

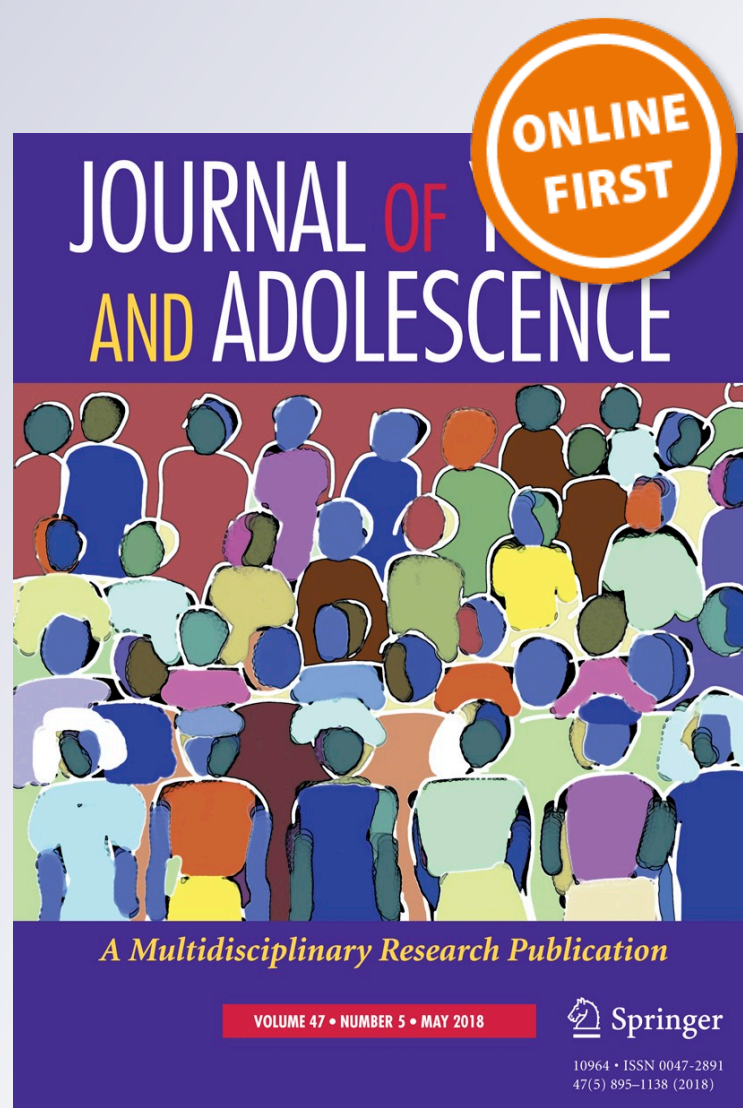
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Profiles of Language Brokering Experiences and Contextual Stressors: Implications for Adolescent Outcomes in Mexican Immigrant Families

Su Yeong Kim¹ · Yang Hou¹ · Jiaxiu Song¹ · Seth J. Schwartz² · Shanting Chen¹ · Minyu Zhang¹ · Krista M. Perreira³ · Deborah Parra-Medina⁴

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Abstract

Adolescents from Mexican immigrant families are often embedded in a challenging social environment and experience multiple contextual stressors, including economic stress, discrimination, and foreigner stress. We consider how the effects of these contextual stressors may be amplified or diminished for adolescents who function as language brokers, interpreting and mediating for their English-limited parents. Using two waves of survey data collected from a sample ($N = 604$ at Wave 1; $N = 483$ at Wave 2) of Mexican American adolescents with ages ranging from 11 to 15 ($M_{age} = 12.41$, 54% female), four distinct brokering—stress profiles were identified. Latent profile analyses revealed that with moderate levels of contextual stress, adolescents with more positive language brokering experiences (protective group) demonstrated more favorable outcomes than those with neutral language brokering experiences (moderate group) and those who did not involve themselves as frequently in language brokering activities (less-involved group). In contrast, high levels of contextual stress, coupled with more negative language brokering experiences (risk group), produced the least favorable outcomes among adolescents.

Keywords Language brokering · Mexican American · Economic stress · Discrimination · Foreigner stress

Introduction

Mexican immigrants, the largest immigrant group in the U.S. (Motel and Patten 2012), face a number of challenges. About 70% of Mexican immigrant adults in the U.S. speak English less than very well, and 56.6% of Mexican immigrant adults do not have a high school diploma or its

equivalent (López and Radford 2017). Limited English skills and low educational attainment act as barriers to obtaining high-status jobs in the labor market (Espenshade and Fu 1997). In fact, 70.9% of Mexican immigrants hold manual labor jobs with low potential for earnings (López and Radford 2017). Besides socioeconomic disadvantage, Mexican immigrants and their children also experience daily discrimination and stress stemming from being stereotyped as foreigners (i.e., foreigner stress, Delgado et al. 2017; Kwon 2015; Rodriguez et al. 2002). Embedded in this stressful socio-cultural context, children of immigrants may help facilitate their families' survival in the U.S. by functioning as language brokers (Morales and Hanson 2005). As language brokers, children interpret and mediate between their heritage language/culture and English/U.S. culture for their parents (Morales and Hanson 2005).

Two separate lines of research have been conducted to examine how contextual stressors and language brokering experiences, respectively, relate to adolescent outcomes. One line of research has demonstrated the generally detrimental effects of contextual stressors (e.g., economic stress,

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discrimination, and foreigner stress) on adolescent adjustment (Armenta et al. 2013; Benner 2017; Parke et al. 2004). The other line of work suggests that language brokering experiences are multifaceted and that different aspects of brokering can relate to distinct adolescent outcomes (Kam and Lazarevic 2014b; Kim et al. 2017). For example, among Mexican American adolescents, positive language brokering experiences relate to more favorable adolescent adjustment, whereas negative language experiences relate to adolescent maladjustment (Kam 2011; Kam and Lazarevic 2014b; Kim et al. 2017). However, a notable gap in the current literature is the lack of consideration for how language brokering is experienced within the context of common stressors (i.e., contextual stressors like economic stress, discrimination, foreigner stress) that usually confront Mexican immigrant families. In the current study, we sought to fill this gap by providing a holistic view of how contextual stressors and language brokering experiences together relate to adolescent outcomes. Specifically, we use latent profile analysis involving a range of language brokering experiences (objective aspect, centrality or how important it is to be a language broker, and subjective appraisal, which also includes the parent–child relational aspect), along with three contextual stress variables to determine whether distinct brokering—stress groups emerge that relate to adolescent outcomes. Along with a traditional focus on internalizing and externalizing problems in adolescents, we also include measures of physical health (e.g., sleep quality) as outcomes in our investigation.

