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Language Brokering among Immigrant Latino Families: Measurement Validation, Moderating Variables, and Youth Outcomes

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Language Brokering among Latino Immigrant Families: Measurement Validation, Moderating Variables, and Youth Outcomes

By

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Committee in charge:

Professor Frank C. Worrell, Chair
Professor Susan Holloway
Professor Kurt Organista

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Abstract

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Language brokering can be defined as interpretation bilingual children provide for their parents or other monolingual persons. Although language brokering is a common practice among immigrant communities, it is still a growing body of literature in need of theoretical and measurement development. This study addressed these gaps in the extant literature in the following ways: (a) the Language Brokering Measure – IV (LBM-IV; Anguiano, 2009) was revised based on empirical examinations of its psychometric properties; (b) a comprehensive theoretical framework of language brokering was put forth, and (c) a theoretical model developed from this framework, which examined the effects of various language brokering experiences and family obligation on perceived stress and academic achievement, was empirically tested using latent variable regression. Participants included 362 Spanish-speaking, Latino adolescents from immigrant families. Structural validity results supported a three-factor structure of the LBM-IV, which included the division of language brokering experiences according to high-stakes, everyday, and low-stakes translating situations. Model-testing results indicated that translating in High-Stakes situations negatively affected the academic achievement of language-brokering youth, while translating in Everyday situations positively affected it. Furthermore, youth who had higher levels of family obligation reported lower levels of perceived stress, higher academic achievement, and were buffered against the negative effects of High-Stakes translating duties on perceived stress. Implications of these results for language brokering scale development and theory development are discussed.

Keywords: language brokering, scale development, Latino youth, immigrant families

Dedication

This dissertation is dedicated to my loving parents, Susan and Joe Anguiano. Since I was a little girl you have inculcated in me the importance of service, tolerance, dedication, hard work, and pride in who I am and where our family comes from. It was only with the support, encouragement, and understanding that you provided me that I was able to complete my doctoral studies. This dissertation is your accomplishment as well. I hope I can continue to make you proud in all of my future work. Words cannot express how grateful I am to you both. ¡Sí se puede!

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Language Brokering among Latino Immigrant Families: Measurement Validation, Moderating Variables, and Youth Outcomes

Research indicates that the children of immigrants often serve as *language brokers,* or cultural and linguistic intermediaries, between their families and the outside world (Chao, 2006; Tse, 1995). Also referred to as cultural meaning makers, language brokers' duties call for cultural interpretation in addition to language translation (Vasquez, Pease-Alvarez, & Shannon, 1994). Language brokers often ensure the very survival of their families by translating things like immigration forms, employment applications, and household bills (Orellana, Dorner, & Pulido, 2003). In fact, in a recent national survey of resident physicians, 22% of over 2000 physicians indicated that they use children as medical interpreters when professional ones are unavailable (Lee, Winickoff, & Kim, 2006).

Although translating as a child may seem like an extraordinary task, when children with non-English speaking parents are asked if they language-broker, the overwhelming majority indicate that they do (Chao, 2006; DeMent, Buriel, & Villanueva, 2005; Orellana, et al., 2003; Tse, 1995). Given that 11.2 million school-age children speak a language other than English at home (Aud et al., 2011), it is possible that over 21% of children in U.S. public schools language-broker in some capacity, receiving little or no formal support for their endeavors. Despite the prevalence of language brokering among immigrant communities, the body of literature on language brokering did not emerge until the mid-1990s. As a result, there is no standard way to measure language brokering and the field is laden with contradictory findings with no unifying theoretical framework (Morales & Hanson, 2005). The current study addresses each of these issues by (a) refining the Language Brokering Measure – IV (Anguiano, 2009) based on empirical examinations of the psychometric properties of its scores; (b) putting forth a comprehensive theoretical framework of language brokering based on a synthesis of the acculturation, segmented assimilation, and bilingualism and cognition literatures; and (c) empirically testing a theoretical model developed from this framework, which examined the nature of the relationship among language brokering experiences (assessed by the revised LBM-IV), family obligation, perceived stress, and academic achievement among Latino adolescents.

In order to set the stage for my examination of the LBM-IV scores and the subsequent use of this measure to empirically test a proposed theoretical model, I begin by reviewing the state of the extant language brokering literature. Specifically, I review previous theoretical frameworks used to analyze language brokering, and empirical findings related to language brokering and psychological adjustment, language brokering and family relationships, and language brokering and academic achievement. Next, drawing upon several other literatures, I synthesize key aspects of acculturation theory, segmented assimilation theory, and theories of bilingualism and cognition to build a comprehensive theoretical framework for language brokering among Latino immigrant families. Finally, I detail the evolution of the Language Brokering Measure, including the reliability and validity of scores, and additions and revisions I made to create the LBM-IV, the current version used to assess language brokering behaviors in this study.

Review of Language Brokering Literature: A Mixed Picture

Previous theoretical frameworks. There is no language brokering theory, per say; however, the majority of studies on language brokering acknowledge that acculturation processes often drive language brokering experiences among immigrant families (Morales & Hanson, 2005). Acculturation refers to the cultural shifts that take place when two distinct cultural groups come into continuous contact with one another (Berry, 1997). Within immigrant families, it is

often the children of immigrants who are the first to acquire English proficiency and cultural knowledge, thus facilitating acculturation among their families (Chao, 2006). Although almost all studies on language brokering acknowledge that acculturation drives language brokering, they often do not explicitly discuss or adopt an acculturation framework. In fact, many early studies simply sought to define and describe language brokering as well as its prevalence among immigrant communities without an explicit theoretical framework (McQuillan & Tse, 1995; Tse, 1995; Weisskirch & Alva, 2002).

Rather than focusing on acculturation processes as the force behind language brokering, most studies have been concerned with the effects of language brokering on family relationships, children's and adolescents' emotional well being, or their cognitive functioning. As a result, most studies exploring the relationship between language brokering and family relationships or language brokering and emotional outcomes have come from a framework that acknowledges the importance that immigrant families place on familial orientation, which I have termed an immigrant family systems framework (Chao, 2006; Love & Buriel, 2007; Orellana, 2008; Wu & Kim, 2009). Researchers that have focused on the academic achievement and linguistic development of language brokers have utilized contextual theories of cognitive development or theories regarding the cognitive and linguistic development of bilinguals to guide their work (e.g., Buriel, Perez, DeMent, Chavez, & Moran, 1998; Tse, 1995; Valdés, 2003).

Immigrant family systems frameworks. Orellana et al. (2003) noted that the role of children in theories of immigrant family functioning is largely missing, and sought to fill this gap through ethnographic and sociocultural research that aimed to identify and understand language brokering from the ground up. In later research, Orellana (2008) discussed the role of "interdependent scripts" among immigrant families, and used this framework to explain the ways in which language brokering may foster interdependence – a common value in collectivist cultures that is centered on family obligation and relationships (Fuligni, 2001). Interdependent scripts are cultural frameworks centered around one's dependence on relationships, which are used to interpret and orient life experiences. Love and Buriel (2007) also discussed the role of interdependence in Mexican immigrant families, though they situated this within the body of literature on traditional Mexican socialization practices. Love and Buriel argued that language brokering, which may foster earlier autonomy, might be at odds with the interdependent socialization practices of traditional Mexican families, thus putting adolescent language brokers at risk for depression. Their findings, however, did not support this hypothesis as none of the interactions between their autonomy variables and language brokering were significant positive predictors of depression (Love & Buriel, 2007).

Wu and Kim (2009) put forth a theoretical model to test the possible mechanisms that lead to either a sense of efficacy or a sense of burden regarding language brokering among Chinese adolescents. At the center of this model, familial obligation and perceptions of mattering to parents served as mediators in the pathway to either self-efficacy or burdensome feelings. In their hypothesized model, youth who were more oriented toward their Chinese heritage would also have a greater sense of familial obligation, which in turn would lead to more positive parent-child relationships and a more positive perception of their language brokering experience. Their data supported this theoretical model. The work of Orellana et al. (2003), Orellana (2008), Love and Buriel (2007), and Wu and Kim (2009) all suggest that the role of family obligation, and especially the unique familial orientation found among immigrant families, is an important theoretical framework to consider when examining the effects of language brokering on youth.

Although some researchers have cited traditional cultural scripts that orient immigrant youth towards their family as a framework for understanding language brokering, it remains unclear if this family orientation is the result of a specific "traditional" cultural value, a consequence of a family's immigrant status, or both. Fuligni's work has demonstrated that adolescents from Asian and Latin American backgrounds in the United States have a stronger sense of family obligation than their European-American counterparts (Fuligni, 2001, Fuligni, Tseng, & Lam, 1999). Furthermore, this sense of family obligation has been found to remain strong across generations of Latin-American youth, with little difference between immigrant adolescents and their American-born counterparts (Fuligni, 2001). Fuligni attributes this finding to the internalization of a family's cultural beliefs around family support and respect stemming from their culture of origin (et al., 1999, 2001). However, there is not data specifically comparing family obligation beliefs within families from Latin America, for example, with American-born Latinos in the United States. It may be that immigrant or minority statuses make this cultural tradition even more salient, and the need for the preservation of this value even more intense. It is most likely that it is both cultural traditions and immigrant status that make family obligation such an important construct for immigrant youth in the United States.

Cognitive and linguistic development of bilinguals. Other researchers that explored the relationship between language brokering and academics situated their work within the bilingualism and sociolinguistic literatures, arguing that language brokering may foster greater levels of bilingualism, metalinguistic awareness, and sociolinguistic skills that may in turn positively influence achievement (Buriel et al., 1998; Dorner, Orellana, Li-Grining, 2007; Orellana et al., 2003). Metalinguistic awareness refers to an ability to reflect on the structural components of language, and sociolinguistics is the relationship between language and context (Biaylstok, 2001). Dorner et al. (2007) described the influence of language brokering on achievement as the relationship between "out-of-school-practices and school literacies" (p. 456). Accoach and Webb (2004), Buriel et al. (1998), and Dorner et al. (2007) all adopted this theoretical framework when examining the relationship between language brokering and academic achievement, hypothesizing a positive relationship due to the positive influence of language brokering on various linguistic capabilities and achievement.

In a later section I draw upon the acculturation (Berry, 1997; 2006), segmented assimilation (Portes & Rumbaut, 2001; Zhou, 1997), and bilingualism (Bialystok, 2001; Cummins, 2000; Malakoff & Hakuta, 1991) literatures to build a more comprehensive theoretical framework for studying language brokering. This theoretical framework highlights the importance of respect for parents and an orientation towards one's family in understanding the effects of language brokering on the psychological adjustment and academic achievement of the children of immigrants. However, with immigrant family systems and the cognitive development of bilinguals in mind as the theoretical frameworks guiding almost all the empirical work on language brokering to date, I now turn to empirical findings on language brokering.

Contradictory findings in the language brokering literature. Most studies investigating language brokering have sample sizes of fewer than 100 participants, utilize correlational designs, and taken together, they have yielded contradictory findings. The most important of these limitations is the contradictory findings. A review of the extant literature indicates that these contradictory findings center on the nature of three main relationships: (a) language brokering and psychological adjustment, (b) language brokering and family relationships, and (c) language brokering and academic achievement (Morales & Hanson, 2005). These contradictory findings may be a reflection of small sample sizes and design issues, the

complexities of the relationships between language brokering and these variables, or both. In the following sections I review studies with findings relevant to psychological adjustment, family dynamics, and academics, highlighting the limitations and strengths of each study, as well as the continuities and discontinuities among them.

Affect and language brokering. Children who translate for their parents may have a number of affective responses to being in such a situation. For example, some language brokers may feel proud to translate for their families, and may see their translating experiences as a positive way to help their family (Tse, 1995). On the other hand, some children and youth may feel anxious or nervous to language broker because various translating situations, such as translating at government offices or at a hospital, may be particularly stress inducing (Weisskirch & Alva, 2002). In the literature, affect and language brokering have been studied in two distinct ways: (a) how language brokers feel about their translating experiences, and (b) how language brokering experiences and feelings about language brokering may predict positive or negative psychological adjustment, such as depression or social self-efficacy. Findings on how language brokers feel about translating and whether or not language brokering is a predictor of a particular negative or positive emotional state are mixed, with some language brokers reporting positive feelings about translating, and others reporting negative feelings (DeMent et al., 2005; Tse, 1995; Weisskirch & Alva, 2002). Researchers have also found language brokering to be a positive predictor of depression in some adolescents, and a positive predictor of respect for their parents in others (Chao, 2006; Love & Buriel, 2007)

Feelings about language brokering. In one of the first descriptive studies of language brokering, Tse (1995) surveyed 35 Latino language brokers (*M* age = 16) to examine the prevalence of language brokering, attitudes toward language brokering, and the average school performance of these youth. Tse used a checklist to assess the agents for whom language brokers translated, the locations where they translated, the texts they translated, and their attitudes toward their translating experiences. Tse's sample of language brokers reported translating most frequently for friends (91%), parents (89%), relatives (74%), and neighbors (69%). Participants also translated in a variety of places, most commonly at home (86%), in schools (80%), in stores (80%), and on the street (80%). Many kinds of texts were also translated, and the most frequent included notes and letters from school (97%), job applications (74%), credit card statements (47%), bank statements (44%), and rental agreements (44%). With regard to affect, the majority of language brokers reported that translating made them feel proud and mature, and that, overall, they liked language brokering. However, 23% of participants reported that they did not like to translate, and 9% felt it was a burden. Although the majority of language brokers in Tse's sample reported positive feelings toward language brokering, conclusions cannot be drawn as to why most of these language brokers liked translating, or how those who reported that they did not like to translate differed from those who reported that they did.

Like Tse (1995), Weisskirch and Alva (2002) also found that their sample of 36 Latino fifth-graders (*M* age = 10.53) reported translating a variety of documents and in a variety of places, most frequently for parents and relatives. However, in contrast to Tse's (1995) sample, Weisskirch and Alva found that the majority of language brokers in their sample reported that they did not like to language broker, that it made them embarrassed and nervous, and that they believed their parents learned English more slowly because they translated for them. Furthermore, the more language brokers translated the less they enjoyed translating (r = -.36). The main difference between Tse's sample of language brokers and that of Weisskirch and

Alva's was the age of the participants. Indeed, Weisskirch and Alva's sample had a mean age of approximately 10 years, and is the youngest group of language brokers to be systematically surveyed about their experiences to date. Weisskirch and Alva concluded that language brokering might be an "age-graded phenomenon" (p. 369), meaning that as language brokers mature cognitively and emotionally, their perspective on language brokering becomes more positive. However, because Weisskirch and Alva did not compare young language brokers with older language brokers, it cannot be conclusively determined that the reason behind these language brokers' negative experiences with translating was their age. But, these studies do suggest that age may be related to language brokers' experiences of translating.

Qualitative and interview data with language brokers has allowed for the elucidation of the variety of conflicting feelings youth may feel about their language brokering duties. For example, DeMent et al. (2005) conducted in-depth, open-ended interviews with 13 college students who language-brokered as children or were still currently brokering for their families. The sample included 11 females and 2 males, the majority of whom were of Mexican origin (n = 8), in addition to two Central Americans, two Vietnamese Americans, and one Chinese American student. All students interviewed reported language brokering for their parents and other extended family members, in a variety of places including at school, in stores, at the bank, and at doctors' offices. Many of the students felt that language brokering had made them independent, mature, and efficacious at navigating social situations. However, all of the students reported feeling at least some frustration because of language brokering, usually because of the confusing or stressful situations that language brokering put them in, or because of parental expectations to language broker at a moment's notice. DeMent and colleagues concluded that many of the language brokers felt ambivalent about translating: They understood how it was helpful to them and their families but also acknowledged the stress and frustration associated with the task. The strength of DeMent and colleagues' qualitative work was how the in-depth interviews captured language brokering processes, and as a result, language brokers were able to express their ambivalence toward translating. Although these results are informative with regard to the mixture of feelings associated with language brokering, they are not generalizeable to other language brokers due to small sample size and the specificity of this group of academically successful brokers, as demonstrated by their college attendance.

In a more recent and statistically rigorous article, Wu and Kim (2009) tested a theoretical model linking Chinese orientation to a sense of burden or efficacy about language brokering among 256 Chinese students in early adolescence (seventh and eighth grade) and again in middle adolescence (11th and 12th grade). In their structural equation models, they found that when Chinese-origin youth stayed oriented towards their Chinese heritage, they ultimately felt a sense of efficacy as language brokers instead of a sense of burden. This relationship was partially mediated by their level of family obligation and their perception of how much they mattered to their parents. Conversely, youth who perceived themselves as alienated from their parents ultimately felt a sense of burden with regard to their language brokering practices. Although this study was conducted with Chinese-origin youth and the results may not be generalizeable to the current study's sample of Latino adolescents, Wu and Kim's model of the mechanisms through which language brokers ultimately feel burdened or empowered by their language brokering duties is a useful one. Furthermore, it is one of the only studies to date that has tested a process model that seeks to explain youths' feelings about language brokering.

Language brokering as a predictor of psychological adjustment. Love and Buriel (2007) examined the relationship among language brokering, autonomy, parent-child bonding,

biculturalism, and depression in a sample of 246 Mexican-American adolescents (*M* age = 12.58). Hierarchical regression analyses indicated that the Persons subscale score, which assessed how frequently brokers translated for different people, was a significant positive predictor of depression for both boys (β = .24) and girls (β = .20). This means that the more people language brokers translated for, the higher their depression scores were. Specific to girls, however, was that the interaction term, Places brokered and responsibility, was a significant negative predictor of depression (β = -.46), indicating that girls who reported brokering in more places and also receiving more responsibilities actually reported lower depression scores. Furthermore, parent-child bonding and biculturalism were significant negative predictors of depression for boys (β = -.26 & β = -.24, respectively), but not for girls, meaning that being bicultural and having a strong parent-child bond buffered only male language brokers from depression. Additionally, girls reported higher levels of biculturalism, depression, and positive feelings toward language brokering than boys.

Love and Buriel's (2007) study is important for several reasons. First, it is one of the larger samples of language brokers, which suggests that the results may be more generalizeable to other Mexican-origin language brokers. Second, they included additional predictor variables such as autonomy, parent-child bonding, and biculturalism that provided a more complete picture of the contexts in which language brokering may have negative effects on adolescents, such as in the absence of a strong parent-child bond. Finally, although Love and Buriel found no difference in the amount of language brokering between boys and girls, their results suggest that biculturalism, parent-child bonding, autonomy, and language brokering may function differently for boys than girls.

Chao (2006) also examined the psychological adjustment of language brokers, but she did so in relation to family characteristics, and respect for mother and father, among 1,601 Mexican (*n* = 463), Chinese (*n* = 581), and Korean (*n* = 557) American ninth graders with immigrant parents (*M* age = 15.72). Chao found that approximately 70% of the adolescents sampled reported language brokering for their parents, with first generation Mexicans reporting the most language brokering (89%), followed by first generation Koreans (87%), and first generation Chinese adolescents (79%). Among Chinese and Korean adolescents, translating for one's mother (*B* = .05 & .06, respectively) or father (*B* = .07 & .05, respectively) was a significant positive predictor of internalizing symptoms. However, given the small size of these coefficients, these relationships should be interpreted with caution. Furthermore, the relationship between translating for one's mother and internalizing symptoms did not exist for Mexican youth. Additionally, being female was a significant positive predictor of depression for Korean and Mexican youth (*B* = .11 & .25, respectively). With regard to externalizing symptoms, only coming from a single parent home or translating for one's mother were significant positive predictors (*B* = .13 & .04, respectively), and only among Korean youth.

Chao's (2006) findings corroborate those of Love and Buriel (2007), who also found that female language brokers tend to report higher levels of internalizing symptoms (i.e., depression). Furthermore, Love and Buriel found that translating for more people was related to higher depression scores, and Chao's results indicated that translating for one's mother or father was positively related to internalizing symptoms. A significant strength of Chao's study, in addition to the large sample size, is that her cross-sectional analysis allowed for comparison across immigrant groups. Results indicated that language brokering affected Chinese and Korean youth more negatively than Mexican youth. However, further research is needed to understand the nature of the underlying mechanisms that may be responsible for these results.

Summary and conclusions. Although earlier studies with smaller sample sizes found that language brokers reported feeling proud to language-broker and enjoyed their translating duties (Tse, 1995), more recent research has complicated the emotional experiences and psychological adjustment of language brokers in several ways. First of all, there appears to be some effect of age, in that younger brokers have reported very negative feelings toward translating (Weisskirch & Alva, 2002). Second, qualitative research has highlighted the possible mix of feelings language brokers may have about their translating duties (DeMent et al., 2005); this ambivalence warrants further research. Third, larger-scale studies indicate that language brokering is most prevalent among Mexican-origin youth, is correlated with internalizing symptoms and depression, and may put girls, who are more at risk for internalizing symptoms to begin with, at more risk than boys (Chao, 2006; Love & Buriel, 2007). Finally, this research has begun to indicate possible moderating or mediating variables between language brokering and psychological adjustment, such as parent-child bonding (Love & Buriel, 2007), family obligations, and perceived mattering to or alienation from one's parents (Wu & Kim, 2009). Further research is needed to determine which language brokering contexts (i.e., specific translating situations) are most associated with negative feelings or positive feelings, as well as variables that may moderate or mediate the relationship between language brokering and psychological adjustment among adolescents.

