will take from 20-50 minutes to complete. Once these questions have been completed the process will conclude and you will be directed to the Post Participation Information form.

You must be 18 years of age or older to take part in this research study.

**Study contact for questions about the study or to report a problem:** If you have questions, concerns, or complaints please contact Nicholas James, Undergraduate Researcher, Psychology, College of Sciences, [ntjames21@gmail.com](mailto:ntjames21@gmail.com)  
Or, Dr. Deborah Beidel at [Deborah.Beidel@ucf.edu](mailto:Deborah.Beidel@ucf.edu)

**IRB contact about your rights in the study or to report a complaint:** Research at the University of Central Florida involving human participants is carried out under the oversight of the Institutional Review Board (UCF IRB). This research has been reviewed and approved by the IRB. For information about the rights of people who take part in research, please contact: Institutional Review Board, University of Central Florida, Office of Research & Commercialization, 12201 Research Parkway, Suite 501, Orlando, FL 32826-3246 or by telephone at (407) 823-2901.

I have read and understood this form, I verify that I am 18 years of age or older, and agree to participate in this study.

- Agree  
 Disagree

**APPENDIX G: BICULTURAL INVOLVEMENT QUESTIONNAIRE:  
REVISED FOR MULTIPLE CULTURES**

Instructions: In the following questions please select the number that best describes your feelings. If a question does not apply to you, please leave it blank and move on to the next question.

How comfortable do you feel speaking English

	Not at all comfortable 1	2	3	4	Very comfortable 5
In Home	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
In School	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
At Work	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
With Friends	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
In General	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

What, if any, would you consider your **next** most proficient language?

- Spanish
- French
- German
- Arabic
- Chinese
- Other (please specify):

How comfortable do you feel speaking this language?

	Not at all comfortable 1	2	3	4	Very comfortable 5
In Home	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
In School	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
At Work	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
With Friends	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
In General	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

What, if any, would you consider your next most proficient language?

- Spanish
- French
- German
- Arabic
- Chinese
- Other (please specify):

How comfortable do you feel speaking this language?

	Not at all comfortable 1	2	3	4	Very comfortable 5
In Home	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
In School	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
At Work	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
With Friends	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
In General	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

If you speak any additional languages please list them here:

How much do you enjoy:

	Not at all 1	2	3	4	Very much 5
American music	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
American dances	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
American-oriented places	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
American T.V. programs	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
American radio stations	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
American books and magazines	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Do you have any other cultures you identify with through family / upbringing?

What year is it?

- 2014
- 2000
- 1995
- 1776

If so: How much do you enjoy activities of your chosen culture (if multiple cultures pick the most enjoyed):

	Not at all 1	2	3	4	Very much 5
Music	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Dances	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Cultural-oriented places	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
T.V. programs	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Radio Stations	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Books and magazines	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Do you have any other cultures you identify with through family / upbringing?

If so: How much do you enjoy activities of your chosen culture:

	Not at all 1	2	3	4	Very much 5
Music	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Dances	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Cultural-oriented places	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
T.V. programs	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Radio Stations	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Books and magazines	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

If you have any other cultures you closely identify with, please list them here:

Do you ever feel your accent is being evaluated by others when you speak?

- Yes
- No
- I do not have a foreign accent.

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