Our study is guided by the integrative model for the study of minority children (Coll et al. 1996), and the adapting cultural systems framework (White et al. 2018). The integrative model focuses on three interrelated areas: the ways in which social position-related factors (race, culture, ethnicity, social class) intersect; the social position-related stressors (e.g., economic stress, discrimination) that often occur; and the adaptive ways that individuals respond to such stressors, ultimately influencing child development. Building on the concept of adaptive culture from the integrative model, White and colleagues (2018) advanced a framework of adapting cultural systems (i.e., cultural systems that are transactional and reflect the influence of both heritage and destination cultures). According to these authors, language brokering represents an adapting cultural system, as children utilize their knowledge of both their heritage and the U.S. language and culture to facilitate their immigrant families' adaptation in the U.S. (White et al. 2018). An important tenet of their framework is that an adapting system of socialization may be influenced by contextual stressors, or interact with contextual stressors to influence child development. According to this theoretical framework, then, language brokering experiences must be

examined alongside contextual stressors to understand their influence on adolescent outcomes.

We focus on early adolescence (middle school age) when children are experiencing dramatic changes psychologically, cognitively, and physically, in ways that are highly predictive of future psychological, behavioral, and physical outcomes (Arnett 1999). As children of immigrants typically start language brokering between the ages of 8 and 12, or between late elementary and early middle school (Morales and Hanson 2005), focusing on middle school students ensures that study participants are old enough to have already had brokering experiences. Another reason for focusing on children in middle school is that early adolescence is a critical period for identity exploration. Providing assistance for the family by brokering, and having to face stressors such as economic hardship (Phillips and Pittman 2003) and discrimination experiences (Umaña-Taylor and Updegraff 2007), could be salient factors in children's development. Therefore, it should be extremely fruitful to examine how the composite of language brokering experiences and contextual stressors would influence young brokers' development during their early adolescence.

Using a Mexican American sample, the current study adopts a person-centered approach to identify various ways in which contextual stressors and language brokering experiences may work together, by identifying profiles that simultaneously take into account multiple contextual stressors (i.e., economic stress, discrimination, and foreigner stress) together with multiple aspects of language brokering experiences (i.e., frequency, centrality, positive experiences, and negative experiences). Further, we examine how each profile relates to adolescents' psychological, physical, and behavioral adjustment one year later, to determine how groups of adolescents who are characterized by various levels of contextual stress, combined with various language brokering experiences, evidence more adaptive or maladaptive adolescent outcomes.

Language Brokering Experience as a Risk and Protective Factor

Language brokering is a multifaceted activity that plays an important role in the lives of adolescents from low-income immigrant families (Weisskirch 2017). According to the integrative theory of language brokering (Kam and Lazarevic 2014a), brokering experiences consist of objective aspects (i.e., brokering frequency) and subjective aspects (e.g., centrality, efficacy, positive emotions, negative emotions, negative feelings, and brokering stress), along with a relational aspect (i.e., adolescents' perceptions of the parent-child relationship in relation to language brokering) (Kim et al. 2017).

Earlier studies focused on language brokering *frequency* found that greater frequency of language brokering was associated with both negative (e.g., more internalizing problems and delinquent behaviors, Chao 2006; Martinez et al. 2009) and positive adolescent outcomes (e.g., better academic performance, Buriel et al. 1998) among Latinos. These mixed findings on frequency of language brokering may be due to reliance on an objective measure of language brokering without consideration for subjective experiences. For example, language brokering may be seen as a positive or negative experience, and such appraisals of the experience appear to relate more consistently to adaptive and maladaptive outcomes in Latino adolescents (Kam and Lazarevic 2014b). More recently, the concept of *centrality* (the extent to which brokers perceive language brokering as a central part of their social identity) was proposed as an additional subjective component that is salient in understanding how language brokering influences adolescent development in Latinos (Kim et al. 2017).

Positive appraisals of the language brokering experience, including sense of efficacy, positive emotions, positive parent-child relationships, and parental dependence, can render language brokering into a protective factor in adolescent development. Among Mexican American adolescents, for example, a stronger sense of *self-efficacy* (how confident one feels in his/her ability to broker) when brokering for fathers was associated with lower levels of depressive symptoms in adolescents (Kim et al. 2017; Kim et al. 2014). Endorsing *positive emotions* toward language brokering was associated with higher self-esteem among Mexican American brokers (Weisskirch 2007). *Positive parent-child relationships*, such as when brokers felt they gained a better understanding of their parents, were associated with fewer depressive symptoms, a higher level of resilience, and more life meaning in Mexican American adolescents (Kim et al. 2017). *Parental dependence* (adolescents' perception that their parents rely on them) was associated with positive feelings toward brokering (Kam 2011), adolescent resilience, and adolescent meaning in life in Mexican Americans (Kim et al. 2017).

In contrast, studies also find language brokering to be a risk factor for adolescents when the experience is appraised negatively, such as when adolescents report negative emotions, negative feelings, and brokering stress. *Negative emotions*, such as embarrassment and uneasiness when language brokering, were predictive of brokers' depressive symptoms and behavioral problems in samples of Latino, Chinese American, and Mexican American adolescents (Kam and Lazarevic 2014b; Kim et al. 2014; Weisskirch 2007). Brokers who experience more *negative feelings*, such as feeling helpless or burdened when asked to translate, were at higher risk for substance use (Kam and Lazarevic 2014b), depressive symptoms (Kim et al. 2017),

and lower self-esteem (Weisskirch 2013) in Mexican American adolescents. Stress from language brokering is also related to less favorable adolescent outcomes, such as Latino adolescents' lower academic achievement (Anguiano 2017).