Family relationships. Ethnographic, interview, and survey data have all indicated that language brokers are often called to interpret in adult-like situations, such as translating legal documents or household bills, and translating at social services offices or their parents' place of employment (DeMent et al., 2005; Orellana, 2008; Orellana et al., 2003; Tse, 1995). As a result, many researchers have explored how language brokering affects the parent-child dynamic, especially when parents come to depend on their children to assist them in navigating English-speaking institutions. For example, language brokers take on additional responsibilities when they translate for their parents, which may invert the parent-child relationship or foster resentment among both children and parents (Weisskirch & Alva, 2002). On the other hand, language brokering does not necessarily hinder parent-child relationships, and in fact may foster a strong family orientation and sense of closeness among immigrant families (DeMent et al., 2005). The findings of these studies can be organized into those that found no negative effect of language brokering on family relationships, and those that did.

Stable family relationships. Qualitative research with college students has indicated that language brokers report a powerful sense of commitment to help their immigrant parents because of the sacrifices their parents made to come to the United States and give them a better future (DeMent et al., 2005). However, because these students gained insight into the challenges that their parents faced as non-English speaking immigrants they often worried about their parents safety, health, and well-being, which altered the traditional parent-child dynamic. In fact, some brokers in DeMent et al.'s study felt that their parents compensated for their dependency on them to translate by being extra tough on them. However, overall these language brokers didn't feel that their translating experiences negatively affected their relationship with their parents, and that they were glad to contribute to their family in a meaningful way.

Orellana (2008) followed 12 Latino language brokers beginning in the fifth or sixth grade for five years. Like DeMent and colleagues (2005), observational and interview data indicated that language brokering was thought of as one's contributions to one's family, a way to be helpful, and a natural part of being a family member. Language brokering was largely seen as a normative practice. With regard to the parent-child dynamic, Orellana did find that conflicts

arose between parents and children, especially when children would use English around the house and parents could not understand what was said. Parents' lack of English proficiency exacerbated their fears of gang involvement or teen pregnancy; they felt they did not know what might be happening outside of the home.

However, Orellana (2008) also found language brokering to be a practice "embedded in relationships" (p. 530), meaning that language brokers did not translate things in isolation; rather, parents and children would work together to solve problems. Although language brokers contributed to decision-making, participant observation data revealed that children rarely made decisions by themselves, and evidence of role-reversal was not found between most parents and children. Orellana concluded that the way in which families work together to navigate new cultural systems is critical to the psychosocial, linguistic, and cultural outcomes of adolescent language brokers. The longitudinal participant-observation design allowed for an examination of daily brokering activities, and of the ways in which parents and children worked in concert with one another to make meaning of English documents and American systems.

Quantitative research has also examined the consequences of children's language brokering on parent-child relationships. For example, Chao (2006) examined the relationship among language brokering, psychological adjustment, and respect for one's mother and father in a sample of over 1,500 adolescents with immigrant parents. Results indicated that for Mexican and Chinese adolescents, translating for one's mother was a significant positive predictor of respect for one's mother (B = .13 & B = .17, respectively), but translating was not related to respect for one's mother among Korean adolescents. However, translating for one's father was a significant positive predictor of respect for one's father among Mexican and Korean adolescents (B = .15 & B = .13, respectively), but not for Chinese adolescents. These relationships may suggest that language brokering does not necessarily result in a loss of respect for parents. Although some conflict between parents and children around language brokering obligations and English versus home-language use seems inevitable (DeMent et al., 2005; Orellana, 2008), role reversal may not be. Although Chao's results across substantial samples of immigrant groups lends support to the generalizeability of these findings, the mechanisms through which parents maintain respect or control remain elusive.

Changing family relationships. Other correlational data suggest that family conflict may play a role in the negative or positive experience of language brokering (Martinez, McClure, & Eddy, 2009; Weisskirch, 2007). For example, in a study including 98 language brokers of Mexican descent (M age = 13.14), Weisskirch (2007) examined feelings about language brokering and family relations. Results indicated that difficult family relations, as measured by the Index of Family Relations (IFR), were positively correlated with negative emotions about language brokering. For example, higher scores on the IFR were correlated with feeling "scared" (r = .37), "angry" (r = .36), "worried" (r = .34), and "nervous" (r = .32) while translating. Weisskirch concluded that children experiencing difficult family relations might also experience language brokering more negatively than children experiencing less difficult family relations. However, because these data were correlational, the direction of the relationship between negative feelings about language brokering and difficult family relationships cannot be determined.

Similarly, Martinez et al. (2009) examined family environment and parental effectiveness in relation to language brokering. Specifically, Martinez and colleagues divided 73 Latino language brokering families with adolescent youth (M age = 12.74) into two groups: (a) high language brokering (HLB) families where children needed to translate frequently because both

parents were monolingual and (b) low language brokering (LLB) families where children didn't need to translate as often because at least one parent was bilingual. Fathers in HLB families reported significantly higher depression scores (d = -.80), immigration stress (d = -.55) and occupational stress (d = -.55) than fathers in LLB families. Additionally, parents in LLB families consistently reported greater parenting effectiveness than HLB families, including significantly greater amounts of general parenting (d = .65), positive fatherly involvement (d = .71), and father monitoring of schoolwork (d = .68). Adolescents in LLB families were less likely to use alcohol (d = -.76), tobacco (d = -.74), or any substance (d = -.85) than adolescents in HLB families.

Martinez et al. (2009) concluded that HLB parents experienced more stress and less parental control, and HLB youth were at greater risk for negative psychosocial outcomes and more prone to risky behavior. Indeed, these medium to large effect sizes demonstrate the magnitude of difference between HLB and LLB families for depression parent involvement, an teen risky-behavior. However, HLB and LLB families differed significantly with regard to socioeconomic status, which is a confounding variable in this study, because parents with lower levels of education are less likely to speak English fluently and therefore more likely to rely on their children to translate. Furthermore, these findings cannot indicate the directionality of the relationship between language brokering and family stress (i.e., is language brokering a consequence of high stressed families or vice versa?).

In addition to family environment and family stress, parent-child bonding may play an important role in mediating or moderating the effects of language brokering on children and youth (Buriel, Love, & DeMent, 2006; Love & Buriel, 2007). As previously discussed, Love and Buriel (2007) found that having a strong parent-child bond was negatively related to depression scores among language brokering boys, but not girls. Similarly, in their examination of parent-child bonding, depression, and language brokering among 157 Latino adolescents (M age = 15.29), Buriel et al. (2006) found that having a strong parent-child bond was negatively related to depression. However, unlike Love and Buriel (2007), this relationship was true for both boys (β = -.32) and girls (β = -.40). Additionally, Buriel and colleagues found that positive feelings about language brokering was a significant positive predictor of parent-child bonding (β = .36). These results suggest that having a positive experience of language brokering can increase the parent-child bond, which can then lower depression. However, whether or not parent-child bonding was actually the mediating variable in this series of relationships cannot be determined from these data, because a strong parent-child bond could just as easily have been a positive predictor of a good language brokering experience.

As previously discussed, Wu and Kim (2009) found family obligations and perceived mattering to or alienation from parents to partially mediate the relationship between Chinese orientation and a sense of burden or efficacy with regard to language brokering. Wu and Kim used structural equation modeling to examine this process model chain of events among 256 Chinese adolescents at two different time points, early adolescence (middle school) and middle adolescence (high school). Results indicated good fit for their hypothesized meditational analyses, which indicated that Chinese orientation at Wave 1 and Wave 2 was ultimately linked to adolescents' sense of efficacy as language brokers at Wave 2 through partial mediation of family obligation at Wave 2 and perceived mattering to parents at Wave 2. Additionally, meditational analyses also supported the hypothesized pathways from Chinese orientation at Wave 1 and Wave 2 to adolescents' sense of burden at Wave 2, partially mediated by sense of family obligation and perceived alienation at Wave 2. These results indicate that a sense of

family obligation and youths' perception of their importance to their parents are partial mechanisms through which language brokers ultimately positively or negatively perceive language brokering, with a stronger sense of family obligation and a perception of mattering to one's parents leading to more positive outcomes.

Summary and conclusions. In summary, qualitative research indicates that although language brokering can cause adolescents to worry more about their parents, thus altering the typical parent-child dynamic, it can also foster a sense of compassion and responsibility towards one's family (DeMent et al., 2005). Longitudinal-ethnographic research indicates that role reversal due to language brokering may be the exception and not the rule; rather, parents and children work together as a problem-solving team (Orellana, 2008). In fact, large-scale quantitative data indicates that language brokering may even foster respect for one's parents, though this relationship was not true across immigrant groups (Chao, 2006). Turbulent family environments may be related to a more stressful experience of language brokering and less effective parenting; however, the direction of the relationship between stressful family environments and negative language brokering experiences has yet to be determined (Martinez et al., 2009; Weisskirch, 2007). Finally, a strong parent-child bond, a perception of mattering to one's parents, and sense of family obligation may play important moderating and/or mediating roles in buffering the possible negative effects of language brokering, or serving as mechanisms through which language brokers develop positive perceptions of their experiences (Buriel et al., 2006; Love & Buriel, 2007; Wu & Kim, 2009).

Academics. Many researchers have explored the relationship between language brokering and academic achievement, hypothesizing that the experiences of a language broker should increase their linguistic capabilities, which would then benefit them in school (Buriel et al., 1998; Dorner et al., 2007; Tse, 1995). The majority of research has supported this positive relationship, though this does not necessarily mean that language brokers are all above average students.

Tse (1995) was one of the first researchers to collect data regarding the academic achievement of language brokers. In her small sample of 35 adolescents, she found that 50% of the students sampled had grade point averages (GPAs) under 2.5, characterizing them as average to below-average achievers. In order to see if language brokering was actually related to achievement, Buriel et al. (1998) examined the relationship among language brokering and academic performance, biculturalism, and self-efficacy among 122 Spanish-speaking adolescents (*M* age = 14.8). Buriel and colleagues (1998) surveyed language brokers regarding for whom they translated, where they translated, what they translated, and how they felt about their translating experiences. They used these subscale scores (Persons brokered, Places brokered, Things brokered, and Feelings about brokering) in correlational and regression analyses.

Buriel et al. (1998) combined participants' scores on the Persons, Places, and Things items to create a Total Brokering score, which was correlated with measures of biculturalism, academic self-efficacy, social self-efficacy, academic performance, and parents' education. Participants' mean scores on the Feelings items were also correlated with all these variables. With regard to academic performance, significant but small correlations were found between Total Brokering and academic performance (r = .20), and Feelings about brokering and academic self-efficacy (r = .29) and academic performance (r = .24). In multiple regression analyses, academic self-efficacy (β = .45), biculturalism (β = .16), and total brokering (β = .15) were found to be significant predictors of academic performance. Total Brokering was then disaggregated into the Persons, Places, and Things dimensions and entered into another multiple

regression equation along with Feelings about brokering and all of the other variables. Results indicated that academic self-efficacy (β = .44), Places brokered (β = .20), and biculturalism (β = .14) were significant predictors of academic performance. Buriel and colleagues (1998) concluded that Places items, which assessed the places in which language brokers translated, might best capture the cognitively demanding aspects of language brokering, demonstrated by its predictive relationship to academic performance. However, the relationships among the language brokering variables and academic performance were small, and therefore should be interpreted with some caution. Nevertheless, these findings were the first to relate academic self-efficacy and biculturalism to academic performance among language brokers, highlighting how efficacy and cultural attitudes may play a predictive role in achievement for language brokers.

Hoping to extend and replicate the work done by Buriel et al. (1998), Accoach and Webb (2004) examined the influence of language brokering on acculturation, academic performance, and nonverbal decoding skills among 89 Spanish-speaking adolescents ranging in age from 13 to 18 years. Unlike Buriel and colleagues, Accoach and Webb created a Total Brokering Experience score that included Persons brokered, Places brokered, Things brokered, and Feelings about brokering. Participants' Total Brokering Experience scores were then used in path analyses to examine the relationship of language brokering to the other variables. Results indicated that acculturation and biculturalism mediated the positive effects of language brokering on academic self-efficacy and GPA for junior high students in the sample. For high school students, the positive effects of language brokering on GPA were mediated only by academic self-efficacy. These findings suggests that the effects of language brokering may differ by age, but more empirical research is needed, as the junior high and high school models are not directly comparable. Although this study provided support for the positive influence of language brokering on achievement via acculturation and biculturalism, the small sample size and the calculation of a total language brokering score that included both the attitudinal and behavioral items makes generalizing these results difficult.

Dorner et al. (2007) sought to examine the relationship between language brokering and academic outcomes using a longitudinal design which controlled for early achievement, exposure to bilingual education, and child and family characteristics among 87 fourth, fifth, and sixth grade low-income Latinos in Chicago. Dorner and colleagues were able to obtain five years worth of school records, allowing them to control for very early levels of achievement. Participants were divided into three groups depending on how frequently they language brokered: (a) active language brokers, (b) partial language brokers, and (c) non-language brokers. Active brokers tended to score lower than the partial and non-language brokers on earlier achievement tests, whereas partial and non-language brokers were equivalent. However, by the 5th grade, active language brokers had the highest achievement scores of the three groups. Additionally, active language brokers tended to be first or second generation, and were more likely to have participated in bilingual education programming. Furthermore, active language brokers scored, on average, 7.47 Normal Curve Equivalents (NCEs $p < .05$) higher on achievement measures than non-language brokers, controlling for prior achievement, generational status, gender, family characteristics, and exposure to bilingual education. This translated into an effect size (ES) of .60 on fifth grade reading comprehension scores. However, partial language brokers scored only one NCE point higher than non-language brokers.

Dorner and colleagues (2007) concluded that for those language brokers who are actively translating, brokering had very positive effects on reading comprehension skills, presumably because of their advanced metalinguistic and sociolinguistic capabilities. These findings are

consistent with Buriel et al.'s (1998) and Accoach and Webbs (2004) findings, in that language brokering positively influenced achievement. Although Dorner and colleagues sample was fairly small, it is one of the most rigorous tests of the relationship between language brokering and academic achievement yet.

Summary and conclusions. Research has consistently demonstrated a positive relationship between language brokering and academic achievement (Accoach & Webb, 2004; Buriel et al., 1998; Dorner et al., 2007). However, this relationship may be mediated or moderated by acculturation, biculturalism, and/or academic self-efficacy (Accoach & Webb, 2004; Buriel et al., 1998). Additionally, earlier correlational designs did not account for socioeconomic status, prior achievement, or level of bilingualism (Accoach & Webb, 2004; Buriel et al., 1998). Results from one longitudinal study that included controls for family characteristics, prior achievement, and exposure to bilingual education indicated that language brokering had a large positive effect on standardized reading scores for very active language brokers (Dorner et al., 2007). Descriptive data, however, indicats that language brokers may be average to below average students (Tse, 1995). Although language brokering may positively influence achievement, more research is needed to see if language brokers are achieving on par with their monolingual peers. Additionally, more covariate variables may need to be included in designs testing this relationship, including controls for socioeconomic status, family environment, parent-child relationships, and levels of bilingualism. For example, no study to date has examined how the family environment and the presence or absence of role-reversal may influence the achievement of language brokers.

Issues of directionality. A common limitation throughout the language brokering literature is that the directionality of the relationship between language brokering and other variables often remains unclear. For example, Love and Buriel (2007) found that positive feelings about language brokering were significantly correlated with a strong parent-child bond, and parent-child bonding, in turn, was a significant negative predictor of depression. These results suggest that parent-child bonding may moderate the relationship between language brokering and depression; however, this moderating effect was not statistically tested. Positive feelings about language brokering also could have moderated the relationship between parent-child bonding and depression. Although these correlational data do indeed suggest a relationship among language brokering, parent-child bonding, and depression, the exact nature of this relationship with regard to mediation, moderation, and directionality is elusive.

Similar to Love and Buriel (2007), Chao (2006) found language brokering for one's parents to be a significant positive predictor of respect for both parents among Mexican origin youth, for mothers among Chinese youth, and for fathers among Korean youth. However, language brokering for one's parents was also positively related to internalizing symptoms (such as depression) for both Korean and Chinese youth, but not for Mexican youth. Although these findings establish a relationship between language brokering and respect for parents, and language brokering and internalizing symptoms, the direction of these relationships cannot be determined. For example, does language brokering actually foster respect, or do respectful youth tend to language broker?

Additionally, Weisskirch (2007) found significant correlations between negative feelings about language brokering and difficult family relations, but it cannot be concluded which variable came first – difficult family relations or negative feelings about language brokering. Martinez et al. (2009) also found that youth from high language brokering (HLB) families (i.e., language brokering was common practice) were more likely to engage in risky behavior, and

parents from HLB families reported significantly less effective parenting than those where language brokering occurred less often. Both these findings are important in establishing a relationship between language brokering and difficulties in family relationships, but these data do not explain the direction of these relationships.

Future research on language brokering should take a stronger theoretical stand with regard to the direction of the relationships among language brokering, family variables, and psychological adjustment. In order to do this, researchers must first work on constructing a theoretical foundation for language brokering, and a common framework from which to work. Theory building is imperative for hypothesizing the nature of the relationships highlighted in the previous sections, and therefore a necessary step in advancing this growing body of literature.

Building a Theoretical Framework for Language Brokering

As previously stated, the first research goal of this dissertation study is to examine the structural validity and reliability of the LBM-IV scores, and the second research goal is to use this revised instrument to test a proposed model that examines the relationship among language brokering, perceived stress, family relationships, and academics. In an effort to build a comprehensive theoretical framework for language brokering as it relates to feelings of stress, family relationships, achievement, and language brokering measurement I will draw upon the acculturation, segmented assimilation, and bilingualism literatures. Through the synthesis of key aspects of these literatures, a model of the relationships among all of the variables to be examined can be formulated. Furthermore, this theoretical framework will highlight which language brokering contexts the LBM-IV will need to assess in order to clarify the relationships among these outcome variables.

First, I begin with a concise review of acculturation theory, focusing on the relationships among the acculturation gap, language brokering, and family relationships. Second, I briefly review segmented assimilation theory, which seeks to explain the patterns of acculturation among immigrant communities of color, as it applies to Latino immigrant families. Next, I offer a succinct review of theories regarding the relationship between bilingualism and cognition and how this relates to the linguistic and cognitive capabilities of language brokers. Finally, I summarize how the combination of all these theories can offer a strong theoretical foundation for language brokering measurement and may shed light on previous contradictory findings. I posit that it is a loss of parental respect and familial orientation that puts language brokers at risk for higher levels of perceived stress and lower levels of academic achievement. However, if immigrant parents can maintain parental authority and respect, and youth can remain oriented toward their family, then language brokering may actually foster higher levels of achievement.

Acculturation theory. Acculturation is both a sociological and psychological construct that refers to the cultural changes that take place when two groups of distinct cultural backgrounds come into continuous contact with one another (Berry, 1997). Berry's (1997) framework for acculturation research combines structural and process features, including the characteristics of the society of origin, the characteristics of the society of settlement, the acculturation orientations adopted by the individual and group, as well as moderating individual variables, such as age, gender, and education level. Acculturation orientations are the ways in which immigrants adapt in the United States, negotiating levels of cultural maintenance and cultural adaptation. Berry (1997, 2006) identified four main scenarios including (a) assimilation, which occurs when immigrants do not maintain their cultural identity and instead adopt the identity, values, and language of the dominant culture; (b) segregation, which occurs when immigrant groups exist apart from the dominant culture, surrounded by their own ethnic

community; (c) integration, which occurs when immigrants are able to maintain their culture of origin while simultaneously participating in the dominant culture; and (d) marginalization, which occurs when immigrants are unable to maintain their culture of origin and also unable to have positive encounters with others in the dominant culture.

Acculturation gap and language brokering. The acculturation gap refers to differences in the rates of acculturation between parents and children that result in differences in language use, identities, and behaviors (Birman, 2006). It can also be thought of as a mismatch in acculturation between parents and children (Berry, 2006). The acculturation gap occurs when the children of immigrants become acclimated to U.S. culture more quickly than their parents, resulting in a different socialization experience than their parents experienced in their country of origin. Furthermore, ignorance of new cultural systems can make it difficult for immigrant parents to monitor and control their children's activities. The acculturation gap is the cause of language brokering; language brokering can be thought of as the linguistic manifestation of the acculturation gap.

Research indicates that the most difficult acculturation gap occurs when youth become highly assimilated at the expense of their cultural heritage and when parents remain ignorant to U.S. systems (Birman, 2006; Hovey & King, 1996; Organista, 2007; Portes & Rumbaut, 2001; Smokowski & Bacallao, 2009). For example, Hovey and King (1996) examined acculturative stress, depression, and suicide ideation among 70 Latino adolescents with immigrant parents (*M* age = 16.76). Results indicated that high acculturative stress and low family cohesion were significant predictors of depression and suicidality. Similarly, in a sample of 465 individuals from 198 Latino families, Miranda, Estrada, and Firpo-Jimenez (2000) found that families with highly assimilated youth experienced less cohesion (F (2, 184) = 11.32, $p < .01$) and more conflict (F (2, 184) = 22.83, $p < .01$) than families with bicultural or low acculturated youth. In summary, when youth become highly assimilated to U.S. culture resulting in an acculturation gap between parents and youth, families may experience more conflict and less cohesion, and youth may be at risk for negative psychological outcomes (Hovey & King, 1996; Miranda et al., 2000).

If language brokering is the linguistic manifestation of the acculturation gap, or as some researchers have argued, a proximal index of the acculturation gap (Martinez et al., 2009), then language brokering may put youth and families at risk for more conflict and poor psychological adjustment. However, findings regarding the relationship between language brokering and family relationships remain unclear, in that some researchers have found that translating for one's parents does alter the parent child dynamic and may be related to more stressful family environments (DeMent et al., 2005; Weisskirch & Alva, 2002), whereas others have found that language brokering may foster respect, responsibility, and compassion (Chao, 2006; Orellana, 2008). Further research is needed to understand under which conditions immigrant families with language brokering youth experience positive or negative relationships. Segmented assimilation theory (Portes & Rumbaut, 2001; Zhou, 1997), specifically as it applies to Latino immigrants, may offer some insight into these processes and contradictory findings.

Segmented assimilation theory. Segmented assimilation theory (Portes & Rumbaut, 2001; Zhou, 1997) offers important critiques and revisions to acculturation theory, namely that contemporary immigrants of color may experience acculturation differently than the European immigrants of the 19th century. Theoretically, both groups in contact during acculturation effect cultural changes in the other; however, in reality the larger and more socially dominant group, such as White Americans in the United States, are less affected by the smaller and less powerful

group that immigrates to the U.S., as is the case with Mexican immigrants (Organista, 2007). Furthermore, although Berry (1997) described acculturation orientations as strategies an immigrant chooses, they are in fact better described as acculturation scenarios imposed upon immigrant groups (Organista, 2007).

The predominant historical acculturation scenario experienced by Mexican immigrant families has been segregation (Organista, 2007; Portes & Rumbaut, 2001). Portes and Rumbaut posited that the segregation of Latino, and especially Mexican immigrants, into underprivileged and linguistically distinct neighborhoods is a result of *segmented assimilation*, which recognizes that immigrants today acculturate into different segments of society. Within the framework of segmented assimilation, immigrants usually face at least three patterns of adaptation including (a) upward mobility and economic integration into the middle-class, (c) downward mobility and parallel integration into the underclass, and (c) economic integration into middle-class America, with the preservation of immigrant community values and solidarity (Zhou, 1997).

Mexican immigrants have experienced both downward assimilation and integration, though this integration has been a protracted process of slow social mobility lasting over 150 years (Organista, 2007). Portes and Rumbaut (2001) asserted that downward or upward mobility is dependent upon the human capital of the immigrant generation, the context of reception, and immigrant social capital. *Human capital* refers to the education and language skills that the immigrant generation brings with them to the United States. The *context of reception* refers to pre-existing stereotypes of the immigrant group in the U.S. as well as documentation status. *Immigrant social capital* refers to the strength of the family structure (e.g., intact families with clear hierarchies), adherence to traditional cultural values, and the strength of the immigrant community (Lopez & Stanton-Salazar, 2001; Portes & Rumbaut, 2001).

Also within the segmented assimilation theoretical model, Portes and Rumbaut (2001) described processes of *dissonant* or *consonant acculturation*, which essentially describe the differential rate of acculturation between immigrant parents and their children, like the acculturation gap referred to under the acculturation model. In families that experience dissonant acculturation, immigrant children outpace their parents in adopting U.S. customs and learning English, whereas families that experience consonant acculturation have a similar pace in their acculturation processes. According to segmented assimilation theorists, the third path mentioned above (economic integration into the middle class) is achieved through *selective acculturation*, where immigrant parents and their children slow down the cultural shift to American society and promote partial retention of the native-language and cultural values (Portes & Rumbaut, 2001; Zhou, 1997). Portes and Rumbaut asserted that selective acculturation often promotes the best psycho-social outcomes for immigrant communities of color.

Immigrant social capital, selective acculturation, and language brokering. According to segmented assimilation theory, immigrant social capital and the preservation of aspects of their family's origin-country culture through selective acculturation are some of the most important protective factors that youth from Mexican immigrant and other Latino immigrant families possess in order to withstand disproportionate poverty, large group size, historical depth, and racist stereotypes and discrimination (Lopez & Stanton-Salazar, 2001; Stanton-Salazar, 2001). Similarly, in a comprehensive review of the extant literature on Latino youth, Organista (2007) found that low levels of family cohesion or high levels of family tension were stronger predictors of depression, suicidality, and substance abuse than poverty, gender, or age. Organista concluded that the breakdown of the Latino family is central to understanding the poor mental health and academic outcomes of many Latino youth, and conversely, that the associated

stabilizing forces of a cohesive family are powerful protective factors for this particular population.

For these reasons, I posit that family cohesion and structure, specifically in the form of parental respect and youth's familial orientation, are central to the relationship among language brokering, perceived stress, and academic achievement. Research with language brokers supports this theoretical framing. For example, Weisskirch (2007) found a significant positive correlation between difficult family relations and negative feelings about language brokering. Furthermore, parents and youth from high language brokering families report less parental effectiveness and more risky behavior (Martinez et al. 2009). I conjecture that parents from high language brokering families depend more upon their youth to language broker, which is more likely to result in role reversal and a loss of parental control, resulting in poorer youth and family outcomes. The stabilizing forces of culturally traditional Latino families, in which youth maintain respect for their parents and an obligation to their family, are at the heart of understanding the conditions under which language brokers and their families experience positive or negative outcomes and are representative of Portes & Rumbaut's (2001) conceptions of immigrant social capital and selective acculturation.

Theories of bilingualism and cognition. Recent research on bilingualism and cognition suggests that bilingualism is associated with certain cognitive advances, such as divergent thinking, communication sensitivity, metalinguistic awareness, mental flexibility, and even general intelligence (August & Hakuta, 1997; Baker, 2006; Bhatia & Ritchie, 2006; Bialystok, 2001; Cummins, 2000). Divergent thinking is akin to creative thinking, and metalinguistic abilities allow for reflection upon and manipulation of the structural features of language (Bialystok, 2001). However, much of the research on the cognitive advantages of bilingualism has focused on upper-middle-class or middle-class children who have a balanced proficiency in both their languages. Very little research has focused on disadvantaged immigrant children who learn a second language out of necessity. Additionally, there is a paucity of research on the accuracy with which language brokers translate, as well as the relationship between their translating skills and their cognitive abilities.

In one of the only studies examining the metalinguistic capabilities of young immigrant interpreters, Malakoff and Hakuta (1991) examined the properties of translation ability in children who had experience translating for their families and the generality of translation ability among a group of bilingual students with less explicit translating experiences. Malakoff and Hakuta asserted that *natural translation*, which is a synonym for language brokering, is found at very early ages in communities where multiple languages are spoken and that all children can translate from the time they start acquiring a second language. In the first study, 16 language brokers were administered a series of translation tasks that involved words, sentences, and stories going from both Spanish to English and from English to Spanish. Results indicated that the participating language brokers were excellent translators who made very few errors in Spanish to English and English to Spanish translating tasks. Translation into English was more efficient than translating into Spanish, reflecting the students' English dominance, which the authors hypothesized was a result of having been educated in English-only programs since entering school. Data also supported the presence of a *translation proficiency*, or an additional component of accessibility to the two languages that may be unique to language brokers.

Malakoff and Hakuta (1991) also examined whether translation skills were distributed across a less selective group of children. To do so, the same series of translation tasks were administered to 52 fourth and fifth grade children randomly selected from classes for non-native

English speakers. Comparisons of the error patterns revealed that the group of self-identified language brokers did not differ from the randomly selected group of bilingual students. In fact, the correlation between the percentage of each error type was r =. 87 for Spanish-to-English translations, and r = .91 for English-to-Spanish translation. These results suggest that most bilingual children may have strong translation skills, and therefore may benefit from the metalinguistic abilities fostered by these skills.

Young interpreters as "gifted." In a mix of ethnographic, qualitative, and quantitative research, Valdés (2003) also examined the translating skills of 25 high-school age interpreters. Specifically, she video taped and audio recorded a scripted interaction, informed by qualitative work within an immigrant Latino community, to examine the challenges that language brokers face during interpreting transactions with community members. The script involved an interaction with a "mother" and a "principal" in which the principal narrated an incident where a wallet is taken and eventually accuses the mother's daughter of stealing the wallet in question. The scripted interaction was based on a situation that actually occurred during earlier ethnographic research. Research team members read the script of the principal and mother, while the language broker translated between them without a script, as would occur in a natural translating situation. Interpreters were evaluated based on the accuracy of the transmission of the original information, conveyance of tone and stance, their ability to keep up with communication demands, and communication through language knowledge gaps (i.e., flawed language usage that still conveyed accurate meaning).

Like Malakoff and Hakuta (1991), Valdés (2003) found that the young interpreters were very skilled in carrying out free translation and interpreting, correctly conveying the meaning of the original utterance as well as the meaning and tone behind the utterances. Furthermore, they were able to anticipate and ameliorate conflict, sort important information from unimportant information, and simultaneously monitor and evaluate their translation. Some of the interpreters were relatively early in their English learning experiences, but were still able to communicate their understanding and convey even subtle meanings from the original utterances. Valdés concluded that young interpreters should be considered gifted because of their superior metalinguistic, sociolinguistic, and translating abilities. In summary, the limited research examining the accuracy of the translations provided by language brokers as well as the metalinguistic and sociolinguistic skills associated with translating provide preliminary evidence for the cognitive advantage of language brokers (Malakoff & Hakuta, 1991; Valdés, 2003). Research examining the relationship between language brokering and academic achievement and academic self-efficacy also supports this claim (Buriel et al., 1998; Dorner et al., 2007).

A model of relationships. Language brokering can be thought of as the linguistic manifestation of the acculturation gap (Birman, 2006; Martinez et al., 2009). Research indicates that the acculturation gap can heighten family conflict, lower levels of family cohesion, and negatively influence the mental health of Latino youth (Birman, 2006; Hovey & King, 1996; Miranda et al., 2000). However, research with regard to family relationships and language brokering is mixed, some indicating that language brokering fosters respect and compassion for parents (Chao, 2006; DeMent et al., 2005), and others that language brokering alters the parent child dynamic and may be related to more stressful family environments (DeMent et al., 2005; Martinez et al., 2009; Weisskirch & Alva, 2002).

Segmented assimilation theory posits that some of the strongest protective factors for Latino youth from immigrant families is an intact and cohesive family and a maintenance of a cultural orientation towards the family, buffering these youth from negative psychosocial

outcomes (Portes & Rumbaut, 2001; Zhou, 1997). In fact, research indicates that it is the breakdown of the Latino family that connects acculturation and the negative psychosocial outcomes of Latino youth (Organista, 2007). For all these reasons, I posit that family cohesion and structure, specifically in the form of youths' respect for their parents and sense of obligation toward their family, moderates the relationship between language brokering and perceived stress and language brokering and academic achievement. Higher levels of respect for parents and obligations towards one's family will protect (i.e., moderate, buffer) language brokers from the possible negative effects of language brokering (i.e., stress), while at the same time allowing them to enjoy the positive cognitive benefits of translating, which may positively affect academic achievement.

Respect for parents and family obligation can be seen as moderating the effects of language brokering on outcome variables in that they specify the conditions under which language brokering has positive or negative effects on youth. That is, the effect of language brokering on perceived stress and achievement varies across levels of respect for parents and family obligation or orientation. Language brokers that remain highly respectful of parents, oriented towards their family, and identified with their heritage culture may experience less stress than youth who do not maintain these stabilizing familial forces. Furthermore, because natural translation and bilingualism are associated with advanced metalinguistic, sociolinguistic, and general cognitive skills (Baker, 2006; Cummins, 2000; Malakoff & Hakuta, 1991; Valdés, 2003), language brokering may foster higher levels of achievement if family cohesion remains high and immigrant parents can maintain respect and control. However, without those stabilizing family variables in place, language brokering may actually lead to higher levels of stress, and lower levels of academic achievement.

The possible moderating effect of family orientation on stress and achievement for language brokering youth outlined above leads to an important question: Which language brokering contexts are more likely to result in the destabilization of traditional immigrant family forces? I posit that situations in which the safety, health, or well-being of the family depends on the language broker's accurate interpretation, or what I have termed *high-stakes contexts*, are when the inversion of the parent-child dynamic is most likely to occur, resulting in the possible loss of parental control and destabilization of immigrant family forces. As a result, instruments designed to measure language brokering must accurately assess the varying contexts in which language brokers interpret, especially those that may lead to role reversal, such as translating in hospitals, clinics, or for social service providers (Anguiano, 2009). Accurate language brokering assessment is therefore a necessary first step in testing the model I have outlined above. In the sections that follow I review and evaluate the literature on language brokering measurement, which will also be addressed empirically in this study.

Measuring Language Brokering

The first tools used to measure language brokering emerged in the mid-1990s when the body of literature began to grow. Tse (1995) created the first language brokering measurement tool, which was used to assess the prevalence of language brokering among immigrant communities. However, the psychometric properties of this instrument have gone largely unexamined. The contradictory findings in the language brokering literature with regard to psychological adjustment, family dynamics, and achievement may in fact indicate an incomplete understanding of the construct itself. As a result, researchers cannot be certain that we are measuring language brokering as we intend to measure it, which may call into question the interpretations of previous findings in this small body of literature. Based on previous findings

(Anguiano, 2009) I created the LBM-IV, which includes additional items designed specifically to assess how frequently language brokers translate in high-stakes contexts. The empirical examination of the LBM-IV scores, which is the first research question in this study, is a necessary step toward understanding the effects of language brokering on Latino immigrant families in the second research question.

In order to clarify the history and development of the LBM, I begin with the evolution of the LBM from its original conception in 1995 by Tse (LBM-I) to the LBM-III, the most recent version of the LBM. Next, I review previous findings on the psychometric properties of the LBM-II and III. Finally, I detail the additions and revisions I made to create the LBM-IV.

Development of the LBM. The LBM has undergone three major revisions (not including the current revision), which are labeled here the LBM-I, LBM-II, and LBM-III. In each of the versions, there were changes to the number of items, the types of items, or the way in which these items were combined to comprise subscales, subscale scores, and total scores. It is important to note that changes to the LBM were not based on empirical examinations of the scale's scores; rather, the changes were related to the research questions proposed by the investigators using the various versions of the measure. Although these revisions often had a theoretical basis, the revised scales were never subjected to empirical examinations aimed at establishing the structural validity and internal consistency of the scores.

LBM-I. Tse (1995) created the original language brokering measurement tool. The LBM-I was a checklist that assessed the agents, locations, texts, and attitudes involved in language brokering among adolescents. In Tse's study, high school students were asked if they brokered, and if so, when they began brokering. Those who indicated they had engaged in language brokering also indicated the people for whom they translated (Agents dimension), the places where they translated (Locations dimension), the documents they translated (Texts dimension), and the attitudes they held about brokering (Attitudes dimension).

For the Agents dimension, participants were required to choose the people for whom they translated from a list that included parents, siblings, friends, other relatives, neighbors, school officials, teachers, and other. For the Locations dimension, language brokers were asked to indicate where they had translated from a list of places, including home, school, the store, the bank, the post office, government offices, and other. The Attitudes dimension required brokers to indicate how they felt about their language brokering from a series of attitudinal quotes, checking all those that reflected their feelings. Examples of these attitudinal quotes included, "I'm proud to be a broker," "I'm embarrassed to broker," or "I like to broker." The purpose of the LBM-I was to assess the prevalence of and attitudes toward language brokering. Therefore, Tse reported percentages for each item within each dimension, and did not calculate a total brokering score because the LBM-I was a checklist as opposed to a scale.

LBM-II. Buriel et al. (1998) revised the LBM-I (Tse, 1995) by adding focus group-derived questions to all four of the dimensions. They called the revised instrument the Language Brokering Scale (referred to as LBM-II here). Like the LBM-I, the LBM-II was intended for use with adolescents. Buriel and colleagues changed the LBM-I from a checklist to a scale by converting the scoring for items on the Agents and Attitudes dimensions to four-point Likert scales. The Agents dimension, renamed Persons, had 10 items and participants responded to how often they brokered for family members, friends, neighbors, teachers, and strangers on a four-point Likert scale with verbal anchors ranging from *never* to *always*.

Participants responded to the 12 items on the Places dimension by checking *yes* or *no* for the places where they had previously brokered. However, unlike the LBM-I, Buriel et al. (1998)

weighted a "yes" response on a scale from one to three, arguing that translating in some places, such as the doctor's office, was more difficult than translating in other places, such as at home. The Texts dimension, renamed Things by Buriel and colleagues, also required participants to check *yes* or *no* to a total of 12 things that they might have translated, and these were also weighted according to difficulty. These theoretical weightings were derived from previous qualitative work (Buriel & DeMent, 1993). The Attitudes dimension, renamed Feelings, included 12 items that assessed how participants felt about language brokering. They were adapted from the Attitudes dimension items of the LBM-I and scoring was converted into four-point Likert scale ranging from *never* (1) to *always* (4). In total, the LBM-II consisted of 46 items, 22 four-point Likert scale items (the Persons and Feelings dimensions), and 24 checklist items (the Places and Things dimensions) that were weighted on a scale from one to three according to difficulty.

Based on the changes that they had made to the item-response formats, Buriel et al. (1998) changed how the LBM-II was scored. Buriel and colleagues calculated a total brokering score, which was a combination of the Persons, Places, and Things items, and a separate Feelings score. They argued that the Feelings dimension should be measured separately "because it represents an attitudinal aspect of brokering rather than the actual behaviors involved with brokering" (p. 287). However, they also disaggregated the total brokering score and used the subscale scores (i.e., Persons, Places, and Things) as predictors in multiple regression analyses.

LBM-III. In 2002, Weisskirch and Alva adapted the LBM-II for use with a younger population, specifically pre- and early-adolescents ranging from approximately 10 to 14 years of age. The LBM-III used simplified vocabulary in order to make the questions more accessible to a younger population. Although the LBM-III retained the four dimensions of the LBM-II (Persons, Places, Things, Feelings), several changes were made to the way in which some items were scored. The Persons dimension retained the 10 Likert scale items from the LBM-II. However, the Places items were converted into four-point Likert scale items, which asked language brokers to indicate how often they translated in different places ranging from one (*always*), two (*a lot*), three (*a little it bit*), to four (*never*). The Things dimension was converted back into a checklist that required participants to check yes or no to a list of 12 things that they may have translated. However, unlike the LBM-II, the LBM-III did not use the theoretical weightings employed by Buriel et al. (1998); the Things dimension was used only as a checklist. Weisskirch and Alva (2002) added two items to the Feelings dimension, and retained the other 12 items from the LBM-II, resulting in a total of 14 Likert-scale items. At this stage, there were 36 Likert-scale items (Persons, Places, and Feelings items) and 12 checklist items (Things items).

In two subsequent studies, Weisskirch (2005, 2007) dropped two Feelings and two Places items, and combined the Persons and Places dimensions into a Frequency dimension with a single score, because all of these items assessed how often language brokers translated for particular people and in particular situations. The Feelings items were scored together to create a Feelings subscale score. Thus, the final LBM-III consisted of 32 Likert-scale items (20 Frequency and 12 Feelings items).

Psychometric properties of scores on the LBM II and III. In the following sections I review the validity and reliability evidence for the various versions the LBM. Because the LBM-I was a checklist and not a scale (Tse, 1995), it cannot be evaluated with regard to psychometric properties, and so is not included in this section of the review.

LBM-II. Buriel et al. (1998) did not report reliability estimates when they first used the LBM-II. However, Love and Buriel (2007) reported moderate internal consistency estimates for the subscale scores: Persons, $\alpha = .74$; Places, $\alpha = .70$; Things, $\alpha = .75$; Feelings, $\alpha = .77$. Accoach and Webb (2004) calculated reliability estimates of scores for the Places and Things items combined ($\alpha = .88$), the Persons and Feelings items combined ($\alpha = .86$), and all four dimensions of the LBM-II combined ($\alpha = .90$).