Past research indicates that positive and negative perceptions of language brokering may co-exist (Kam and Lazarevic 2014b; Wu and Kim 2009). Indeed, given the multidimensionality of the language brokering experience, it makes sense that there would be different configurations involving varying levels of frequency and centrality, as well as positive and negative subjective experiences. A recent study using a sample of Latino adolescents, for example, identified three broker profiles based on the multifaceted language brokering experiences and family contexts (i.e., brokering frequency, levels of family-based acculturation stress, negative brokering beliefs, and positive brokering beliefs, (Kam et al. 2017). They found that the profile characterized by high scores on all indicators was associated with more negative socio-emotional outcomes; the profile characterized by low scores on all indicators, instead, was associated with more positive behavioral outcomes. Relative to the first two profiles, the third profile which was marked by moderate brokering frequency, moderate levels of positive brokering beliefs, and low levels of negative brokering beliefs and stress, however, did not present distinctive adolescent outcomes. It is clear that a person-centered approach is ideally suited to capture the complexity inherent in the language brokering experience, as it considers varying levels of multiple dimensions simultaneously. Building on these findings, we further tested how various language-brokering experiences may serve as risk or protective factors in the presence of varying levels of the contextual stressors that language brokers face.

Contextual Stressors Faced by Language Brokers in Low Socioeconomic Status Mexican Immigrant Families

Mexican immigrants and their children face multiple contextual stressors that may increase their risk of maladjustment. One such stressor is economic hardship. Relative to U.S. immigrants from other countries of origin, the median personal earnings for Mexican immigrants is the lowest (López and Radford 2017). According to the family stress model (Conger and Donnellan 2007), economic hardship in low-income families can precipitate delinquent behaviors in children (Ponnet 2014). The integrative model of minority children's development suggests that discriminatory experiences are at the forefront of understanding the development of minority children, including Mexico-origin adolescents (Coll et al. 1996). In the present study, we consider two forms of discrimination experiences: daily

discrimination experiences and foreigner stress. Mexico-origin adolescents are likely to experience daily discrimination (e.g., being treated with less respect than other people), with self-reports ranging from 59 to 80% (Delgado et al. 2017). Discrimination can take a toll, predicting a range of poor developmental outcomes in adolescents (Benner 2017). Foreigner stress (e.g., being criticized for speaking Spanish) is another common form of discrimination experienced by Mexico-origin adolescents (Romero and Roberts 2003). Foreigner stress is relevant for language brokers, who may signal their foreigner status by speaking Spanish or by engaging in Mexican cultural practices with their English-limited parents. Experiencing foreigner stress is related to depressive symptoms as well as lower life satisfaction in adolescents (Armenta et al. 2013; Kim et al. 2011).

For adolescents from Mexican immigrant households, functioning as language brokers for their parents may exacerbate economic stress, discrimination and foreigner stress. As language brokers, adolescents may be privy to the family's financial situation, making the family's economic stress very apparent (Valenzuela 1999). Adolescents can also experience discrimination and foreigner stress when serving as language brokers for their parents. Performing an activity that is not practiced by children with native-born parents can invite discriminatory treatment. Despite the fact that the majority of Mexico-origin language brokers are U.S.-born (Chao 2006), they may be perceived as foreigners because they speak Spanish and engage in Mexican cultural practices as a way to communicate and interact with their English-limited parents, who are often unfamiliar with the language and cultural norms of the U.S.

Past research has focused on how each contextual stressor identified above can exert an independent influence on adolescent outcomes (Armenta et al. 2013; Benner and Kim 2009; Conger and Donnellan 2007). However, theoretical and empirical studies suggest a need to consider how adolescents experience multiple stressors simultaneously, at varying levels, to better understand the cumulative and interactive influence of multiple stressors on adolescent outcomes (Bronfenbrenner and Morris 1998; Magnusson and Stattin 1998; Zeiders et al. 2013). A person-centered approach can take into account multiple contextual stressors that are experienced concurrently by language brokers. Given that our sample is comprised of Mexican immigrant families with low socioeconomic status, we expect that most of the families would experience at least moderate levels of economic stress, discrimination, and foreigner stress, and some families may experience high levels of these stressors.

Different levels of contextual stressors can be associated with various brokering experiences. Language brokers who experience high levels of contextual stress may report less

favorable language brokering experiences (i.e., fewer positive experiences and more negative experiences of brokering). For example, in the context of high discrimination, adolescents may perceive more negative feedback and treatment, which may lead them to think that they are not good at translating and to feel that they are less efficacious at performing language brokering tasks (i.e., low brokering efficacy). Such a context may also mean that they relate their brokering experiences with more negative emotions and fewer positive emotions. Thus, we expect to find a group of language brokers characterized by high levels of contextual stress and less favorable brokering experiences. This group would be at risk for adolescent maladjustment (e.g., depressive symptoms, delinquency) given prior evidence demonstrating the detrimental effects of contextual stressors and negative brokering experiences on adolescent adjustment (Kam et al. 2017).

Language brokers who have moderate levels of contextual stressors may report various combinations of language brokering experiences. Some adolescents may feel a strong sense of efficacy about language brokering, reinforcing positive parent-child relationships and giving them a strong sense of the importance of language brokering as a part of their social identity (Kim et al. 2017; Shen et al. 2014). Other adolescents may feel that their role as a language broker is a normal part of growing up with English-limited immigrant parents, and report moderate levels of positive and negative language brokering experiences (Orellana et al. 2003). There may also be adolescents who feel less involved about language brokering (Dorner et al. 2008). When faced with similar levels of contextual stress, adolescents who report more positive language brokering experiences – especially if their positive assessment is reinforced by brokering more frequently and feeling that this activity is important to who they are – may have better developmental outcomes, whereas other adolescents, who are neutral or less-involved, may not derive as much benefit from their language brokering experiences.