Only one group of researchers (Accoach & Webb, 2004) examined the structural validity of the LBM-II scores. Accoach and Webb conducted a principal components analysis (PCA) with varimax rotation to examine the validity of combined item scores on the LBM-II, the Bicultural Involvement Questionnaire (Szapocznik, Kurtines, & Fernandez, 1980), and an academic self-efficacy scale. They found a six-factor solution with the LBM-II items loading on two factors. Items from Places and Things loaded on the first factor and items from Persons and Feelings loaded on the second factor.

Accoach and Webb's (2004) structural validity analyses were problematic for several reasons. First, they used principal components analysis, which does not discriminate between shared and unique variance and can produce inflated values when factors are uncorrelated and communality estimates are moderate (Costello & Osborne, 2005). The communality estimates for the PCA, however, were not reported. Second, Accoach and Webb did not report the factor loadings for the two-factor structure they found. Third, the analyses included three scales with more than 60 items combined although the sample consisted of only 89 participants. Therefore, these findings are difficult to accept. With regard to convergent validity, Buriel et al. (1998) reported significant but small correlations between scores on the Bicultural Involvement Questionnaire (BIQ; Szapocznik et al., 1980) and total brokering ($r = .20$) and feelings about brokering ($r = .24$).

LBM-III. There is also limited psychometric evidence for LBM-III scores. Weisskirch (2005, 2007) reported an internal consistency estimate for Frequency subscale scores of .87 in both studies, and an internal consistency estimate of .70 for Feelings subscale scores in 2005. With regard to convergent validity, Weisskirch (2005) reported a moderate correlation between the Feelings subscale scores and ethnic identity scores ($r = .42$).

Anguiano (2009) is the only known study to examine the psychometric properties of the LBM-III. Using exploratory factor analytic procedures Anguiano examined the structural validity of the Frequency subscale scores, Feelings subscale scores, and the subscales' combined scores, as well as the reliability of the subscales indicated by the factor structure findings in comparison with reliability estimates of the hypothesized structure of the LBM-III. Anguiano examined multiple structures, including a four-factor structure (Persons, Places, Positive Feelings, and Negative feelings), a three-factor structure (Places, Persons, and Feelings), and a two-factor structure (Frequency and Feelings). However, factor analyses supported an embedded five-factor structure: a three-factor structure for the Frequency subscale scores and a two-factor structure for the Feelings subscale scores.

Frequency subscale. The first factor in the three-factor structure of the Frequency subscale scores was named Everyday translating contexts, and consisted of items that addressed translating for parents, relatives, and the corresponding places where language brokers might translate for these people. These places included their parent's place of employment, the bank, or on the phone. The second factor, named High-Stakes translating contexts, addressed translating in places such as the hospital or the clinic. In contrast, the final factor, named Low-Stakes translating contexts, addressed translating for friends, siblings, neighbors, and at church.

Internal consistency estimates were reported in the moderate to high range (Everyday α = .82; High-Stakes α = .82; and Low-Stakes α = .78).

The three-factor solution found by Anguiano (2009) suggested a new conceptualization of the Frequency subscale. Namely, the division of the items into high-stakes, low-stakes, and everyday duties suggests that the context in which language brokers translate is important. Items that addressed translating in high-stakes situations were more interrelated than items that addressed translating in low-stakes situations. Cohen, Moran-Ellis, and Smaje (1999) found that interpreting sensitive material in hospitals was especially anxiety provoking for children, which highlights the importance of context in language brokering. Additionally, Weisskirch (2007) found that language brokers interpreted their duties as more stressful in the context of high family stress. This suggests that language brokering as a construct may be better understood according to the varying levels of what is at stake during a particular language brokering situation. This takes context into account in a way that the structures of the previous versions of the LBM did not.

As previously stated, I posit that high-stakes contexts are the language brokering transactions that are most likely to negatively affect parent-child relationships because they may foster a loss of parental control and respect as children far exceed their parents' English and cultural knowledge proficiencies in important contexts; high-stakes translating experiences may exacerbate the acculturation gap. And as outlined in the theoretical section, the acculturation gap or dissonant acculturation is known to have negative effects on parent-child relationships and the psycho-social outcomes of youth (Birman, 2006; Hove & King, 1996; Portes & Rumbaut, 2007; Zhou, 1997). Translating in everyday and low-stakes contexts, in contrast, should be less likely to cause family stress, because less is at stake in these language brokering transactions. In this way, the assessment of language brokering in the form of high-stakes, low-stakes, and everyday translating contexts fits within the previously outlined theoretical framework.

Feelings subscale. Factor analyses supported a two-factor structure for scores on the Feelings subscale, which consisted of a Positive Feelings factor and a Negative Feelings factor. Although analyses confirmed a dichotomous underlying factor structure, the structural analysis of the Feelings subscale scores also revealed some important concerns. The first of these concerns was the low to moderate communality estimates, suggesting that very little variance in the items actually contributed to the factors (Thompson, 2004). Second, the Positive Feelings factor consisted of eight of the 12 subscale items, whereas the Negative Feelings factor had only three salient items. It is important to note, however, that of the 12 items on the Feelings subscale only three items reflect any sort of negative emotions. These items include "I feel embarrassed when I translate for others," "I feel nervous when I translate for others," and "I have to translate for others even when I don't want to." Internal consistency estimates were reported in the moderate range (Negative Feelings α = .67; Positive Feelings α = .78). Anguiano (2009) concluded that the Feelings subscale needed substantial item revisions in order to better capture the variety of feelings associated with language brokering.

Additions and revisions to create the LBM-IV. The evolution of the various versions of the LBM indicates that researchers have consistently conceptualized the Feelings subscale, which assesses attitudes, as a distinct dimension from the Frequency subscale, which assesses actual language brokering behaviors (Buriel et al., 1998; Weisskirch, 2005, 2007). Of the two dimensions, reports on the psychometric properties of the Feelings subscale indicate that it is less internally reliable, has lower communality estimates, and may need substantial revision to balance the number of positive to negative feeling items (Anguiano, 2009; Weisskirch, 2005,

2007). For these reasons, only the High-Stakes contexts, Everyday contexts, and Low-Stakes contexts (formerly the Frequency subscale) subscales were examined and used in this study. The main research question sought to examine which language brokering behaviors, situations, or experiences might be related to positive or negative outcomes for Latino youth. Therefore, the LBM-IV consists only of the language brokering context items.

Item additions and revisions were formulated based on Anguiano's (2009) three-factor structure of the Frequency subscale. As a result, item revisions resulted in three subscales: the High-Stakes subscale, the Low-Stakes subscale, and the Everyday subscale. Many of the items from the LBM-II and LBM-III were retained on the LBM-IV; however, they were reorganized into these three subscales instead of the Persons, Places, and Things subscales of the LBM-II or the Frequency Subscale of the LBM-III. Items were added to the three subscales, resulting in a total of 30 Likert-scale items.

High-Stakes items. The High-Stakes subscale items assess how frequently language brokers interpret high-stakes documents or in high-stakes contexts. High-stakes contexts are meant to indicate situations in which the language broker's interpretations are regarding someone's health, safety, or general well being. The factor structure indicated by Anguiano's (2009) three-factor solution resulted in five salient items on the High-Stakes factor. Five additional high-stakes items were added to create a total of 10 items. These items included translating medical documents, immigration forms, tax documents, for medical professions, and for social service providers.

Low-Stakes items. The Low-Stakes subscale items assess how frequently language brokers interpret low-stakes documents or in low-stakes contexts. Low-stakes contexts are those translating situations in which the consequences of an inaccurate translation are not severe. Anguiano's (2009) factor structure resulted in four salient items without complex loadings on the Low-stakes factor, which included translating for friends, at church, for siblings, or for neighbors. Six low stakes items were added to create a total of 10 items. These items included translating television shows, instructions for a new appliance or piece of equipment, on the phone when the other person doesn't speak English, at a restaurant, around the neighborhood, and when someone comes to the door.

Everyday items. The Everyday subscale items assess everyday translating contexts, such as translating around the house and for family and relatives. Anguiano's (2009) factor structure resulted in five salient items on the Everyday factor. Five items were added to create a total of 10 items. These items included translating for other relatives, at home, while running errands with parents, notes or letters home from school, and for various people at school.

The Present Study

The research objectives of the present study were two-fold: (a) to examine the structural validity and reliability of LBM-IV scores, and make further item revisions based on those examinations to create a reliable and valid language brokering assessment tool; and (b) to empirically test a theoretical model which seeks to clarify the relationship among language brokering, family obligation, perceived stress, and academic achievement using the refined LBM-IV. Data analyses were conducted in two phases, a scale development phase, and a model-testing phase. In Phase I, exploratory factor analyses and confirmatory factor analyses were used to refine the LBM-IV. In Phase II, structural equation modeling (SEM) was used to examine the relationships among all the variables in question. SEM is a statistical analysis that combines confirmatory factor analysis (CFA) and path analysis (PA) to test proposed models. In this way, moderating pathways among the variables in question can be examined.

Phase I: Scale development hypotheses. Based on Anguiano's (2009) findings, a three-factor structure of the LBM-IV was hypothesized, which included a Low-Stakes translating duties factor, an Everyday translating duties factor, and a High-Stakes translating duties factor. To empirically test this hypothesis a single-factor structure (all translating items), a two-factor structure (An Everyday and Low Stakes combined factor, and a High Stakes factor), and a three-factor structure (High Stakes, Everyday, High-Stakes) were examined. Additionally, parallel analysis was used to aid in determining the number of factors to extract (Thompson, 2004).

Phase II: Model testing hypotheses. In the hypothesized SEM model, each pathway indicated among the latent variables in question represents a specific hypothesis. Several variations of models were tested, and the fit of each of the models was examined to determine which model provided for the best fit. The models tested the moderating effect of family obligation on stress and achievement as outlined in the theoretical section of this paper. The moderator variable is the interaction of two variables, family obligation and High-Stakes translating contexts. Hypotheses were made with regard to main effects, as well as interaction/moderating effects on the outcome variables. Models used the previously outlined theory to guide the placement of independent, moderating, and dependent variables, thus addressing previous concerns about the direction of the relationship between language brokering and other variables.

Moderation measure. I hypothesized that family obligations, assessed by Fuligni et al.'s (1999) Family Obligations measure, would moderate the relationship between High-Stakes translating contexts and perceived stress, and High-Stakes contexts and academic achievement. Fuligni et al.'s measure assesses three aspects of family obligations among immigrant youth: the importance youth place on respecting one's parents (Respect subscale), how often youth feel they should help out and spend time with their families (Current Assistance subscale), and the importance youth place on remaining close to their family in the future (Future Obligations subscale). This measure was selected to operationlize family orientation among the Latino youth in this study because it was developed with Asian immigrant and Latin American immigrant youth (Fuligini et al., 1999), and has been found to be associated with academic motivation (Fuligni, 2001), and more positive emotional well being (Fuligni & Pederson, 2002) among Latino-origin youth. The three subscales of the Family Obligations measure can be used as three separate subscales, or combined to create one index (A. Fuligni, personal communication, 2011). In this study, the three subscales were combined to create one index in order to create a more parsimonious model. See Figure 1 for the hypothesized structural model.

Moderation/Interaction hypotheses. As outlined in the theoretical section, I hypothesized that High-Stakes translating contexts, such as translating immigration forms or at a government office, are most likely to have a negative effect on the parent-child dynamic, cause stress, and hinder academic achievement. It is during these contexts that stabilizing familial forces, conceptualized here as the Family Obligations measure, become particularly important (Birman, 2006; Portes & Rumbaut, 2001; Organista, 2007). Higher levels of respect, time spent helping and being with one's family, and a future obligation towards one family will moderate the effect of translating in High-Stakes contexts on perceived stress and academic achievement – lessening the possible negative impact of translating in situations where the health and well-being of one's family is at stake and allowing youth reap the positive cognitive effects of translating and being bilingual.

This moderation construct is an interaction between family obligations and High-Stakes translating duties (i.e., Family Obligations x High-Stakes, represented as FOxHS in the

hypothesized model in Figure 1), and is represented as a latent interaction term in all models. A latent interaction term was created and model fit was compared with and without the pathways among the interaction term and the outcome variables estimated, thus empirically testing the hypothesis using nested models, as is customary for hypothesis testing in structural equation models (Kline, 2011). It was also hypothesized that there would be a negative relationship between FOxHS and stress, because the moderating variable should reduce the amount of perceived stress experienced by youth. Conversely, a positive relationship between FOxHS and GPA was hypothesized, because the moderating variable should positively affect academic achievement among youth.

Main effects hypotheses. It was hypothesized that High-Stakes translating contexts would have a negative relationship with achievement and a positive relationship with stress, and that Everyday and Low-Stakes translating contexts would have a positive relationship with achievement and no relationship with perceived stress. These hypotheses were based on the premise that Everyday and Low-Stakes translating duties are by nature less potentially harmful than High-Stakes translating contexts, and may in fact foster the development of youth's bilingual capacities, resulting in higher academic achievement (Malakoff & Hakutta, 1991, Valdés, 2003). Family Obligations was also hypothesized to have a positive relationship with achievement and a negative relationship with perceived stress, because research among Latin American youth has found that higher levels of family obligations are associated with increased academic motivation (Fuligni, 2002) and more positive emotional well being (Fuligni & Pedersen, 2002). Furthermore, segmented assimilation theory recognizes the importance of family orientation as a protective factor for immigrant youth of color (representing immigrant social capital and selective acculturation among Latino immigrants), which also supports hypotheses regarding the positive impact of family obligations on achievement and stress.

Theoretical directionality. An important theoretical issue is conceptualizing which variables are moderators and which are predictors. Mathematically, the product terms representing the theoretical interactions do not differentiate which variable is which; it is merely the empirical combination of two variables that account for a unique amount of variability on the outcome variables, beyond the main effects of High-Stakes language brokering contexts and Family obligation (Little, Bovaird, & Card, 2007). However, because many researchers in the language brokering literature have established correlations among variables without theoretically arguing which variables are predictors and which are outcomes (e.g., Martinez et al., 2009; Weisskirch, 2007), it is imperative that theory inform the placement of predictor, moderating, and outcome variables in these hypothesized models.

The Family Obligations measure represents the traditional stabilizing forces of the immigrant Latino family in this study. Segmented assimilation theory states that one of the most important protective factors for Latino immigrant youth are these stabilizing forces – an intact, cohesive, and culturally traditional family (Portes & Rumbaut, 2007; Zhou, 1997). Comprehensive reviews on Latino families also indicate that it is the breakdown of the traditional stabilizing forces associated with the family that leave immigrant youth vulnerable to poverty and discrimination (Organista, 2007). For all these reasons, I hypothesize that the family variables in this study are moderators – or interactions – between high-pressure language brokering experiences and psychological adjustment (i.e., stress) and academic achievement.

Method

Participants

Participants were recruited from four public middle schools and two public high schools in English learner or Spanish for Spanish-speakers classrooms in urban school districts in California. The larger of the two high schools had 1685 students total, 67% were Latino, 55% were considered socioeconomically disadvantaged, and the school had an Academic Performance Index (API) of 775. API scores range from 100 to 1000 with a state target of 800. The second high school was a smaller charter school with a total of 192 students, 56% were Latino students and 98% of all students were considered socioeconomically disadvantaged, with an overall API score of 825. The four middle schools ranged in size from approximately 600 to 1300 students, with anywhere from 32% to 79% Latino students, 48% to 76% socioeconomically disadvantaged, and API scores ranging from 655 to 771. In general, all of the schools had a large percentage of Latino and socioeconomically disadvantaged students, and all of the schools except for the charter high school had API scores below the state target.

A total of 362 adolescents ranging in age from 11 to 18 years (M = 13.62, SD = 1.47) completed surveys, 48.4% (n = 175) of whom were female. All participants came from Spanish-speaking homes, and based on self-report, 73.8% (n = 267) were of Mexican descent and 66.3% (n = 240) were second generation with two immigrant parents. The average amount of education completed by mothers and fathers on a 6-point scale (1 = *Elementary School or Less*, 2 = *High Schoo*l, 3 = *Some College/University*, 4 = *Completed College/University*, 5 = *Master's Degree*, 6 = *Doctoral or Professional Degree*) was 2.04 (SD = 1.11) and 1.91 (SD = 1.01), respectively. The average self-reported grade point average was 2.90 (SD = .88). With regard to language proficiency, the average level of comfort speaking English was 3.58 (SD = .69) and the average level of comfort speaking Spanish was 3.27 (SD = .86), both on a 4-point scale, indicating that students felt comfortable speaking in either language. With regard to reading and writing, however, students reported feeling more comfortable reading (M = 3.42, SD = .76) and writing (M = 3.45, SD = .72) in English than reading (M = 2.89, SD = 1.01) and writing (M = 2.73, SD = 1.02) in Spanish. See Table 1 for detailed descriptive statistics of participants.

Measures

The measures used assessed demographic data and language fluency, academic achievement, language brokering experiences, family obligations, and perceived stress using Likert-scale items. Please see Appendix A for a complete copy of all measures outlined in this section.

Demographic data and language fluency. Demographic questions assessed participants' country of origin/ethnic background, mother's and father's educational attainment, generational status, gender, age, English language fluency, and Spanish language fluency. Participants rated their comfort speaking, reading, and writing in English and Spanish on a four-point Likert scale ranging from 1 (*Very Uncomfortable*), 2 (*Somewhat Uncomfortable*), 3 (*Somewhat Comfortable*), to 4 (*Very Comfortable*).

Language Brokering Measure – IV. Three subscales of 10 items each were used to assess frequency and type of language brokering experiences: High-Stakes, Everyday, and Low-Stakes translating contexts. The structure and item content of the three subscales were based on Anguiano's (2009) three-factor structure of the language brokering context items. All three subscales assessed the frequency of particular language brokering situations on a four-point Likert scale, ranging from 1 (*Never*) to 4 (*Always*). The High-Stakes subscale items assessed how frequently language brokers interpret high-stakes documents or in high stakes items. An

example High-Stakes item includes, "How often do you translate at the hospital?" The Everyday subscale assessed everyday translating activities, such as translating around the house and for family and relatives. An example Everyday item includes, "How often do you translate for your parents?" The Low-Stakes subscale assessed how often language brokers interpret in situations in which the consequences of an inaccurate translation are not severe, such as for friends or siblings. An example Low-Stakes item includes, "How often do you translate for your siblings?" Please see Appendix A for the complete Language Brokering Measure – IV retained items.

Family Obligations. Fuligni et al.'s (1999) Family Obligations measure was used to assess participants' sense of obligation to support, assist, and respect their families. The measure consists of three distinct, yet overlapping, aspects of family obligation. The first subscale, Current Assistance, assessed youth's expectation for how often they should help out with 11 different activities or household tasks on a scale ranging from 1 (*Almost Never*) to 5 (*Almost Always*). Example items include how often youth think they should "help take care of your brothers and sisters," or "spend time with your family on the weekends." The Respect for Family subscale measured the importance of respecting and following the wishes of parents and other family members on a scale ranging from 1 (*Not Important at All*) to 5 (*Very Important*). Participants rated the importance of seven items, such as how important it is to "show great respect for your parents," or "follow your parents advice about choosing a job or major in college." The third and final subscale, Future Support, measured participants' obligations to support and be near their families in the future also on a scale ranging from 1 (*Not Important at All*) to 5 (*Very Important*). Six items assessed the importance of six activities, such as "help your parents financially in the future," or "spend time with your family even after you no longer live with them." Reliability estimates for all three subscales have been reported in the moderate to high range ($.76 \leq \alpha \leq .87$), Fuligni & Pedersen, 2002; Fuligni et al., 1999).

Perceived Stress. Cohen, Kamarck, and Mermelsteing (1983) developed the Perceived Stress Scale (PSS) to measure the degree to which people appraise situations as stressful. The PSS is a 10-item measure that asks about feelings and thoughts during the last month, such as, "In the last month, how often have you been upset because of something that happened unexpectedly" or "In the last month, how often have you felt that things were going your way." Items are rated on a five-point Likert scale ranging from 1 (*Often*) to 5 (*Never*). Responses to the positively stated items are reversed, in order to obtain a score that reflects the nature of the construct – perceived stress. Internal consistency estimates have been reported in the high range (αs = $.84 \leq \alpha \leq .86$, Cohen et al., 1983).

Achievement. Academic achievement was assessed using student self-reported grade point average for the current academic year. Participants indicated on a four-point scale their overall grade point average.

Study Design and Procedure

Data were collected using paper-and-pencil, multiple-choice surveys. Principals of urban public junior high and high schools with large Latino populations were approached and asked to participate. If a principal agreed, then teachers of English learner or Spanish for Spanish-speakers classrooms were recruited for participation of their classroom in the study. If a teacher was willing, the investigator visited the classroom, explained the study in person to students, and provided a letter describing the study and procedure with an attached consent form to be sent home for parents to read. All documents were provided in both English and Spanish. Students had to return a signed consent form from their parents in order to participate. Additionally, before the survey was administered students also signed an assent form, indicating that they

agreed to participate and were able to terminate participation at any time and still receive compensation. Approximately 90% of students who received a letter agreed to participate.