Gender Differences

It has been noted that Mexican American families usually emphasize traditional gender roles, with fathers being the authority figures and mothers being the caregivers (Updegraff et al. 2014), especially among those who are newly immigrated or less fluent in English (Leaper and Valin 1996). In light of the different parenting roles of mothers and fathers, it is possible that adolescents perceive language brokering experiences differently depending on the gender of the parent for whom they broker. Initial evidence from variable-centered research indicates that adolescents experience stronger senses of burden and efficacy when brokering for mothers versus fathers (Wu and Kim 2009),

suggesting that adolescents may be less involved in brokering for fathers than brokering for mothers. Hence, profiles that are based on the multidimensional experiences of language brokering and contextual stressors may have different distributions for brokering for mothers versus fathers. In addition, the relationship between broker—contextual stress profiles and adolescent outcomes may differ according to parent gender.

Prior research also suggests that language brokering experiences may vary by brokers' gender. Some studies found that female brokers carried out brokering practices at a higher frequency (e.g., Buriel et al. 1998), while others did not (e.g., Love and Buriel 2007). Also relevant is a study on Mexican American language brokers indicating that boys were more English-dominant than girls (Weisskirch 2005). If this is the case, then boys may feel less stressed and more efficacious when brokering for their parents than girls because of their greater confidence in their English skills. In other words, boys (vs. girls) may be less likely to report unfavorable language brokering experiences.

Current Study

The current study expands the extant literature by proposing that language brokering and contextual stressors such as economic stress, discrimination, and foreigner stress work jointly to influence developmental outcomes among adolescents from Mexican immigrant families. We focus on a sample of middle school students (68th grade) to ensure the concurrence of language brokering experiences and contextual stressors. We also go beyond the existing literature, which focuses on the psychological and behavioral outcomes of language brokers, by including physical health during adolescence as an outcome. The current study examines adolescent outcomes in three key domains: psychological well-being (depressive symptoms, anxiety, life meaning, and resilience); behavioral adjustment (delinquent behaviors); and physical health (ability to run, walk, or participate in physical activity, and sleep quality).

Our study was designed to answer two questions. First, in which ways do language brokering experiences combine with economic stress, discrimination, and foreigner stress? We use latent profile analysis to identify adolescent profiles that incorporate multiple dimensions of the language brokering experience together with the aforementioned contextual stressors. We expect that moderate levels of contextual stress may combine with neutral language brokering experiences, positive language brokering experiences, or minor involvement in language brokering experiences to emerge as *Moderate*, *Protective*, and *Less-involved* profiles, respectively. We also expect the

emergence of a *Risk* profile, in which negative brokering experiences are accompanied by relatively high levels of contextual stress.

Second, how do language brokering and contextual stressors collectively influence the developmental outcomes of adolescents from Mexican immigrant families? We hypothesize that *Protective* brokers will demonstrate the most favorable outcomes, whereas *Risk* brokers will exhibit the least favorable outcomes across all domains. We speculate that *Moderate* and *Less-involved* brokers will show more moderate outcomes compared to *Protective* brokers and *Risk* brokers. Additionally, we explore parent and adolescent gender differences in the distribution across profiles and how profile membership may relate to adolescent outcomes.

Methods

Participants

The current study used a two-wave longitudinal dataset of Mexican immigrant families in the United States. Participants were 604 Mexican American adolescents (54% female) and 595 of their mothers and 293 of their fathers. The adolescents were in 6th to 8th grade in middle school, with ages ranging from 11 to 15 years old ($M = 12.41$, $SD = .97$) at Wave 1. The majority of adolescents (76%) were living with both their mother ($M_{age} = 38.39$, $SD = 5.74$) and father ($M_{age} = 40.82$, $SD = 6.71$), and were born in the United States (75%). For adolescents who were born in Mexico, they came to live permanently in the U.S. at an average age of 3.99 ($SD = 2.62$). Mothers had been living in the U.S. for 15.07 years on average ($SD = 5.59$); fathers had been living in the U.S. for 18.84 years on average ($SD = 7.96$). Median family income was in the range of \$20,001 to \$30,000. For both fathers and mothers, the median education level was finished middle school. Most of the fathers (87%) and about half of mothers (46%) were employed at least part-time, and most of the parents' occupations were unskilled laborer (e.g., construction worker, truck driver, mover, restaurant server).

Procedures

Participants were recruited through public records, school presentations, and community recruitment in and around a metropolitan city in central Texas from 2012 to 2015. Families qualified to participate if parents were of Mexican origin, with a child in middle school who had the responsibility of translating from English to Spanish for at least one parent. If a family met these qualifications, an acquaintance visit was scheduled to provide the family with

comprehensive information about the project and procedures. Family consent (for parents) and assent (for children) were acquired at the acquaintance meeting if the family decided to participate in the project. In the formal interview, bilingual and bicultural interviewers read the questions aloud and entered the participant responses on a laptop computer, given that many participants cannot read and write well. Questionnaires were prepared in both English and Spanish (English questionnaires were first translated to Spanish and then back-translated to English). Both Spanish and English were presented together on the same questionnaires, so that interviewers were able to see both languages for each question and could read aloud to the participants in their preferred language.

In total, two waves of data (with an interval of approximately one year) were collected following the same procedures. Of the 604 families participating in Wave 1, 483 (80%) families also participated in Wave 2. Each participating family was compensated \$60 at Wave 1 and \$90 at Wave 2. Attrition analyses were conducted to compare families who participated in both data collection waves and those who dropped out at Wave 2 on demographic variables and all study variables at Wave 1. We found two significant differences between these groups: families who continued participating had higher levels of maternal education, $t(591) = 2.41, p < .05$, and paternal education, $t(291) = 3.13, p < .01$.

Measures

Language brokering experiences

Nine aspects of language brokering experiences assessed at Wave 1 were included as indicators in the latent profile analysis: *frequency*, *centrality*, *efficacy*, *positive emotions*, *negative emotions*, *negative feelings*, *brokering stress*, *positive relationship with parents*, and *parental dependence*. Adolescents reported their experiences of brokering for mothers and fathers separately.

Frequency Adolescents answered, “In general, how often do you translate for your mother/father?” on a scale ranging from 1 (*never*) to 6 (*daily*).

Brokering centrality Brokering centrality was measured by three items (e.g., “Being a translator for my mother/father is important to who I am”) from a previous study (Kim et al. 2017). Adolescents reported how much they agreed with each statement on a scale ranging from 1 (*strongly disagree*) to 5 (*strongly agree*). Higher scores indicate higher levels of brokering centrality ($\alpha = 0.86$ for brokering for mothers, $\alpha = 0.92$ for brokering for fathers).

Brokering efficacy Brokering efficacy was measured by four items (e.g., “I am good at translating for my mother/father”) from a previous study (Kim et al. 2017). Adolescents reported how much they agreed with each statement on a scale ranging from 1 (*strongly disagree*) to 5 (*strongly agree*). Higher scores indicate higher levels of brokering efficacy ($\alpha = 0.83$ for brokering for mothers, $\alpha = 0.87$ for brokering for fathers).

Brokering negative feelings Brokering negative feelings were measured by four items (e.g., “I feel desperation when my mother/father asks me to translate for her/him”) from a previous study (Kim et al. 2017). Adolescents reported how much they agreed with each statement on a scale ranging from 1 (*strongly disagree*) to 5 (*strongly agree*). Higher scores indicate higher levels of negative feelings ($\alpha = 0.72$ for brokering for mothers, $\alpha = 0.77$ for brokering for fathers).

Positive relationship with parents due to brokering Positive relationship with parents was measured by four items (e.g., “I understand my mother/father better because I translate for her/him”) from a previous study (Kim et al. 2017). Adolescents reported how much they agreed with each statement on a scale ranging from 1 (*strongly disagree*) to 5 (*strongly agree*). Higher scores indicate more positive relationships with parents ($\alpha = 0.82$ for brokering for mothers, $\alpha = 0.86$ for brokering for fathers).

Parental dependence due to brokering Parental dependence was measured by three items (e.g., “I feel I am my mother/father’s protector because I translate for her/him”) from a previous study (Kim et al. 2017). Adolescents reported how much they agreed with each statement on a scale ranging from 1 (*strongly disagree*) to 5 (*strongly agree*). Higher scores indicate higher levels of parental dependence ($\alpha = 0.59$ for brokering for mothers, $\alpha = 0.64$ for brokering for fathers).

Positive emotions during brokering Adolescents reported how often they feel each of the positive emotions (i.e., enthusiastic, excited, happy) when they translate from English to Spanish for their mother/father on a scale ranging from 1 (*never*) to 7 (*always*). Higher scores reflect higher levels of positive emotions ($\alpha = 0.82$ for brokering for mothers, $\alpha = 0.90$ for brokering for fathers).

Negative emotions during brokering Adolescents reported how often they feel each of the negative emotions (i.e., angry, annoyed, sad, embarrassed) when they translate from English to Spanish for their mother/father on a scale ranging from 1 (*never*) to 7 (*always*). Higher scores reflect higher

levels of negative emotions ($\alpha = 0.68$ for brokering for mothers, $\alpha = 0.75$ for brokering for fathers).

Contextual stressors

Three contextual stressors assessed at Wave 1 were included as indicators in the latent profile analysis: *discrimination*, *foreigner stress*, and *family economic stress*.

Discrimination *Discrimination* was measured by the 9-item chronic daily discrimination scale (e.g., “I am treated with less courtesy than other people”) (Kessler et al. 1999). Adolescents reported on a scale ranging from 1 (*never*) to 4 (*often*), with higher scores indicating more experiences of being the target of discrimination ($\alpha = 0.82$).

Foreigner stress Adolescents’ *foreigner stress* was assessed with four items adapted from previous research (Kim et al., 2011). Sample items included, “Because of how I speak, people sometimes assume I am not a U.S. American” and “When people look at me, they see a foreigner.” Adolescents reported how much they agreed with each of the statements on a scale ranging from 1 (*strongly disagree*) to 5 (*strongly agree*). Higher mean scores indicate higher foreigner stress ($\alpha = 0.71$).

Family economic stress *Family economic stress* was assessed by 5 items adapted from a prior study (Mistry et al. 2009): 1) “Did your parents argue with each other about not having enough money?”; 2) “Did you argue with your parents about not having enough money?”; 3) “Did you and your parents disagree or get upset about money?”; 4) “How much of a problem did your family have because your parents did not have enough money to buy things your family needs or wants?”; and 5) “How upset or worried were your parent(s) because they did not have enough money to pay for things?” Adolescents reported the first three items on a scale ranging from 1 (*never*) to 5 (*always*) and the last two items on a scale ranging from 1 (*not at all*) to 5 (*very*). Higher mean scores indicate higher economic stress ($\alpha = 0.75$).

Adolescent outcome variables

In total, adolescents self-reported on seven outcome measures at Wave 2, spanning behavioral (delinquent behaviors), psychological (depressive symptoms, anxiety, life meaning, resilience), and physical health domains (physical functioning problems, sleep quality).

Delinquent behaviors Adolescents’ delinquent behaviors were measured with 13 items adapted from the Youth Self-Report (Achenbach and Rescorla 2001), including items

such as stealing, running away, and lying. Adolescents reported the extent to which the listed behaviors applied to them during the past six months, on a scale ranging from 0 (*not at all true*) to 2 (*often true or very true*). Higher mean scores reflect more delinquent behaviors ($\alpha = 0.79$).

Depressive symptoms Depressive symptoms were measured by the widely used 20-item Center for Epidemiologic Studies of Depression Scale (CESD; Radloff 1977). Adolescents self-reported how often during the past week they had experienced depressive symptoms, endorsing items such as “Bothered by things usually not bothered by,” on a scale of 1 (*rarely or none of the time*) to 4 (*most or all of the time*). Higher mean scores reflected more depressive symptoms ($\alpha = 0.84$).

Anxiety Anxiety was measured by four items adopted from prior studies (Reynolds and Richmond 1997; Spitzer et al. 2006). Adolescents self-reported how often they were bothered by the following problems over the last 2 weeks: (1) feeling nervous, (2) worrying about what is going to happen, (3) trouble relaxing, and (4) becoming easily annoyed or irritable, on a scale of 1 (*not at all*) to 5 (*nearly every day*). Higher mean scores reflected higher levels of anxiety ($\alpha = 0.82$).