Each classroom that participated was given a short lesson on language brokering (presented in English and then translated into Spanish) and administered the survey. The few students who did not return consent forms listened to the classroom lesson and then completed homework or other seatwork while the survey was administered to participating students. All surveys were administered in English. The investigator began by providing a working definition of language brokering and child translators to ensure that students understood the nature of the questions they would be answering. The investigator then administered the survey in class, reading each set of directions out loud, and encouraging students to ask questions if they did not understand a particular item. After completion of the survey, regardless of how many students participated in the study, the entire classroom was given a food party as a reward. During the food party, the investigator finished the lesson on language brokering, explaining what other researchers have concluded about child translators, and encouraged students to share their translating experiences. The entire process lasted approximately 50 minutes per classroom, or one full class period. Teachers were compensated with a gift certificate to Office Depot. The institutional review board at the investigator's institution approved the study.

Results

Phase I: Scale Development Results

Phase I, scale development, focused on the examination of item scores on the three subscales of the Language Brokering Measure – IV. Based on the results of the preliminary analyses, exploratory factor analyses, confirmatory factor analyses, and convergence with theory, items were eliminated from each subscale to create subscale scores that were reliable and valid before they were entered in the structural equation model for the examination of the relationships among constructs in Phase II.

Preliminary analyses. Means and standard deviations based on the originally hypothesized 30 items of the High-Stakes, Everyday, and Low-Stakes subscales can be found in the upper half of Table 2. As can be seen, subscale means fell between 1.0 and 2.0, with standard deviations in the .5 to .6 range. Item means fell between 1.0 and 3.0 for the Everyday subscale, between 1.0 and 2.0 for the High-Stakes subscale, and between 1.0 and 3.0 for the Low-Stakes subscale. High-Stakes and Low-Stakes items were minimally and positively skewed (item range, .65 - 1.5) and kurtotic (item range, .9 – 3.0). Examination of histograms and box-and-whisker plots of items confirmed that five of the Low-Stakes items and six of the High-Stakes items had more cases below the mean (positive skew) and/or a peaked distributions with long tails (positive kurtosis), indicating that participants translated less frequently in High-Stakes and Low-Stakes contexts than in Everyday Contexts. These findings are logical given the nature of the scales; one might expect youth to translate more in everyday situations rather than in high-stakes or low-stakes ones.

The High-Stakes and Low-Stakes subscales were also minimally skewed and kurtotic (see Table 2). However, these indices were well below conservative cut-off guidelines (e.g., Kline, 2011). In fact, absolute skew and kurtosis values of greater than 3 and 10, respectively, are considered moderate index guidelines for how much non-normality may be problematic according to Monte Carlo simulation studies, and parameter estimates and chi-square estimates have been found to remain unbiased if skew and kurtosis values are below these guidelines (Curran, West, & Finch, 1996; Kline, 2011; Lei & Lomax, 2005). Therefore, transformations of

data were not deemed appropriate, as these slight violations of non-normality should not bias parameter estimates.

With regard to missing data, all exploratory factor analyses, confirmatory factor analyses, and structural equation models were run using Mplus Version 6.11 software (Muthén & Muthén, 2001), which uses maximum likelihood estimation for incomplete data, in which parameter estimates and their standard errors are calculated directly from the available data without deletion or imputation of missing values. In this way, all available data were utilized without having to alter the original data in any way. Examination of missing data patterns indicated that the majority of participants (95.6%; 346 of 362) had complete data for the language brokering items, 12 participants had only one item missing, three participants had two items missing, and one participant had eight items missing.

Cronbach's alpha was used to examine the internal consistency estimates of the three originally hypothesized subscale scores (see Table 2). As can be seen, subscale scores had high reliability estimates (αs $\geq$ .85). Additionally, all items contributed substantially to the reliability of their respective subscale scores, with only one item of 30 having a correlation of less than .40 with its respective subscale score, and 23 of 30 items having correlations above .50 with their respective subscale scores.

Exploratory factor analyses. The first research goal of this study was to examine the structural validity of the LBM– IV in order to further refine the scale, eliminate items, and ensure the integrity of the language brokering constructs before examining the relationships among language brokering and outcome variables. For this reason, exploratory factor analyses (EFAs) were initially used to examine the structural validity of the LBM-IV. All EFAs were run using Mplus Version 6.11 software (Muthén & Muthén, 2001), maximum likelihood estimation was used as the extraction method, and both oblique (oblimin) and orthogonal (varimax) rotations were examined. Parallel analysis (Watkins, 2000) and theory were used to determine the number of factors to extract. Items with factor coefficients of .40 or greater were considered to be salient with a factor, and factors were only retained if there were three or more salient item loadings (Costello & Osbourne, 2005).

As this phase of analyses was exploratory in nature, several factor structure solutions were extracted in order to fully examine the nature of the items and factors. Parallel analysis indicated two factors should be extracted and Anguiano's (2009) findings indicated three factors. Therefore, three- and two-factor solutions were extracted. A single-factor solution was also extracted to assess the possibility that all the items were contributing to a single factor. The structure of High-Stakes, Everyday, and Low-Stakes were also assessed separately to examine the integrity of the three individual factors.

Individual factor structures. For each of the three individual subscales (High-Stakes, Everyday, Low-Stakes) parallel analysis and theory were in agreement, suggesting a single-factor solution. The single-factors that were extracted were robust, accounting for between 36% and 51% of the variance, with High-Stakes having 10 items with factor loadings greater than .6, Everyday having 9 items with coefficients greater than .4, and Low-Stakes having 9 items with coefficients greater than .5. Therefore, decision rules (Costello & Osbourne, 2005; Thompson, 2004) supported single-factor solutions for each of the three individual subscales.

Single-factor, two-factor, and three-factor solutions. The items from all three subscales were combined and examined in single-factor and two-factor solutions. The single-factor solution accounted for 38% of the variance in the scores, with 28 of the 30 items having coefficients greater than .4. Two items failed to load onto the factor: an Everyday item that

assessed how often participants translated for relatives, and a Low-Stakes item that assessed how often participants translated for friends.

The two-factor solution accounted for 42% of the variance in the scores, with 18 salient items on the first factor, and nine salient items on the second factor in the oblique (oblimin) rotation. Sixteen of the 18 items on the first factor were Everyday and Low-Stakes items, such as translating for parents, notes home from school, or on the phone, and two were High-Stakes items. Eight of the nine items on the second factor were High-Stakes items, such as translating at a government office, translating medical documents, or translating job applications, and the ninth item on the second factor, translating at the post office, was originally hypothesized as a Low-Stakes item. Three items, including translating at church, translating for neighbors, and translating at parents' work place, failed to load on any factor. The two factors were fairly highly correlated ($r = .73$). The overall structure of the varimax rotational solution was similar to that of the oblimin rotation, with 19 salient items on the first factor comprised mostly of Everyday and Low-Stakes items and seven of the same High-Stakes items on the second factor. However, six items also cross-loaded on both factors, resulting in a total of 13 salient items on the second factor (6 with complex loadings).

The three-factor solution accounted for 46% of the variance in the scores, with nine salient items on the first factor, nine salient items on the second factor, and five salient items on the third factor in the oblique rotation. The first factor was comprised of five Everyday items, one High-Stakes item, and three Low-Stakes items (translating at a restaurant, on the phone, and at the door). The second factor was comprised almost entirely of High-Stakes items, with the exception of translating at the post office, which was originally hypothesized as part of the Low-Stakes subscale. The third factor was comprised entirely of Low-Stakes items, such as translating for siblings, at church, and for neighbors. Seven items failed to load onto any factor. The three factors were fairly strongly correlated ($.52 \leq r \leq .70$), suggesting distinct, yet related factors. The varimax solution was similar to that of the oblique rotation, though there were 13 salient items on the first factor, which included the same nine items on the first factor of the oblique solution and four additional High-Stakes items that cross-loaded onto the second factor as well. The third factor was identical to that in the oblique rotation, with five salient Low-Stakes items. Factor coefficients from the three-factor oblique rotation can be seen in Table 3.

Confirmatory factor analyses. CFAs were used to examine the one-, two-, and three-factor structures. All three EFA solutions were examined with CFAs for several reasons. First, all three EFA solutions yielded interpretable results: Twenty-eight of the 30 items had salient loadings in the single-factor solution; Everyday and Low-Stakes items loaded together on one factor with High-Stakes on another factor in the two-factor solution; and Everyday, Low-Stakes, and High-Stakes items loaded mostly (as hypothesized) onto their own factors in the three-factor solution, and the few items that were originally hypothesized as Low-Stakes items that loaded onto the Everyday factor could more logically be considered Everyday items (e.g., translating on the phone, at the front door, or at a restaurant). Second, the results of the individual subscale EFAs provided strong evidence for the robustness and integrity of the three factors. Third, the CFAs allowed for the examination of goodness of fit indices for all three models, thus enabling direct comparisons among all three solutions.

Items for each CFA model (single-, two-, and three-factor structures) were chosen based on the size of the coefficients in EFA solutions – both high loadings on one factor (.40 and above) and low loadings on all other factors (.30 and below, Costello & Osbourne, 2005) – as well as item content to ensure content validity and breadth of construct coverage. Based on these

criteria, the single-factor CFA included 28 items, the two-factor CFA included 27 items, and the three-factor CFA included 21 items (one-item from the 3-factor EFA solution was dropped because of it loaded .35 on another factor). The descriptive statistics and standard deviations of the subscale scores for the retained three-factor structure can be seen in the bottom half of Table 2, and the inter-item correlations and standard deviations for the retained items can bee seen in Table 4.

Several goodness of fit indices were reported to assess the fit of the models as recommended by Kline (2011) and Thompson (2004): the chi-square statistic (χ^2); the chi-square to degrees of freedom ratio; the root mean squared error approximation (RMSEA; Steiger, 1990), a parsimony-corrected index that also takes the number of respondents into account, and its 90% confidence interval; the comparative fit index (CFI, Bentler, 1990), an incremental fit index; the NNFI (also known as the Tucker-Lewis index, Bentler, 1990), which compares a proposed model's fit to a nested baseline or null model; and the Standardized Root Mean Square Residual (SRMR), which is related to the correlation of the residuals. Direct comparisons were made between the one-, two-, and three-factor models through comparisons among the fit statistics presented. CFI and RMSEA are the most sensitive indicators of model misspecification and were consequently given particular weight in evaluating model fit (Hu & Bentler, 1999). Evidence suggests that CFI and NNFI values in the .90 to .95 range and SRMR and RMSEA values in the .05-.08 range are indicators of acceptable fit for item-level scales, while CFI and NNFI values of .95 or higher and RMSEA values of .05 or lower indicate close fit (Browne & Cudeck, 1993; Hoe, 2008). As previously stated, all analyses were conducted using maximum likelihood extraction procedures based on raw scores using Mplus, Version 6.11 (Muthén & Muthén, 2001). The fixed factor method (Little, Slegers, & Card, 2006), which fixes the latent variance to one, was used for the identification and scale setting of latent variables.

CFA results for all three solutions are presented in Table 5. The null model was rejected because it had the highest chi-square to degrees of freedom ratio. The one-factor model, which included 28 items, had one fit index in the acceptable range (SRMR), one at the very upper end of the acceptable range (RMSEA), and three indices (CFI, NNFI, and χ^2/df) that indicated poor fit. The two-factor model included a total of 27 items, with Low-Stakes and Everyday items on one factor and High-Stakes items on the other factor. Model fit for the two-factor model improved slightly with SRMR and RMSEA values within the acceptable range, but the CFI and NNFI remained outside the acceptable range. The three-factor model (21 items) included a High-Stakes, Everyday, and Low-Stakes factor and had the best fit of all three models, with all indices well within acceptable ranges, all standardized factor loadings above .50, and all reliability estimates in the moderate to high range.

When comparing the overall fit of the one-, two-, and three-factor models presented in Table 5, it is clear that the three-factor model was a better fit than both the one- and two-factor models, as indicated by the CFI and NNFI above .9, and the RMSEA well below .08. Therefore, the three-factor model was accepted and is presented in Figure 2 with standardized coefficients for all factor loadings and latent variable correlations. As can be seen in Figure 2, latent variable correlations were in the moderate range. Retained items according to subscale are presented in Appendix A, and descriptive statistics for the retained subscale items can be found in Table 2. The items and factor structure of the three-factor CFA results were used in the following structural equation models.

Phase II: Model Testing Results

The second phase of data analyses included the evaluation of several structural equation models in relation to hypotheses among the included constructs. The constructs included in the model were Everyday, High-Stakes, and Low-Stakes translating experiences (the three factors of the LBM-IV), Family Obligations (Fuligni et al., 1999), Perceived Stress (Cohen et al., 1983), and self-reported grade point average (GPA). The relationships among these variables were examined using latent variable regression, which corrects for measurement error, allows for multiple dependent variables, and allows for the specification of complex models such as those including latent variable moderation and covariate controls.

A two-step modeling approach (Kline, 2011) was utilized for specification, identification, and evaluation of the latent-variable regression models in the current study. In this approach, a valid measurement model is needed before the structural (regression) portion of the model can be evaluated. The first step includes the specification of the measurement model using all the variables to be examined. The CFA model is analyzed to determine if it properly fits the data. If the measurement model is acceptable, then the latent correlations/covariances are converted to structural (directional) paths, controls for covariate effects are added, and the model is pruned. The fit statistics of the pruned models are compared to those of the saturated model using the chi-square difference test and other fit indices for evaluation, because the models are all nested, or hierarchical, under the saturated model.

Preliminary analyses. Descriptive statistics for all the constructs included in the SEM models can be found in Table 2. As can be seen, reliability estimates for scores on the retained language brokering subscales, family obligations, and stress measures fell in the moderate to high range. Subscale means for the retained language brokering subscales, which were on Likert scales ranging from one to four, fell between 1.0 and 3.0, with standard deviations in the .5 and .6 range. Subscale means for the Perceived Stress and Family Obligations measures, which were both on five-point Likert scales, fell between 1.0 and 4.0 with standard deviations in the .6 range, and scores on both measures were neither skewed nor kurtotic.

These analyses were also conducted using Mplus Version 6.11, which uses maximum likelihood estimation for incomplete data. Examination of missing data patterns indicated 17 different missing data patterns, with the most frequent being students having complete data and missing only one item regarding gender information (n = 67), which was because a number of surveys did not include gender information. However, because gender data were collected only for use as a covariate control and not to test specific hypotheses, and because it would only be used as a covariate for those on which it had a significant effect (Stress and GPA, see next section for covariate effects), it was deemed appropriate to include the available gender data in the analyses. Besides this, the majority of participants had complete data (89.9%; n = 328 of 362), with the rest missing data on only one (n = 13), two (n = 18), or three items (n = 3).

Item parceling. Parceling is a measurement practice that uses aggregate-level indicators, such as the sum or average of two or more indicators, as the manifest variables of constructs in structural equation models (Little, Cunningham, Shahar, & Widaman, 2002). As the substantive goal of this phase of data analysis was the examination of the relationships among a set of constructs, as opposed to the structure of a set of items (already examined in Phase I of data analyses), parceling items was deemed appropriate. Furthermore, the use of parcels has many empirical advantages including (a) higher reliability, higher communality, and a higher ratio of common-to-unique factor variance; (b) less likelihood of distributional violations; (c) smaller and more equal intervals between scale points than items; (d) and more acceptable model fit

indices due to the psychometric and estimation advantages (Little et al., 2002; MacCallum, Widaman, Zhang, & Hong, 1999). In summary, models using parceled data are more parsimonious and provide for many advantages with regard to model fit, sampling error, and distributional violations.

Two different methods were used to create item parcels, including using item-to-construct relations to create balanced parcels, and using subscale aggregates to create facet parcels. For identification purposes, usually three parcels are created to use as manifest indicators for a given latent construct. In the item-to-construct method, the factor loadings for a single construct are used as a guide, using the highest loadings to anchor each of the three parcels, and then placing lower loaded items with higher loaded items to created overall balanced parcels (Little et al., 2002). This method was used for the Everyday, High-Stakes, Low-Stakes, and Stress constructs in the model. The facet-method was used for the Family Obligations construct. In the facet method the three parcels are created using facets as grouping criteria (Little et al., 2002). Because the Family Obligations measure consists of three different subscales (Current Assistance, Respect for Family, and Future Support) combined to create one index (as recommended by the creator of the scale, A. Fuligni, personal communication, 2011), each of the subscales was used to create facet parcels. The item make up for all parcels used in the model are presented in Table 6. Exact items of all scales used in the model can be found in Appendix A.

Orthogonalizing product terms (latent variable interaction). As previously discussed, it was hypothesized that Family Obligations would moderate the negative effects of High-Stakes translating experiences on GPA and Perceived Stress. This moderation is statistically an interaction between the two latent variables. The method used for representing this latent variable interaction was the orthogonalizing approach (Little, Bovaird, & Widaman, 2006). To create orthogonalized indicators for a latent interaction term using this approach, all the indicators are first mean centered. Then, each possible product term from the two sets of original main-effect indicators are created and individually regressed onto the first-order indicators. The residuals from these regressions are saved and used as indicators of the latent variable interaction term.

In the case of the Family Obligations and High-Stakes latent interaction term (represented as FOxHS), all three parceled and mean-centered indicators of Family Obligations and all three parceled and mean-centered High-Stakes indicators were multiplied, resulting in nine product terms. Next, each of these product terms was individually regressed onto the six original mean-centered Family Obligations and High-Stakes indicators. The residuals for each of these regressions were then saved and used as indicators for the latent interaction term (Little, Bovaird, et al., 2006). Next, with regard to specification, the residual variances of the interaction term indicators that were created from the same first-order indicators are allowed to correlate. Finally, the latent interaction term was not allowed to correlate with the main effect latent constructs because the indicators of the interaction term were orthogonalized with respect to the main effects, resulting in covariances of zero for the relationships between the original six main effect indicators and the nine orthogonalized interaction indicators (Little, Bovaird, et al., 2006).

Figure 3 contains a graphical representation of the two main effects and latent interaction construct with orthogonalized indicators and specified correlated residuals. Inter-item correlations with standard deviations for all manifest variables included in the model can be found in Tables 7 and 8. Note that correlations among the six main effects indicators and the

nine interaction interactions are not reported because they were fixed to zero, due to the orthgonalization process, and specified not to correlate in all models.

Measurement model. As previously stated, the measurement model must be specified and examined before the structural regression model can be evaluated. The measurement model consisted of the latent variables, Everyday, High-Stakes, Low-Stakes, Family Obligations, and Stress, all of which had three parceled indicators, and the Family Obligations and High-Stakes latent interaction term (FOxHS) with nine product-term indicators with specified correlated residuals. Additionally, because the indicators of the latent interaction term were orthogonalized with respect to the main effects, FOxHS was not allowed to correlate with Family Obligations or High-Stakes. GPA, a manifest outcome variable was also included in the measurement model. Factor-loadings, standard errors, and residual variances for the standardized solution of all the manifest variables in the measurement model can be found in Table 9. As can be seen in Table 9, all parcel loadings were quite high, with loadings in the .6 to .9 range for all constructs. Correlations among the latent variables and GPA can be found in Table 10, and fit indices for the measurement model can be found in the second column of Table 11. The measurement model had excellent fit, with CFI and NNFI values well above .95 and RMSEA values well below .05. The measurement model was deemed acceptable due to the high factor loadings and fit indices, indicating that it was appropriate to move on to the structural regression models with this measurement model specified.

Fully nested model and covariate effects. Next, the correlations among the exogenous (Everyday, High-Stakes, Low-Stakes, Family Obligation, FOxHS) and the endogenous variables (Stress and GPA) in the measurement model were converted into structural pathways, and covariate effects were introduced into the model. Covariates included country of origin (Mexican or not), generation level, school level (high school or junior high), district (four different districts were surveyed), English proficiency, Spanish proficiency, mother's education level, father's education level, and gender. These demographic and language proficiency items can be found in Appendix A. These covariate effects were removed from both the independent and dependent variables in the models by regressing all of the variables in the model on all of the covariates. Everyday, High-Stakes, Low-Stakes, Family Obligations, and FOxHS (exogenous variables) as well as Stress and GPA (endogenous variables) were all regressed on all nine of the above covariates. Then the non-significant covariate effect pathways ($p > .05$) were removed from the model.

The pathway estimates and standard errors for the covariate effects are listed in Table 12. Generation had no significant effect on any of the exogenous or endogenous variables, and so was removed from the model entirely. Spanish language proficiency had significant effects on all of the language brokering variables as well as family obligations, with participants who reported higher levels of Spanish proficiency also reporting more translating experiences and a stronger sense of family obligation. Students who reported higher levels of English proficiency reported less stress, and Mexican students had higher scores on the Everyday construct but had lower GPAs than non-Mexican participants. Students whose mothers had higher levels of education had lower scores on the Everyday construct but higher GPAs, and students whose fathers had higher education levels had higher scores on the Low-Stakes construct. Finally, junior high students reported translating more in High-Stakes and Everyday situations in comparison with high school students, and females reported higher stress levels and higher GPAs than their male counterparts.

This fully nested model with the above covariate effects is referred to as Model 0 because all other models, which were pruned for hypothesis testing, were nested under this model. Further comparisons among models are compared to this baseline model. The fit indices for Model 0 can be found in the third column of Table 11. As can be seen, Model 0 provided for good fit, with the CFI, NNFI, and RMSEA all in the close-fitting range, and the SRMR well within the acceptable range.

Model pruning and the final accepted model. Next, pathways were pruned one or two at a time to test specific hypotheses. With regard to main effects, it was hypothesized that High-Stakes translating experiences would increase perceived stress levels, whereas family obligations would decrease perceived stress levels. It was also hypothesized that High-Stakes translating experiences would negatively affect GPA, whereas Low-Stakes and Everyday translating experiences, and Family Obligations would positively affect it. With regard to interaction effects, it was hypothesized that Family Obligations would moderate the negative effects of High-Stakes translating experiences on both outcome variables (Stress and GPA). This moderating effect is represented as interaction between Family Obligations and High-Stakes translating duties. See Figure 1 for hypothesized structural model.

Predictors of stress. Fit statistics for each of the models discussed in this section can be found in Table 11. First the Everyday and High-Stakes pathways on Stress were pruned because they were not significant and not hypothesized. The overall fit of this model, Model 1, χ^2 (457) = 632.930, $p < .001$, was not statistically different than Model 0, χ^2 (455) = 632.233, $p < .001$; $\Delta\chi^2$ (2) = .697, $p > .05$, and so these pathways were set to zero because the more parsimonious model (Model 1) was essentially equivalent to Model 0. In Model 2, χ^2 (458) = 633.448, $p < .001$, the hypothesized pathway High-Stakes on Stress, which was not significant, was fixed to zero and again the overall fit of the model was essentially equivalent to that of Model 1, $\Delta\chi^2$ (1) = .518, $p > .05$, and so this pathway was also not estimated, disconfirming one initial hypothesis. Next, the hypothesized pathway from Family Obligations to Stress was fixed to zero and the difference in chi-square relative to degrees of freedom was not significant, $\Delta\chi^2$ (1) = 3.54, $p > .05$. Then the hypothesized pathway from FOxHS to stress was set to zero, and again the change in chi-square was not significant, $\Delta\chi^2$ (1) = 3.483, $p > .05$. The model with both the FOxHS → Stress and Family Obligations → Stress pathways fixed to zero is referred to as Model 3. Although when each pathway was pruned individually the change in chi-square relative to degrees of freedom was not significant, as can be seen in Table 11, when both these pathways were fixed to zero in Model 3, χ^2 (460) = 640.481, $p < .001$, the relative fit to the data over Model 2, χ^2 (458) = 633.448, $p < .001$, was significantly worse, $\Delta\chi^2$ (2) = 7.02, $p < .05$, and the values of approximate fit indices for Model 3 were also slightly worse. Therefore, Model 2 had a significantly better fit to the data than Model 3, and the two pathways (Family Obligations → Stress and FOxHS → Stress) and Model 2 were retained.

Predictors of GPA. Hypothesized pathways from Low-Stakes on GPA and FOxHS on GPA were not significant and fixed to zero, and the overall fit of this model (Model 4, χ^2 (460) = 635.563, $p < .001$) was not statistically different than Model 2, χ^2 (458) = 633.448, $p < .001$; $\Delta\chi^2$ (2) = 2.115, $p > .05$, so those pathways were not estimated. Next each of the remaining pathways were set to zero and the change in chi-square was examined (Everyday → GPA, High-Stakes → GPA, & Family Obligations → GPA). For the pruning of each of these pathways, the change in chi-square was significant, and the overall fit statistics were also noticeably worse, $\Delta\chi^2$ (1) = 15.207, $p > .001$; $\Delta\chi^2$ (1) = 9.667, $p > .01$; $\Delta\chi^2$ (1) = 12.045, $p > .001$, respectively. Thus, each of these pathways was estimated and Model 4 was retained because it provided the best fit

to the data. Model 4 represents the final retained model, and as can be seen in Table 11, the overall fit statistics are not appreciably worse than Model 0, the baseline model. Please see Figure 4 for the final retained model.

Final model. The final retained model presented in Figure 4 was respecified from the originally hypothesized model according to improvements in model fit among the various nested models. These respecifications included the pruning of the originally hypothesized pathways High-Stakes → Stress, Low-Stakes → GPA, and FOxHS → GPA. The remaining pathways (High-Stakes → GPA, Everyday → GPA, Family Obligations → GPA, Family Obligations → Stress, and FOxHS → Stress) were all originally hypothesized. Furthermore, the hypotheses with regard to the valence of these retained pathways (positive or negative) were also confirmed, with High-Stakes negatively predicting GPA, Everyday and Family Obligations positively predicting GPA, Family Obligations negatively predicting (reducing) Stress, and the interaction (i.e., moderation) of Family Obligations and High-Stakes (FOxHS) negatively predicting Stress. High-Stakes, Everyday, and Family Obligations predicted 22% of the variance in GPA, and Family Obligations and FOxHS predicted 8% of the variance in Stress. Low-Stakes language brokering was not related to either stress or GPA.

Discussion

The present study represents one of very few studies to empirically examine the psychometric properties of any language brokering measure, and to put forth and empirically test a complex theoretical model of the effects of language brokering with possible moderating variables, informed by larger psycho-social theories related to the adaptation of Latino immigrant youth and families. The goals of this study were to (a) examine the structural validity and reliability of the scores of the LBM-IV, and make further item revisions based on those examinations to create a reliable and valid language brokering measurement tool; and (b) to empirically test a theoretical model in which various language brokering experiences predicted perceived stress and GPA, and family obligations moderated the possible negative effects of translating in High-Stakes contexts. This theoretical model was framed by a synthesis of the acculturation (Berry, 1997; Birman, 2006), segmented assimilation (Portes & Rumbaut, 2001; Zhou, 1997), and bilingualism and cognition literatures (Baker, 2006; Cummins, 2000; Valdes, 2003).

Scale development and structural validity results supported a three-factor structure of the Language Brokering Measure-IV, which included High-Stakes, Everyday, and Low-Stakes translating contexts factors, each with moderate to high internal reliability scores. Model testing results supported hypotheses with regard to the effects of High-Stakes and Everyday translating experiences – but not Low-Stakes ones – on GPA, the importance of family obligations in the lives of language brokering youth, and the moderating effects of family obligations on stress but not on GPA. In the following sections I review these findings in detail, discuss their theoretical and practical implications, and conclude with limitations of the current study and possible future directions for language brokering research.

Scale Development Findings and Implications

Reliability. Results indicated moderate to high internal consistency estimates for the retained items of each of three language brokering subscales: High-Stakes ($\alpha = .90$), Everyday ($\alpha = .89$), and Low-Stakes ($\alpha = .76$) translating contexts. The Low-Stakes factor had the lowest reliability estimate, but also had the fewest retained items (five of 10 items), whereas the High-Stakes and Everyday factors retained nine of 10 and eight of 10 items respectively. Scale length may in part explain the relatively lower reliability of the Low-Stakes subscale in comparison

with the other two language brokering subscale scores. Despite the slightly lower reliability estimate for the scores of the Low-Stakes factor, these internal consistency estimates of the retained language brokering subscales still provide good evidence for reliability of the scores.

Structural validity. Due to the paucity of studies in the extant literature examining the psychometric properties of any language brokering assessment tool, both EFAs and CFAs were used to examine the structural validity of the LBM-IV scores. EFAs were used for item elimination, and CFAs were used to compare fit among several models. A three-factor structure of the LBM-IV, which included a High-Stakes, Everyday, and Low-stakes factor, was hypothesized, but two and single-factor structures were also examined. EFAs of the three-factor structure resulted in the elimination of one item from the High-Stakes subscale, two items from the Everyday subscale, and five items from the Low-Stakes subscale based on the salience of items with a factor. The CFAs supported the three-factor model over two-factor and single-factor models, with the three-factor model being the best fit to the data and the only model with all fit indices within acceptable ranges.

The Everyday factor included items that assessed how often participants translated for their parents, notes or letters home from school, between parents and teachers, at home, in restaurants, while running errands, when answering the phone, and when answering the front door. Translating at a restaurant, on the phone, and at the door were originally hypothesized as Low-Stakes items, but analyses indicated that they contributed to the Everyday factor. The Low-Stakes factor was comprised of items that assessed how often participants translated for siblings, for friends, at church, for neighbors, and for others who work at school. Given the nature of the Low-Stakes factor, which included translating scenarios that were more community based or with peers, translating at a restaurant, on the phone, and at the door also fit better theoretically with the Everyday factor, which included translating contexts that included parents and the home. The High-Stakes factor included translating at government offices, at the post office, immigration forms, for government officials, insurance forms, job application and rental contracts, at the hospital, and medical documents. One item, translating at the post office, was originally hypothesized as a Low-Stakes item, but analyses indicated that it contributed to the High-Stakes factor instead. Although not originally hypothesized, this finding is consistent with theory in that the post office is a government agency and language brokering there may require the translation of sensitive material. As hypothesized, High-Stakes items included those translating situations in which the health or well being of the family might depend on the accurate translation provided by the language broker.

The structural validity findings in this study corroborate those of Anguiano (2009) and provide evidence for the structural validity of LBM-IV scores. Researchers using language brokering measures have provided little to no information with regard to the structural validity and reliability of the measures they utilized (Morales & Hanson, 2005), and so the current study contributes to the extant literature by providing structural validity and reliability evidence for a language brokering measure. However, this study should be seen as the beginning of a body of work that establishes the validity of measures to be used with language brokers, and the factor structure of the LBM-IV as well as the moderate to high reliability estimates should be replicated among other Spanish-speaking language brokering samples and other immigrant groups to ensure the stability of this structure. Additionally, it should be noted that the means for all three of the language brokering subscales were relatively low ($1.44 \leq M \leq 2.08$) for this particular sample. There may be other groups of youth that engage in greater amounts of language

brokering, such as samples with a larger representation of first generation immigrants (Morales & Hanson, 2005).

Model Testing Findings and Implications

As previously stated, the hypothesized model empirically examined the effects of varying language brokering contexts and family obligation on perceived stress and academic achievement, as well as the moderating effect of family obligations on High-Stakes translating contexts. The important findings of the empirical examination of this model are discussed in the following sections.

Unique effects of language brokering contexts on GPA. The three language brokering subscales had important and unique effects on academic achievement. Namely, High-Stakes translating experiences negatively predicted GPA, Everyday translating contexts positively predicted GPA, and Low-Stakes contexts did not predict GPA. These findings are important for two main reasons. First of all, the differing effects of the language brokering subscales demonstrate that they are indeed distinguishable (though related) aspects of language brokering behaviors with unique effects on outcome variables. This lends support to the use of the three subscales in language brokering research because each measures something unique and may predict different outcomes.

Second, the nature of the relationship between the three subscales and GPA is in keeping with theory. It was hypothesized that translating in High-Stakes contexts would negatively affect achievement because it is during those language brokering experiences that the parent-child dynamic is at most risk for breakdown – altering the traditionally stabilizing hierarchies of Latino families, and in which the most stress may be experienced, two things that can negatively affect the achievement of Latino youth according to segmented assimilation theory (Portes & Rumbaut, 2001) and acculturation and language brokering research (Martinez et al., 2009; Miranda et al., 2000; Portes & Rumbaut, 2001). However, it was hypothesized that Everyday translating experiences would positively affect GPA, because these experiences may strengthen youth's bilingualism and translating skills without the pressure of a high-stakes situation; research has indicated that bilingualism and translating skills are positively related to metalinguistic awareness, sociolinguistic abilities, and increased cognitive abilities (Baker, 2006; Cummins, 2000; Malakoff & Hakuta, 1991, Valdés, 2003).

It was also hypothesized that Low-Stakes translating experiences would positively predict GPA for the same reasons that Everyday translating experiences were hypothesized to positively predict GPA. However, results did not support this hypothesis; overall model fit was better without this relationship in place. Although this finding is contrary to the initial hypothesis, this finding is also in keeping with theory. Low-stakes translating duties were those brokering transactions in the community: translating for peers, neighbors, and siblings. The communities of the language brokers in this study, the majority of whom were second-generation children of Mexican immigrant parents, may in fact already be bilingual communities in which less emphasis is placed on exact translation and a more natural flow between English and Spanish takes place (Valdés, 2003). As a result, Low-Stakes translating experiences may not have the same cognitive benefits as Everyday translating duties because they may require less actual translation by nature. Furthermore, Low-Stakes experiences may be the most removed from actual academic activities when compared to other language brokering experiences that require translating in more cognitively demanding situations, like for one's elders in public spaces (which are Everyday translating experiences).

Language brokering contexts and stress. Results supported initial hypotheses that Low-Stakes and Everyday translating duties would not predict perceived stress because there is less at stake in these situations and language brokers themselves have described daily translating activities as normal (e.g., Orellana, 2008). However, results did not support the originally hypothesized relationship between High-Stakes translating contexts and perceived stress. One possible explanation for this might be that the Perceived Stress Scale (PSS) is a global measure of stress, and as a result, too distal an outcome to be predicted by High-Stakes translating duties. The PSS assesses how frequently youth have felt upset, angry, or that things were out of their control in the last month (Cohen et al., 1983). The definition of High-Stakes translating experiences are language brokering transactions where the health or well-being of the family depends on the accurate translation provided by the language broker. Although these may be the translating situations in which stress is most likely conferred, the actual stress experienced by the language broker during those transactions was not directly measured. This is a small, yet important distinction to make; High-Stakes translating duties are not the same as high-stress translating duties. Each language broker will experience High-Stakes translating duties differently, and perhaps a more proximal outcome, such as how the language broker feels about language brokering, would have demonstrated the relationship between High-Stakes translating contexts and stress. For example, Wu and Kim (2009) used sense of burden about language brokering, assessed by five items, and sense of efficacy about language brokering, assessed by three items, as their outcomes when examining the effects of language brokering on Chinese youth. These items included things like, "Translating is a burden" and "I feel useful when I translate," which are more proximal outcomes related to the language brokering experience and may be a better outcome measure than more distal, global measures of psychological adjustment.

Family obligations are important. As predicted, family obligations (Fuligni et al., 1999) positively predicted GPA and negatively predicted stress. Youth in this study with higher levels of family obligation perceived their lives as less stressful and reported higher overall GPAs. These results are consistent with other findings among immigrant and second generation youth of Mexican or Latin American descent that have found associations between family obligations and positive emotional well being (Fuligni & Pederson, 2002) and academic motivation (Fuligni, 2001). As Fuligni's research and the current study have demonstrated, it appears that a sense of family obligation, defined as a sense of duty to assist, respect, and orient around one's family, is an important construct for youth from immigrant families. Not only an important construct, it may be a unique construct to youth from immigrant families when compared to their White, native-born counterparts (Fuligni et al., 1999), and therefore extremely important when examining the emotional, psychological, and educational outcomes of these youth.

The positive impact of family obligations on the lives of Latino language brokers in this study is also theoretically important because it supports the larger sociological model of segmented assimilation. As discussed in the theoretical section, segmented assimilation theorists posit that the preservation of aspects of the family's origin culture and the strength of the family's structure are possibly the most important protective factors immigrant youth of color can possess to aid in becoming economically and academically successful, and psychologically well-adjusted while the entire family adapts to U.S. culture (Lopez & Stanton-Salazar, 2001; Portes & Rumbaut, 2001; Zhou, 1997). For Latino youth in particular, the family is an important stabilizing factor that is a large part of Latino culture (Organista, 2007), which is why it is so fitting that Latino youth in this study with higher levels of family obligation experienced better

psychological and academic outcomes. These findings support the use of these theoretical frameworks when conducting research with language brokering youth of Latino origin.

Moderation. Evaluation of model fit supported the hypothesis that family obligations would moderate the effects of High-Stakes translating contexts on stress, but results did not support this same moderating effect on GPA. According to the previously outlined placement of independent and moderating variables, this moderation finding can be interpreted as the following: Youth who translated frequently in High-Stakes situations but who also had high levels of family obligation reported less stress than youth who also translated frequently in High-Stakes situations but had lower levels of family obligations. Although model fit was improved by estimating the relationship between the moderating (interaction) variable and stress, this relationship was not actually statistically significant. This may again be due to the nature of perceived stress as a somewhat distal outcome variable. As just discussed, High-Stakes (a main effect) did not predict perceived stress as hypothesized, but family obligations did, though the relationship between family obligations and perceived stress only approached significance. Perhaps if the outcome were more proximal, such as assessing participants' sense of burden or stress from their language brokering practices, the moderating effect of family obligations would be stronger.

Results did not support family obligations moderating the effects of High-Stakes translating experiences on GPA. Both the main effects (High-Stakes and Family Obligations) were significant in the hypothesized directions, but the interaction effect was not. This indicates that although High-Stakes negatively predicted GPA and family obligations positively predicted it, the effects of High-Stakes translating contexts did not vary at differing levels of family obligations. One possible explanation for this result may be that family obligation may be a mediating variable instead of a moderating one. Although family obligation was conceptualized as a buffer against the possible negative effects of High-Stakes translating duties, it may in fact be a mechanism through which High-Stakes translating experiences negatively or positively affect academic achievement. For example, Wu and Kim (2009) used Fuligini et al.'s (1999) family obligations as a mediator in a chain of constructs linking Chinese orientation, family obligation, and perceived mattering to parents to a sense of efficacy or a sense of burden as language brokers. Wu and Kim's results supported this chain of events, with family obligation and the perception of mattering to one's parents partially explaining the relationship between Chinese orientation and sense of burden or efficacy as language brokers. Perhaps, then, family obligations may be better conceptualized as a mediator in a family process of language brokering, as opposed to a moderator that buffers the effects of translating experiences on outcome variables. Future research should continue to examine the possible moderating or mediating effects of family obligations and other family variables in the lives of language brokering youth.

Theory Building Implications

There is no overarching theory of language brokering (Morales & Hanson, 2005). In fact, earlier research seemed to view language brokering as an isolated phenomenon, simply defining and describing the construct (MQuillan & Tse, 1995; Tse, 1995). This was to be expected when research on language brokering was first emerging. More recent research has moved toward the inclusion of family variables and the recognition that language brokering is a practice often embedded in a family context (e.g., Martinez et al., 2009; Orellana, 2008; Weisskirch, 2007; Wu & Kim, 2009). However, the current study attempted to move beyond this, utilizing a larger sociological framework concerning the adaptation of immigrants of color

in the US to further inform a complex theoretical model of language brokering experiences, family obligation, perceived stress, and achievement. Results supported the use of segmented assimilation theory, and specifically the concepts of selective acculturation and immigrant social capital. Youth who were more oriented toward their families had better outcomes than youth who were not, which directly relates to the positive impact of slowing down the cultural shift to American society and preserving youth's orientation toward their family, an important construct for Latinos (i.e., selective acculturation) and for immigrant families especially (immigrant social capital).

Although previous studies have highlighted the importance of the family context for language brokering youth, none have connected the importance of family to a larger theoretical framework that helps explain *why* and *how* family obligation can serve as a protective factor for immigrant youth of color. Segmented assimilation theory appears to be a useful sociological framework in informing the psychological outcomes of Latino youth from immigrant families.

Limitations

Although the current study contributes to the language brokering literature with regard to psychometric evidence for a language brokering measure and the empirical examination of a complex, theoretically informed model, there are several limitations that must be considered when evaluating these findings. First, and possibly most importantly, are the characteristics of the current sample. Approximately 74% of the sample was of Mexican descent, while the remaining 26% were Central Americans, South Americans, or a mix of two or more Latin American countries. Although ethnicity was included as a covariate in the latent regression model, specific differences among the various ethnic groups were not examined, and as a result, the findings may be more representative of and generalizeable to the Mexican-origin population. Furthermore, because each Latin American country has a unique history and relationship with the US, the adaptation processes of youth and families from these various countries may also be unique, and it is important to take these differences into account (Portes & Rumbaut, 2001). Similarly, participants ranged in age from 11 to 18 years, a somewhat wide age range that included both junior high and high school students. Again, although school level was controlled for, it may be beneficial to examine and compare alternative models of younger versus older age groups, as some studies have suggested that youth's perception of language brokering changes with age (Weisskirch & Alva, 2002).

Second, a paper-pencil survey design was utilized, and as a result all constructs were based on students' self-report. Although self-report was appropriate for many of the variables, a corroboration of what youth reported with other data sources, such as parents and schools, might have helped ensure accurate estimates for GPA and language brokering experiences. Additionally, with regard to missing data, a number of surveys (n = 67) did not include gender information, and so the effect of this covariate was controlled for with only approximately 82% of data present. Finally, the Perceived Stress Scale had a relatively lower reliability estimate (α = .69) in this sample than in others (α = .84-.86, Cohen et al., 1983), which may indicate that this instrument was not assessing perceived stress among this study's sample in the same way as in other populations from previous studies.