Life meaning Life meaning was measured using three items from the presence subscale of the meaning in life questionnaire (Steger et al. 2006): “I understand my life’s meaning,” “My life has a clear sense of purpose,” and “I have a good sense of what makes my life meaningful.” These items were selected given their relatively high item-scale correlations and their good face validity (Steger et al. 2006). Adolescents self-reported on a scale of 1 (*strongly disagree*) to 5 (*strongly agree*). Higher mean scores reflect a greater sense of life meaning ($\alpha = 0.90$).

Resilience Resilience was measured using three items from the Connor-Davidson Resilience Scale (Connor and Davidson 2003), for example, “I tend to recover easily after an illness or hardship.” The three-item scale has been validated in prior research (Kim et al. 2017). Adolescents reported on a scale of 1 (*strongly disagree*) to 5 (*strongly agree*), with higher scores reflecting a greater sense of resilience ($\alpha = 0.73$).

Physical functioning problems Physical functioning problems were assessed by three items adopted from the Physical Functioning subscale of the Pediatric Quality of Life Inventory Version 4.0 (Varni et al. 2001). Adolescents reported how much of a problem the following was for them during the past month: (1) walking more than one block, (2) running, and (3) participating in sport activities or physical

Table 1 Descriptive statistics and correlations of key study variables

	1	2	3	4	5	6	7	8	9	M	SD	N
1. BM frequency	1.00									4.66	1.12	603
2. BM centrality	0.12**	1.00								3.49	0.81	602
3. BM efficacy	0.16***	0.39***	1.00							3.40	0.71	602
4. BM pos. emotions	0.12**	0.32***	0.27***	1.00						2.93	1.50	603
5. BM neg. emotions	0.04	-0.13***	-0.30***	0.06	1.00					2.11	0.96	603
6. BM neg. feelings	-0.04	-0.16***	-0.32***	-0.15***	0.54***	1.00				2.45	0.73	602
7. BM stress	0.07	0.14***	-0.06	0.18***	0.37***	0.23***	1.00			1.43	0.81	603
8. BM pos. relationship	0.13***	0.65***	0.52***	0.35***	-0.22***	-0.27***	0.05	1.00		3.61	0.73	602
9. BM parental dependence	0.00	0.45***	0.28***	0.20***	-0.04	0.02	0.11**	0.46***	1.00	3.02	0.73	602
10. BF frequency	0.43***	0.15***	0.13***	0.10*	-0.03	-0.09*	0.09*	0.12***	0.02	3.95	1.50	558
11. BF centrality	0.07	0.81***	0.37***	0.31***	-0.13**	-0.17***	0.12**	0.62***	0.39***	3.37	0.97	532
12. BF efficacy	0.12**	0.41***	0.75***	0.24***	-0.26***	-0.29***	-0.04	0.50***	0.28	3.37	0.76	530
13. BF pos. emotions	0.06	0.35***	0.29***	0.80	0.00	-0.19	0.19***	0.36***	0.19***	2.66	1.63	549
14. BF neg. emotions	0.02	-0.09*	-0.22***	-0.01	0.72***	0.41***	0.32***	-0.14***	0.01	1.80	0.96	551
15. BF neg. feelings	-0.07	-0.18***	-0.29***	-0.15***	0.49***	0.73***	0.28***	-0.25***	-0.02	2.38	0.75	530
16. BF stress	0.05	0.14***	-0.06	0.15***	0.26***	0.15***	0.69***	0.07	0.06	1.10	0.84	558
17. BF pos. relationship	0.12**	0.65***	0.43***	0.32***	-0.19***	-0.24***	0.07	0.67***	0.39***	3.43	0.83	530
18. BF parental dependence	-0.06	0.46***	0.19***	0.19	0.00	0.03	0.17***	0.38***	0.67***	2.82	0.79	530
19. Discrimination	0.01	-0.11**	-0.20***	0.03	0.22***	0.18***	0.14***	-0.12***	-0.02	1.63	0.48	604
20. Foreigner stress	0.05	0.06	-0.10*	0.00	0.11**	0.12**	0.19***	0.08*	0.09*	2.43	0.73	604
21. Economic stress	-0.02	0.05	-0.14***	0.02	0.24***	0.22***	0.24***	-0.02	0.01	1.88	0.68	602
22. Delinquency	0.00	-0.17***	-0.12**	-0.16	0.11*	0.17***	0.05	-0.20**	-0.05	0.26	0.22	482
23. Depression	0.11*	-0.12**	-0.17***	0.01	0.20***	0.13**	0.11*	-0.20	-0.02	1.55	0.39	483
24. Anxiety	0.10*	-0.11*	-0.15***	0.04	0.27***	0.14**	0.19***	-0.11*	-0.07	1.72	0.65	483
25. Life meaning	-0.09	0.10*	0.23***	0.09*	-0.11*	-0.12**	-0.03	0.21***	0.09	3.70	0.78	483
26. Resilience	-0.06	0.15***	0.24***	0.02	-0.09*	-0.06	-0.04	0.17***	0.13**	3.54	0.65	483
27. PFP	-0.03	-0.01	-0.14**	0.10*	0.17***	0.07	0.16***	-0.04	-0.04	1.49	0.69	483
28. Sleep quality	-0.12*	0.12**	0.13**	0.05	-0.11*	-0.16***	-0.05	0.14**	0.09	3.09	1.05	483
10. BF frequency	1.00									26	27	28
11. BF centrality	0.23***	1.00								25	26	27
12. BF efficacy	0.20***	0.52***	1.00							24	25	26
13. BF pos. emotions	0.19***	0.40***	0.34***	1.00						23	24	25
14. BF neg. emotions	0.12***	-0.08	-0.20***	0.06	1.00					22	23	24

Table 1 (continued)