Conclusions and Future Directions

The goals of this study were to examine and revise the LBM-IV in order to add to the dearth of validity evidence for language brokering measurement, and to empirically test a theoretical model that examined the effects of various language brokering contexts and family obligations on perceived stress and academic achievement. Findings supported the use of the

Low-Stakes, Everyday, and High-Stakes subscales, the positive effects of Everyday translating experiences on academic achievement, as well as the positive influence of family obligations on the lives of language brokering youth of Latino origin. Despite the aforementioned limitations, the current study extends extant research on language brokering in several ways. Namely, all variable placement in the tested model was informed by larger psycho-social theories related to the adaptation of Latino immigrant youth and families and relationships were examined using latent variable regression, which corrected for measurement error and allowed for multiple dependent variables and numerous covariate controls, making this study one of the most statistically rigorous and theoretically sound studies on language brokering to date.

Future research should continue to build a body of validity evidence for the LBM-IV and any other language brokering measurement tools. The three-factor structure found in this study should be replicated among other Latino-origin populations as well as among other immigrant groups. Additionally, it may be fruitful for future studies to specifically examine the varying cognitive and psychological (i.e., stress-related) demands of the experiences measured by the three LBM-IV subscales, in order to corroborate the current findings and further explore the relationship among translating experiences, cognitive functioning, academic achievement, and psychological adjustment. In-depth observations and mixed-methods research may be useful in directly observing or measuring the various demands placed on a language broker in typical High-Stakes, Everyday, and Low-Stakes situations, which can then be used to further validate the items on the LBM-IV.

With regard to theoretical models examining the effects of language brokering on youth, future research should continue to examine the possibility of moderating and mediating variables, in order to further specify language brokering processes and identify additional protective or risk factors for Latino youth who language-broker. Lastly, research on language brokering should continue to move towards more comprehensive theoretical models that incorporate sociological trends of immigration and seek to explain the conditions under which language brokering positively or negatively affects families and youth. Language-brokering is not an isolated phenomenon; it occurs within a family system that is simultaneously adapting to a new cultural system, and the more that language brokering research can take this into account, the stronger the research designs and the more meaningful the results will become.

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Table 1

Participant Characteristics: Country of Origin and Generation

	Country of Origin			Generation	
	n	%		*n*	%
Mexico	267	73.8	1st	75	20.7
Central America	27	7.5	2nd (2 immigrant	240	66.3
South American	3	.8	parents)		
Cuba	1	.3	2nd (1 immigrant	22	6.1
Dominican Republic	1	.3	parent)		
Other (2 or more Latin American Countries)	60	16.6	3rd or higher	20	5.5

Table 2

Descriptive Statistics for all Measures Used

Subscale	*M*	*SD*	Skew	Kurtosis	α
Original LBM-IV Items					
LBM-IV Hypothesized Everyday (10)	1.87	.56	.67	.31	.85
LBM-IV Hypothesized High-Stakes (10)	1.59	.61	1.53	2.52	.91
LBM-IV Hypothesized Low-Stakes (10)	1.66	.53	1.28	2.33	.85
Retained LBM-IV Items					
LBM-IV Retained Everyday (8)	2.08	.69	.35	-.44	.89
LBM-IV Retained High-Stakes (9)	1.52	.60	1.75	3.38	.90
LBM-I Retained Low-Stakes (5)	1.44	.52	2.07	5.57	.76
Other Subscales					
Perceived Stress (10)	1.91	.62	-.12	1.09	.69
Family Obligations (24)	3.79	.61	-.62	.55	.89

Note. $N = 362$. Number of items in parentheses. LBM-IV = Language Brokering Measure IV.

Table 3

Factor Coefficients EFA Three-Factor Structure, 30-Item LBM – IV

Subscale Item	Factor I Everyday	Factor II High-Stakes	Factor III Low-Stakes
Eparents1	**0.882**	-0.041	-0.111
Enotes2	**0.738**	0.022	-0.034
Eparent-tchr10	**0.636**	0.064	0.068
Ehome5	**0.598**	-0.039	0.161
Lrestaurant6	**0.596**	0.093	0.061
Eerrand8	**0.550**	0.043	0.144
Lphone29	**0.445**	0.088	0.285
Ldoor19	**0.410**	0.142	0.238
Hdoctor20	**0.403**	0.354	-0.015
Hgovoffice15	-0.072	**0.871**	-0.071
Hmeddocs16	-0.098	**0.765**	0.014
Hgovppl21	0.029	**0.711**	0.034
Hinsurdoc17	0.104	**0.701**	0.069
Hjobapp14	0.059	**0.647**	0.034
Hrentdoc18	0.048	**0.625**	0.117
Hmedppl13	0.267	**0.549**	-0.006
Hhospital12	0.310	**0.449**	0.047
Lpost30	0.055	**0.423**	0.291
Lsibs22	0.018	-0.063	**0.636**
Lchurch23	0.028	0.021	**0.615**
Lneighbor25	-0.022	0.140	**0.604**
Lfriends24	0.035	-0.112	**0.594**
Eotherschool27	0.037	0.130	**0.565**
Erelatives3	0.319	-0.078	0.221
Eparentwork4	0.181	0.210	0.213
Ebank7	0.344	0.284	0.126
Esibsschool11	0.321	0.098	0.154
HbillsS9	0.377	0.300	0.119
Lappliance26	0.276	0.236	0.246
Ltv28	0.348	0.088	0.270

Note. N = 362. Factor loadings > .40 are in boldface. E = originally hypothesized Everyday items. H = originally hypothesized High-Stakes items. L = originally hypothesized Low-Stakes items.

Table 4

Intercorrelations and Standard Deviations for scores of LBM-IV, 3-Factor CFA Retained Items

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21
E1	1.00																				
E2	.62	1.00																			
E3	.53	.56	1.00																		
E4	.54	.47	.49	1.00																	
E5	.53	.50	.50	.49	1.00																
E6	.49	.47	.49	.48	.48	1.00															
E7	.49	.47	.47	.43	.43	.46	1.00														
E8	.45	.47	.55	.39	.42	.45	.57	1.00													
H1	.36	.37	.35	.30	.40	.34	.37	.44	1.00												
H2	.31	.36	.32	.29	.31	.38	.33	.35	.60	1.00											
H3	.38	.38	.45	.38	.41	.38	.42	.44	.62	.54	1.00										
H4	.45	.46	.46	.45	.47	.42	.50	.47	.60	.61	.58	1.00									
H5	.39	.34	.42	.35	.39	.39	.46	.34	.57	.45	.51	.57	1.00								
H6	.37	.38	.44	.39	.40	.32	.39	.46	.54	.41	.60	.65	.50	1.00							
H7	.47	.48	.46	.43	.48	.42	.48	.38	.52	.55	.49	.63	.56	.48	1.00						
H8	.46	.35	.45	.32	.48	.39	.42	.45	.47	.38	.43	.53	.50	.47	.60	1.00					
H9	.33	.38	.40	.32	.31	.44	.46	.44	.48	.42	.50	.48	.49	.43	.45	.38	1.00				
L1	.19	.22	.24	.31	.31	.18	.30	.30	.19	.18	.22	.31	.25	.26	.28	.19	.30	1.00			
L2	.18	.22	.21	.32	.31	.31	.30	.29	.22	.21	.24	.28	.27	.35	.29	.20	.35	.43	1.00		
L3	.21	.16	.21	.27	.19	.21	.31	.32	.18	.22	.19	.20	.17	.22	.17	.14	.26	.39	.27	1.00	
L4	.25	.28	.36	.27	.28	.34	.40	.40	.30	.30	.34	.45	.34	.34	.33	.32	.42	.36	.40	.34	1.00
L5	.30	.31	.37	.31	.34	.34	.41	.36	.31	.35	.36	.40	.36	.39	.38	.32	.40	.39	.39	.38	.50
SD	.88	.94	.98	.97	.85	.83	.95	.94	.80	.74	.77	.79	.82	.79	.86	.88	.69	.74	.60	.79	.70

Note. $N = 362$. E = Everyday retained items. H = High-Stakes retained items. L = Low-Stakes retained items. *SD* = standard deviations. All correlations $p < .01$.

Table 5

Fit Indices for LBM-IV Scores From Confirmatory Factor Analyses

Model	χ^2	df	χ^2/df	CFI	NNFI	SRMR	RMSEA	RMSEA CI
Null	4947.494*	351	14.10					
1 Factor (28)	1081.150*	324	3.34	.835	.82	.056	.080	.075 - .086
2 Factor (27)	819.944*	298	2.75	.884	.87	.051	.070	.064 - .075
3 Factor (22)	491.260*	206	2.38	.924	.91	.047	.062	.055 - .069

Note. $N = 362$. Number of items in parentheses. CFI = Comparative fit index; NNFI = nonnormed fit index; SRMR = standardized root mean square residual; RMSEA = root mean square error approximation; CI = confidence interval.
*$p < .001$.

Table 6

Parcel Item Make-Up By Construct

Construct	Parcel 1 Items	Parcel 2 Items	Parcel 3 Items
Everyday	E1, E8	E2, E7, E4	E3, E6, E5
High-Stakes	H4, H9, H7	H1, H8, H6	H3, H2, H5
Low-Stakes	L4	L5, L2	L1, L3
Family Obligations	CA1 –CA11	R1-R7	F1-F6
Perceived Stress	S1, S6, S4	S3, S2, S5	S3, S9, S7, S8

Note. E = Everyday, H = High-Stakes, L = Low-Stakes, CA = Current Assistance, R = Respect for Family, F = Future Support, S = Perceived Stress. All language brokering items can be found in Table 6, all other items in Appendix A.

Table 7

Inter-item Correlations and Standard Deviations for Language Brokering Variables, Family Obligations, Stress, and GPA Indicators

Item	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
GPA (359)	1.00															
CA (361)	.185**	1.00														
R2 (358)	.185**	.583**	1.00													
F3 (359)	.220**	.446**	.618*	1.00												
HP1 (362)	.039	.145**	.112*	.159**	1.00											
HP2 (362)	-.004	.149**	.108*	.169**	.775**	1.00										
HP3 (362)	-.002	.102*	.056	.131*	.787**	.771**	1.00									
EP1 (362)	.119*	.141**	.105*	.121*	.603**	.612**	.526**	1.00								
EP2 (362)	.113*	.145**	.094	.122*	.670**	.563**	.562**	.753**	1.00							
EP3 (361)	.110*	.166**	.114*	.126*	.640**	.606**	.577**	.717**	.748**	1.00						
LP1 (362)	.096	.203**	.155**	.173**	.477**	.397**	.401**	.383**	.398**	.400**	1.00					
LP2 (362)	.036	.153**	.094	.137**	.505**	.439**	.440**	.399**	.472**	.461**	.539**	1.00				
LP3 (362)	.084	.115*	.056	.160**	.354**	.277**	.287**	.360**	.394**	.327**	.411**	.534**	1.00			
SP1 (361)	-.087	.053	-.011	.006	.058	.072	.042	.064	.055	.047	-.010	.003	.019	1.00		
SP2 (361)	-.087	-.006	-.019	-.054	.045	.035	.020	.050	.082	.028	-.068	.005	.062	.577**	1.00	
SP3 (361)	-.078	-.153*	-.166*	-.147*	.058	-.006	.041	.056	.090	.007	-.025	-.027	.052	.502**	.608**	1.00
SD	.912	.704	.701	.784	.645	.672	.772	.759	.718	.795	.546	.646	.646	.696	.844	.695

Note. N = 359-362, varied for each item due to use of pairwise deletion for creation of tables in SPSS Version 17.0. Interaction indicators not included due to orthogonalization with Family Obligations and High-Stakes main effects. GPA = grade point average, CA1 = Current Assistance Family Obligations facet-parcel 1, R2 = Family Obligations Respect facet-parcel 2, F3 = Family Obligations facet-parcel 3, GPA = grade point average, HP1 = High-Stakes parcel 1, HP2 = High-Stakes parcel 2, HP3 = High-Stakes parcel 3, EP1 = Everyday parcel 1, EP2 = Everyday parcel 2, EP3 = Everyday parcel 3, LP1 = Low-Stakes parcel 1, LP2 = Low-Stakes parcel 2, LP3 = Low-Stakes parcel 3, SP1 = Stress parcel 1, SP2 = Stress parcel 2, SP3 = Stress parcel 3, *SD* = standard deviation.
*$p < .05$. **$p < .01$.

Table 8

Inter-item Correlations and Standard Deviations for Interaction Term with Everyday, Low-Stakes, Stress, and GPA indicators

Item	CA1HP1	CA1HP2	CA1HP3	R2HP1	R2HP2	R2HP3	F3HP1	F3HP2	F3HP3
GPA (359)	.027	.020	.040	.082	.065	.072	.047	.021	-.010
EP1 (361)	-.029	-.045	-.040	-.006	-.004	-.027	-.031	-.070	-.039
EP2 (358)	-.084	-.041	-.048	-.028	.015	-.014	-.024	-.016	-.030
EP3 (359)	-.059	-.086	-.080	-.049	-.036	-.053	-.005	-.030	-.023
LP1 (362)	.098	.078	.113*	.104	.081	.084	.092	.084	.066
LP2 (362)	.146**	.110*	.174**	.060	.041	.058	.095	.028	.064
LP3 (362)	.145**	.139**	.103	.231**	.213**	.172**	.145**	.086	.066
SP1 (361)	-.038	-.117*	-.055	-.024	-.121*	-.085	-.085	-.141**	-.093
SP2 (361)	-.043	-.089	-.115*	-.061	-.074	-.110*	-.076	-.114*	-.117*
SP3 (361)	-.013	-.029	-.069	.027	-.024	-.033	-.109*	-.134*	-.148**
CA1HP1 (356)	1.00								
CA1HP2 (356)	.818**	1.00							
CA1HP3 (356)	.834**	.812**	1.00						
R2HP1 (356)	.572**	.478**	.451**	1.00					
R2HP2 (356)	.462**	.573**	.441**	.859**	1.00				
R2HP3 (356)	.458**	.478**	.535**	.828**	.876**	1.00			
F3HP1 (356)	.525**	.443**	.448**	.521**	.456**	.429**	1.00		
F3HP2 (356)	.443**	.557**	.455**	.460**	.622**	.506**	.804**	1.00	
F3HP3 (356)	.434**	.451**	.527**	.413**	.474**	.539**	.821**	.804**	1.00
SD	.492	.516	.514	.497	.538	.508	.510	.537	.528

Note. N = 356-362, varied for each item due to use of pairwise deletion for creation of tables in SPSS Version 17.0. Interaction indicators not included located in top row, correlations with interaction indicators with Family Obligations and High-Stakes main effects not reported due to orthogonalization. CA1HP1 – CA1HP3 = interaction indicators, products of Current Assistants facet-parcel and High-Stakes parcels, R2HP1 – R2HP3 = interaction indicators, products of Respect facet-parcel and High-Stakes parcels, F3Hp1 – F3HP3 = interaction indicators, products of Future Support facet-parcel and High-Stakes parcels, GPA = grade point average, EP1 = Everyday parcel 1, EP2 = Everyday parcel 2, EP3 = Everyday parcel 3, LP1 = Low-Stakes parcel 1, LP2 = Low-Stakes parcel 2, LP3 = Low-Stakes parcel 3, SP1 = Stress parcel 1, SP2 = Stress parcel 2, SP3 = Stress parcel 3, *SD* = standard deviation.
*$p < .05$. **$p < .01$.

Table 9

Factor Loadings, Standard Errors, and Residuals for Each Indicator in the Measurement Model

Construct/Indicators	Loading	Standard Error	Theta
Everyday			
EP1	.844*	.019	.288
EP2	.883*	.016	.220
EP3	.853*	.018	.273
High-Stakes			
HP1	.912*	.014	.169
HP2	.865*	.017	.252
HP3	.865*	.017	.252
Low-Stakes			
LP1	.685*	.037	.531
LP2	.799*	.032	.361
LP3	.638*	.039	.593
Family Obligations			
CA1	.669*	.037	.553
R2	.856*	.032	.268
F3	.716*	.036	.488
Stress			
SP1	.691*	.036	.522
SP2	.830*	.033	.311
SP3	.733*	.036	.462
FOxHS			
CA1HP1	.677*	.042	.542
CA1HP2	.662*	.041	.562
CA1HP3	.665*	.042	.558
R2HP1	.663*	.041	.561
R2HP2	.718*	.038	.485
R2HP3	.687*	.040	.528
F3HP1	.630*	.044	.603
F3HP2	.710*	.039	.496
F3HP3	.662*	.042	.562

Note. All estimates from standardized solution. FOxHS = Family Obligations and High Stakes interaction term. HP1 = High-Stakes parcel 1, HP2 = High-Stakes parcel 2, HP3 = High-Stakes parcel 3, CA1 = Current Assistance Family Obligations facet-parcel 1, R2 = Family Obligations Respect facet-parcel 2, F3 = Family Obligations facet-parcel 3.
*$p < .001$

Table 10

Correlations among Constructs in the Measurement Model

Construct	1	2	3	4	5	6	7
Everyday	1.00						
High-Stakes	.790**	1.00					
Low-Stakes	.656**	.654**	1.00				
Family Obligations	.176*	.169*	.223**	1.00			
Stress	-.094	.059	-.005	-.094	1.00		
FOxHS	-.060	–	.190**	–	-.154*	1.00	
GPA	.132*	.016	.087	.247**	-.109	-.052	1.00

Note. FOxHS = Family Obligations and High-Stakes interaction term. GPA = grade point average, manifest outcome variable. All other variables latent constructs. FOxHS specified to not correlate with High-Stakes and Family Obligations main effects due to orthogonalization.
*$p < .05$. **$p < .001$.

Table 11

Fit Indices for all Structural Equation Models

Fit Indices	Measure-ment Model	Model 0	Model 1	Model 2	Model 3	Model 4 (retained)
χ^2	301.497**	632.233**	632.930**	633.448**	640.481**	635.563**
df	239	455	457	458	460	460
χ^2/df	1.261	1.398				
CFI	.991	.974	.974	.974	.974	.974
NNFI	.988	.970	.970	.970	.970	.970
SRMR	.031	.052	.052	.053	.056	.053
RMSEA	.021	.033	.033	.033	.033	.032
RMSEA CI	.016-.036	.026 -. 039	.026 -. 039	.026 -. 038	.027 - .039	.026 - .038
Model Comparisons			Model 1 vs. Model 0	Model 2 vs. 1	Model 3 vs. Model 2	Model 4 vs. Model 2
$\Delta\chi^2$	–	–	.697	.518	7.033*	2.115
Δdf			2	1	2	2

Note. $N = 362$. CFI = Comparative fit index; NNFI = nonnormed fit index; SRMR = standardized root mean square residual; RMSEA = root mean square error approximation; CI = confidence interval. $\Delta\chi^2$ = change in chi-square, Δdf = change in degrees of freedom.
*$p < .05$. **$p < .001$.

Table 12

Full Partial Covariate Effects for Latent Regression Models

Covariate Effect[1]	Pathway Estimate	Standard Error
Everyday		
Spanish Proficiency	.342**	.049
Mexican	.079*	.040
Mother's Education	-.089*	.040
School Level	-.122*	.047
District	.070	.041
High-Stakes		
Spanish Proficiency	.280**	.051
School Level	-.067	.044
Low-Stakes		
Spanish Proficiency	.258**	.056
Father's Education	.168**	.047
Family Obligations		
Spanish Proficiency	.217**	.055
Gender	.179**	.065
Stress		
English Proficiency	-.158*	.058
Gender	.178*	.064
GPA		
Mexican	-.203**	.050
Mother's Education	.145*	.053
Gender	.260**	.055
School Level	-.087	.050

Note. All estimates are from the standardized solution.
*$p < .05$. **$p < .001$.

[1] Definitions of covariates: Spanish and English proficiency = the averages of how comfortable students felt speaking, reading, and writing in Spanish and English on a 4-point Likert scale. Mexican = a dummy variable indicating country of origin, Mexico (1) or other Latin American countries (0). Mother and Father's education = highest level of schooling completed by participants' mothers and fathers ranging from elementary school to doctoral or professional degree (MD/PhD/JD). District = dummy variable for the district students belonged to. School level = dummy variable for high school (1) or junior high (0). Gender = dummy variable for females (1) and males (0).

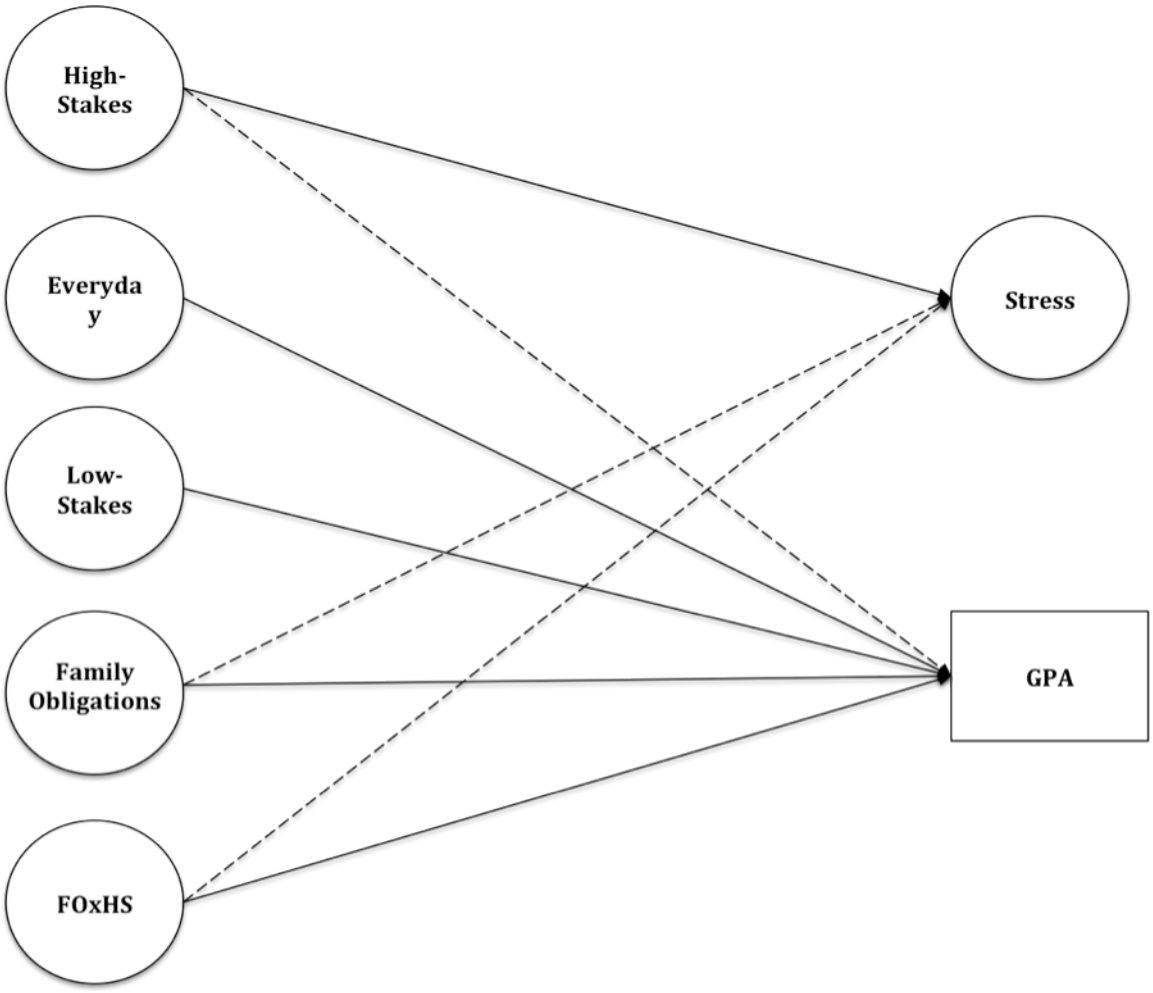

Figure 1. Hypothesized Structural Model. FOxHS represents the Family Obligations and High Stakes translating contexts moderating variable. Each pathway (or pathway absence) represents a hypothesis with regard to main effects and interaction effects. Dashed lines represent negative relationships.

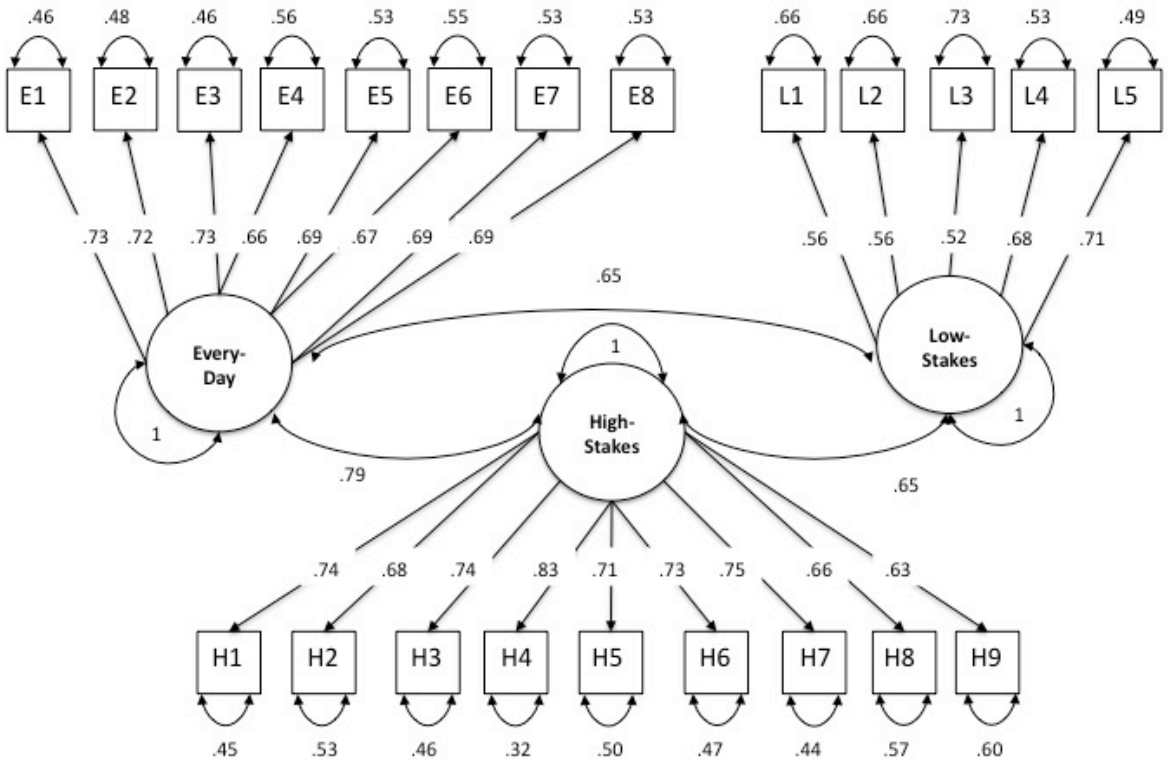

Figure 2. Three-factor Model for Language Brokering Measure-IV Scores. All coefficients are standardized estimates.

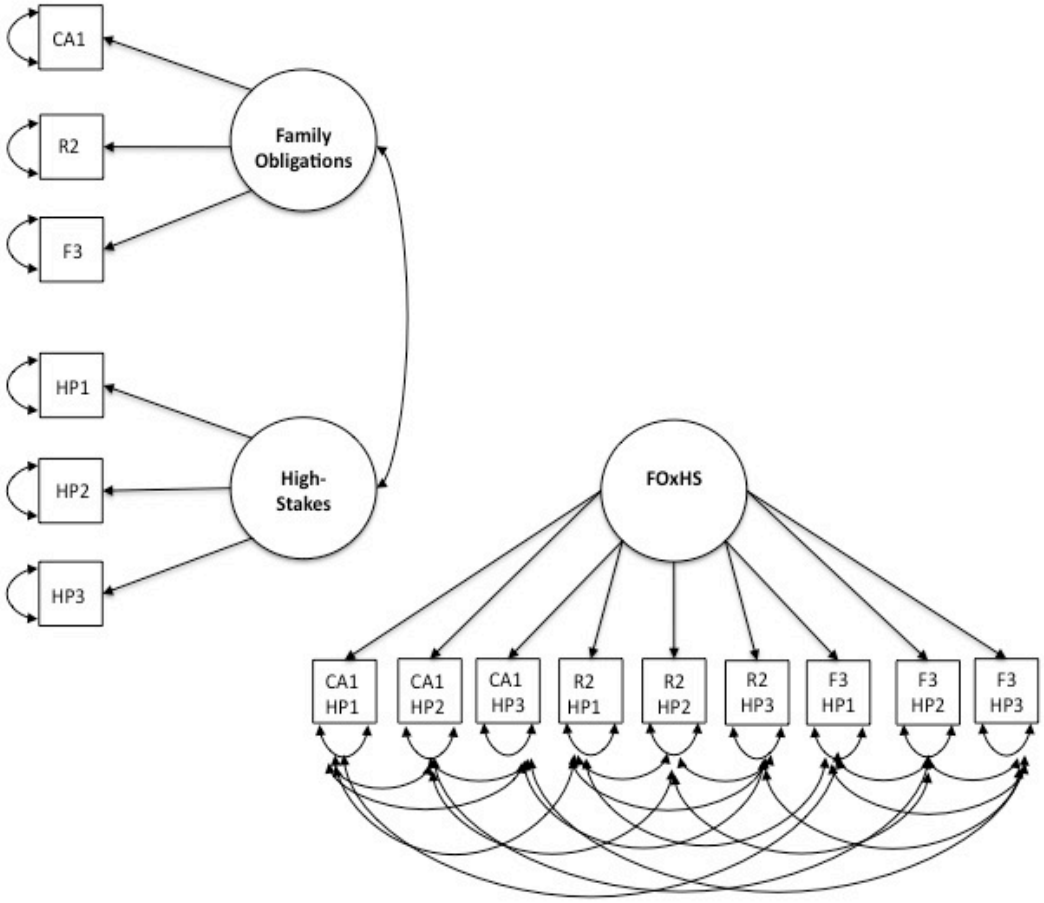

Figure 3. Latent Variable Interaction with Orthogonalized Product Terms and Main Effects Graphical Representation. FOxHS = Family Obligations and High Stakes interaction term. HP1 = High-Stakes parcel 1, HP2 = High-Stakes parcel 2, HP3 = High-Stakes parcel 3, CA1 = Current Assistance Family Obligations facet-parcel 1, R2 = Family Obligations Respect facet-parcel 2, F3 = Family Obligations facet-parcel 3. Curved arrows represent correlated residuals. Residuals are specified for those interaction indicators that were created from shared first-order indicators.

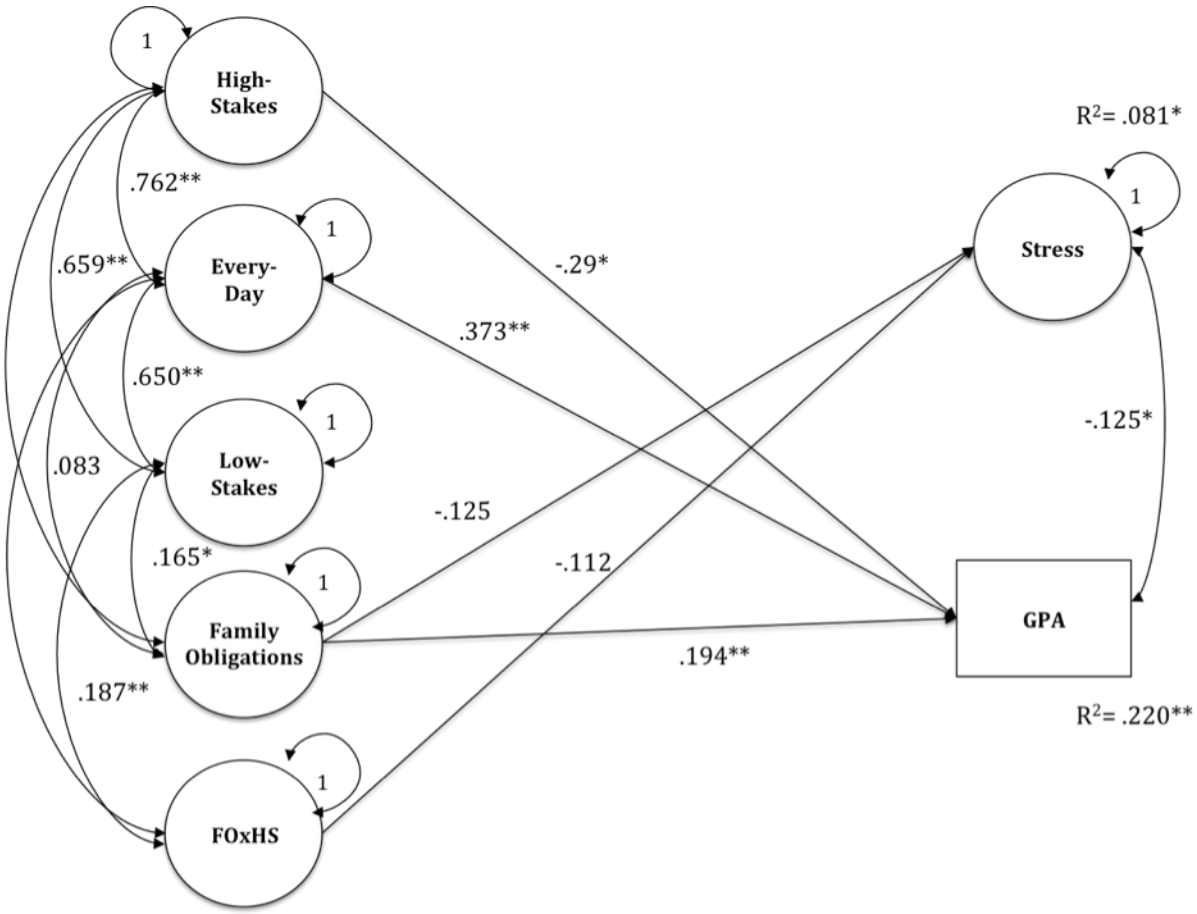

Figure 4. Final retained Model. All estimates are from the standardized solutions.
*$p < .005$. **$p < .001$.

Appendix A

Demographic and Language Proficiency Items

Directions: Please fill in the circle that shows how comfortable you feel speaking, reading, and writing in English and Spanish. Please answer this generally, thinking across situations

	Very uncomfortable 1	Somewhat Uncomfortable 2	Comfortable 3	Very Comfortable 4
1. How comfortable do you feel speaking in **English?**	○	○	○	○
2. How comfortable do you feel reading in **English?**	○	○	○	○
3. How comfortable do you feel writing in **English?**	○	○	○	○
4. How comfortable do you feel speaking in **Spanish?**	○	○	○	○
5. How comfortable do you feel reading in **Spanish?**	○	○	○	○
6. How comfortable do you feel writing in **Spanish?**	○	○	○	○

1. What is your family's country of origin/region of origin? (could be you, your parents, or grandparents)

Mexico	Central America	South America	Dominican Republic	Cuba	Puerto Rico	Other
○	○	○	○	○	○	○

2. Which is true of you?

I was born in another country outside the U.S. (e.g., Mexico)	I was born in the U.S., but one of my parents was born in another country outside the U.S., and one was born inside the U.S.	I was born in the U.S., but both my parents were born in another country outside the U.S.	I was born in the U.S. and so were my parents
○	○	○	○

3. What is the highest level of schooling that your mother completed?

Elementary School	High School	Some College/University	Completed College/University	Master's Degree	Doctoral or Professional Degree (M.D./Ph.D/J.D.)
○	○	○	○	○	○

4. What is the highest level of schooling that your father completed?

Elementary School	High School	Some College/University	Completed College/University	Master's Degree	Doctoral or Professional Degree (M.D./Ph.D/J.D.)
○	○	○	○	○	○

5. What grade are you in?

6th	7th	8th	9th	10th	11th	12th
○	○	○	○	○	○	○

6. What is your age? _____

7. What is your gender?

Male	Female
○	○

Language Brokering Measure – IV Retained Items

Directions: The following questions will ask you about your experiences translating for others. Please fill in the circle that shows how often you translate in these situations.

	Never	A Little Bit	A Lot	Always
E1. How often do you translate for your parents?	○	○	○	○
E2. How often do you translate notes or letters home from school?	○	○	○	○
E3. How often do you translate at school for conversations between your parent and your teacher, like at parent-teacher conferences?	○	○	○	○

E4. How often do you translate at home?	○	○	○	○
E5. How often do translate at a restaurant?	○	○	○	○
E6. How often do you translate while running errands with your parent/s?	○	○	○	○
E7. How often do you translate on the phone when the other person doesn't speak English?	○	○	○	○
E8. How often do you translate when someone comes to your door?	○	○	○	○
H1. How often do you translate at a government office, like social security office, welfare office, or city hall?	○	○	○	○
H2. How often do you translate immigration forms or other official government forms?	○	○	○	○
H3. How often do you translate for a government official, like a policeman, or someone who works in the immigration office, city hall, or the social welfare office?	○	○	○	○
H4. How often do you translate insurance forms?	○	○	○	○
H5. How often do translate job applications?	○	○	○	○
H6. How often do you translate rental contracts?	○	○	○	○
H7. How often do you translate medical documents?	○	○	○	○
H8. How often do you translate do you translate at the hospital?	○	○	○	○
H9. How often do you translate at the post office?	○	○	○	○
L1. How often do you translate for your brothers and sisters?	○	○	○	○
L2. How often do you translate at church?	○	○	○	○
L3. How often do you translate for friends?	○	○	○	○
L4. How often do you translate for neighbors?	○	○	○	○
L5. How often do you translate for other people who work at school?	○	○	○	○

Grade Point Average

1. Please fill in the circle that best represents your overall Grade Point Average on a 4-point scale.

A+ to A- = 4.0 – 3.7	B+ to B- = 3.3 – 2.7	C+ to C- = 2.3 – 1.7	D+ to F = 1.3 – 1.0 &below
○	○	○	○

Family Obligations Items

Directions: Please fill in a circle to show how often you think you SHOULD engage in the following activities.

How often do you think you ***should…***	Almost Never	Once in a While	Sometimes	Fairly Often	Almost Always
CA1. Spend time with your grandparents, cousins, aunts, and uncles?	○	○	○	○	○
CA2. Spend time at home with your family?	○	○	○	○	○
CA3. Run errands that the family needs done?	○	○	○	○	○
CA4. Help your brothers or sisters with their homework?	○	○	○	○	○
CA5. Spend holidays with your family?	○	○	○	○	○
CA6. Help out around the house?	○	○	○	○	○
CA7. Spend time with your family on weekends?	○	○	○	○	○
CA8. Help take care of your brothers and sisters?	○	○	○	○	○
CA9. Eat meals with your family?	○	○	○	○	○
CA10. Help take care of your grandparents?	○	○	○	○	○
CA11. Do things together with your brothers and sisters?	○	○	○	○	○

Directions: Please fill in a circle to show how important you believe it is to do the following things.

How important is it that you…	Not at all important	A little bit important	Somewhat important	Pretty important	Very important
R1. Treat your parents with great respect?	○	○	○	○	○
R2. Follow your parents' advice about choosing friends?	○	○	○	○	○
R3. Do well for the sake of your family?	○	○	○	○	○
R4. Follow your parents' advice about choosing a job or major in college?	○	○	○	○	○

R5. Treat your grandparents with great respect?	○	○	○	○	○
R6. Respect your older brothers and sisters?	○	○	○	○	○
R7. Make sacrifices for your family	○	○	○	○	○

Directions: Please fill in a circle to show how important you believe it is to do the following things.

How important is it that you…	Not at all important	A little bit important	Somewhat important	Pretty important	Very important
F1. Help your parents financially in the future?	○	○	○	○	○
F2. Live at home with your parents until you are married?	○	○	○	○	○
F3. Help take care of your brothers and sisters in the future?	○	○	○	○	○
F4. Spend time with your parents even after you no longer live with them?	○	○	○	○	○
F5. Live or go to college near your parents?	○	○	○	○	○
F6. Have your parents live with you when you get older?	○	○	○	○	○

Perceived Stress Items

The questions in this scale ask you about your feelings and thoughts *during the last month*. In each case, you will be asked to fill in the circle to show *how often* you feel or thought a certain way.

	Almost Never	Once in a While	Some-times	Fairly Often	Almost Always
S1. In the last month, how often have you been upset because of something that happened unexpectedly	○	○	○	○	○
S2. In the last month, how often have you felt that you were unable to control the important things in your life?	○	○	○	○	○
S3. In the last month, how often have you felt nervous and “stressed”?	○	○	○	○	○
S4. In the last month, how often have you felt confident about your ability to handle your personal problems?	○	○	○	○	○

S5. In the last month, how often have you felt that things were going your way?	○	○	○	○	○
S6. In the last month, how often have you found that you could not cope with all the things that you had to do?	○	○	○	○	○
S7. In the last month, how often have you been able to control irritations in your life?	○	○	○	○	○
S8. In the last month, how often have you felt that you were on top of things?	○	○	○	○	○
S9. In the last month, how often have you been angered because of things that were outside of your control?	○	○	○	○	○
S10. In the last month, how often have you felt difficulties were piling up so high that you could not overcome them?	○	○	○	○	○