	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28
15. BF neg. feelings	-0.02	-0.11*	-0.19***	-0.19***	0.50***	1.00													
16. BF stress	0.35***	0.19***	0.02	0.26***	0.40***	0.27**	1.00												
17. BF pos. relationship	0.21***	0.75***	0.63***	0.43***	-0.16***	-0.19***	0.14**	1.00											
18. BF parental dependence	0.09*	0.55***	0.39***	0.29***	0.02	0.08	0.17***	0.56	1.00										
19. Discrimination	-0.02	-0.08	-0.22***	-0.03	0.18**	0.20***	0.14***	-0.15***	-0.03	1.00									
20. Foreigner stress	0.02	0.04	-0.04	0.01	0.07	0.13**	0.19***	0.04	0.05	0.29***	1.00								
21. Economic stress	-0.02	0.02	-0.13**	-0.02	0.18**	0.22***	0.20***	-0.08	0.08	0.31***	0.19***	1.00							
22. Delinquency	-0.03	-0.17***	-0.1*	-0.14**	0.12*	0.18*	0.08	-0.16***	-0.06	0.30***	0.13**	0.18***	1.00						
23. Depression	0.01	-0.16***	-0.22***	-0.07	0.14**	0.15**	0.05	-0.21***	-0.10*	0.32***	0.13**	0.15***	0.31***	1.00					
24. Anxiety	0.02	-0.17***	-0.14**	-0.04	0.24**	0.19***	0.15**	-0.15**	-0.11*	0.29***	0.14**	0.18***	0.28***	0.63***	1.00				
25. Life meaning	-0.07	0.11*	0.22***	0.10*	-0.06	-0.11*	-0.04	0.13**	0.02	-0.19***	-0.05	-0.09*	-0.18***	-0.30	-0.20	1.00			
26. Resilience	-0.06	0.16***	0.28***	0.01	-0.06	-0.07	-0.03	0.17***	0.14**	-0.18***	-0.06	-0.09*	-0.07	-0.34	-0.26***	0.51***	1.00		
27. PFP	-0.04	-0.02	-0.18***	0.01	0.08	0.11*	0.13**	-0.09	0.01	0.21***	0.08	0.10*	0.140**	0.23***	-0.21***	-0.21***	-0.21***	1.00	
28. Sleep quality	-0.03	0.17***	0.15**	0.10*	-0.08	-0.19***	-0.04	0.14**	0.09	-0.18***	-0.09*	-0.14**	-0.21***	-0.35***	-0.33***	0.26***	0.26***	-0.16***	1.00

BM brokering for mother, BF brokering for father, pos. positive, neg. negative, PFP physical functioning problems

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

functioning, on a scale of 1 (*never a problem*) to 5 (*always a problem*). Higher mean scores reflect more physical functioning problems ($\alpha = 0.80$).

Sleep quality For sleep quality, adolescents reported on one item, “During the past month, how would you rate your sleep quality overall?” from the Pittsburgh Sleep Quality Index (Buysse et al. 1989), on a scale of 1 (*poor*) to 5 (*excellent*).

Covariates

A set of demographic variables were included as covariates for adolescent outcomes, including adolescent age, gender, nativity (i.e., whether born in the U.S. or not), and parental education, given these variables’ associations with adolescent outcomes, as demonstrated in prior studies (Conger and Donnellan 2007; Kwak 2003; Yip et al. 2008). Parents reported on their highest education level on a scale of 1 (*no formal schooling*) to 11 (*finished graduate degree*).

Analysis Plan

Data analyses were conducted in four steps. First, we conducted descriptive and correlational analyses for key study variables. Second, we did two sets of latent profile analyses: one for adolescents’ experiences of brokering for mothers and the other for adolescents’ experiences of brokering for fathers. In each set of latent profile analyses, a total of 12 indicators were used, including nine indicators of language brokering experiences (i.e., *frequency*, *centrality*, *efficacy*, *positive emotions*, *negative emotions*, *negative feelings*, *brokering stress*, *positive relationship with parents*, and *parental dependence*) and three indicators of contextual stress (i.e., *discrimination*, *foreigner stress*, and *family economic stress*). Latent profile analyses were conducted using Mplus 7.31 (Muthén and Muthén 1998-2015). Mplus uses the full information maximum likelihood (FIML) estimation method to handle missing data, which enables full usage of all available data in the model. A series of models were specified (i.e., 1 to 5 profiles). We evaluated the models with varying numbers of profiles based on fit statistics, parsimony, and substantive meaning of each solution (Berlin et al. 2014). Specifically, for fit statistics, Bayesian information criteria (BIC), sample-size adjusted Bayesian information criteria (ABIC), and entropy were used. Smaller values on the BIC and ABIC are indicative of a better fitting model (Nylund et al. 2007). Entropy with values approaching 1 indicate clearer delineation of classes (Celeux and Soromenho 1996). In addition, we examined whether the profiles appeared substantively and conceptually meaningful and qualitatively unique from other profiles in the model.

Table 2 Model fit indices for latent profile analysis of brokering experiences and contextual stressors

	Log-likelihood	N of parameters	AIC	BIC	ABIC	Entropy	Distribution ^a
Brokering for mothers							
1 profile	−10,261.763	24	20,571.527	20,677.213	20,601.019		604
2 profiles	−9974.861	37	20,023.721	20,186.653	20,069.188	0.694	342–262
3 profiles	−9796.262	50	19,692.523	19,912.702	19,753.965	0.770	236–289–79
4 profiles	−9683.955	63	19,493.909	19,771.335	19,571.325	0.796	114–86–325–79
5 profiles	−9613.414	76	19,378.828	19,713.500	19,472.219	0.821	69–80–338–55–62
Brokering for fathers							
1 profile	−9475.672	24	18,999.343	19,105.029	19,028.835		604
2 profiles	−9152.521	37	18,379.042	18,541.974	18,424.509	0.693	275–329
3 profiles	−8971.958	50	18,043.915	18,264.094	18,105.357	0.760	229–296–79
4 profiles	−8804.421	63	17,734.842	18,012.267	17,812.258	0.796	298–52–181–73
5 profiles	−8713.408	76	17,578.815	17,913.487	17,672.206	0.791	44–175–277–52–56

The optimal solution is bolded

^aNumber of individuals being classified into each class

Third, after latent profiles were identified, we examined whether the 12 indicators were significantly different across profiles using multivariate analysis of variance (MANOVA). Fourth, we examined whether later adolescent outcomes differed across profiles using multivariate analysis of covariance (MANCOVA). Two MANCOVA models were analyzed separately, one for brokering for mothers and another for fathers. In each MANCOVA model, the dependent variables were the adolescent outcome variables; the independent variable was brokering—stress profiles for mothers or fathers. The covariates included adolescent age, sex, nativity, and maternal or paternal education levels.

Results

Descriptive Statistics

Table 1 displays descriptive statistics and bivariate correlations among all study variables. Correlations among language brokering dimensions generally ranged from nonsignificant to moderate, with just two correlations greater than .60 ($rs = -.37$ to $.54$ for brokering for mothers; $rs = -.19$ to $.75$ for brokering for fathers), indicating that these dimensions represent distinct aspects of brokering experiences. Specifically, the correlations between positive dimensions (i.e., efficacy, positive emotions, positive relationship with parents, and parental dependence) and negative dimensions of language brokering (i.e., negative emotions, negative feelings, and brokering stress) were

nonsignificant or modest ($rs = -.32$ to $.11$ for brokering for mothers; $rs = -.20$ to $.26$ for brokering for fathers), indicating that adolescents could apprehend positive and negative experiences simultaneously because they are distinct dimensions. Contextual stressors (i.e., discrimination, foreigner stress, and economic stress) were somewhat related to, but distinct from, language brokering experiences, with nonsignificant or modest correlations ($rs = -.22$ to $.24$).

Latent Profile Modeling of Broker—Stress Profiles

Model fit indices of latent profile analyses are presented in Table 2. Based on the model fit indices and the identification of conceptually meaningful and interpretable profiles, the 4-profile solutions were separately identified as the optimal solutions for both brokering for mothers and brokering for fathers. Specifically, AIC, BIC and ABIC values started to level off after the 4-profile solution in both cases. Moreover, the 4-profile solutions had meaningful patterns that were consistent with our hypotheses based on prior work.

The standardized estimated means of all indicators in each profile are depicted in Fig. 1. The unstandardized means of all indicators, as well as the F test results of mean differences across profiles, are shown in Table 3. Four similar profiles were identified, representing adolescents' brokering experiences for mothers (Fig. 1a) and fathers (Fig. 1b), with slightly different distributions across brokering experiences for mothers and fathers. The largest

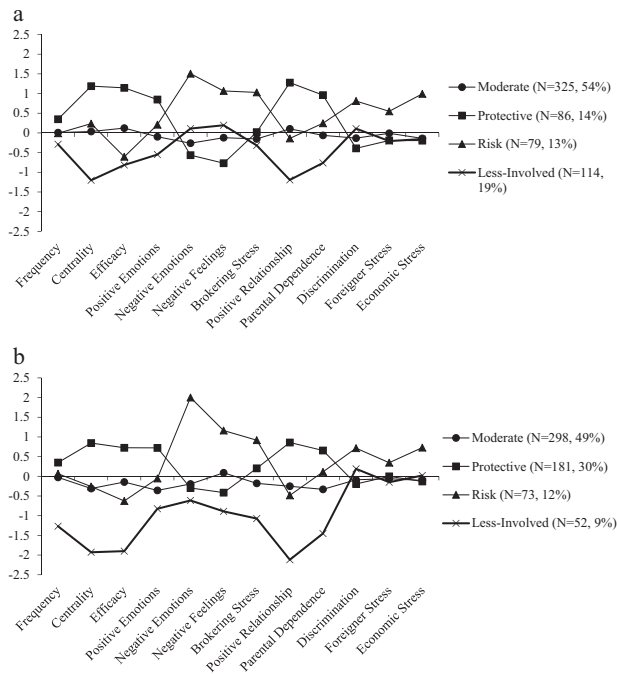


Fig. 1 Profiles of adolescent language brokering experiences and contextual stress. **a** Presents profile of brokering for mothers; **b** presents profiles of brokering for fathers

group of adolescents, brokering for mothers and fathers, had moderate scores on all indicators (labeled “Moderate”; $n = 364$, 60% of the sample for mothers; $n = 298$, 49% of the sample for fathers). Compared to the *Moderate* group, adolescents in the second group (labeled “Protective”) had higher levels of brokering frequency, greater centrality, and more positive experiences of brokering (i.e., efficacy, positive emotions, positive relationship with parents, and parental dependence), fewer negative experiences of brokering (i.e., less negative emotions and/or negative feelings), and similar levels of stress in general (i.e., brokering stress, foreigner stress, economic stress, and/or discrimination) ($n = 86$, 14% for mothers; $n = 181$, 30% for fathers). Relative to the *Moderate* group, adolescents in the third group (labeled “Risk”) reported similar levels of brokering frequency and/or centrality, lower levels of efficacy, and more negative experiences of brokering (negative emotions, negative feelings, and brokering stress), and higher levels of contextual stressors (i.e., discrimination, foreigner stress, and economic stress) ($n = 79$, 13% for mothers; $n = 73$, 12% for fathers). The fourth group had generally low scores on brokering indicators, especially centrality and positive relationship with parents, along with levels of contextual stressors similar to the *Moderate* group (labeled “Less-Involved”; $n = 114$, 19% for mothers; $n = 52$, 9% for fathers). It is of note that although the *Moderate*, *Protective*, and *Less-Involved* groups had generally similar levels of

contextual stress (especially foreigner stress and economic stress), which were significantly lower than those reported by the *Risk* group, the three groups had distinct language brokering experiences.

Comparing Adolescent Outcomes across Profiles

The multivariate test indicated significant group differences for Wave 2 adolescent well-being across profiles of brokering for mothers, $F(21, 1341) = 3.04$, $p < .001$, partial $\eta^2 = 0.05$, as well as profiles of brokering for fathers, $F(21, 1341) = 3.27$, $p < .001$, partial $\eta^2 = 0.05$. The means and standardized deviations for each well-being indicator for each profile are presented in Table 4, along with the F test results. When we observed significant group differences for a given indicator of adolescent well-being, we further compared the marginal means (i.e., means when accounting for all covariates) of the outcomes for each group. We used a Bonferroni correction to control the Type I error rate (p value = $.05/6 = .008$) to interpret findings from the multiple group comparisons. In general, the *Protective* brokers demonstrated the best adolescent well-being, whereas the *Risk* brokers exhibited the worst adolescent well-being across all domains; the *Moderate* and *Less-Involved* brokers had mediocre levels of adjustment relative to these two groups. But there are variations across measures of adolescent outcomes.

Specifically, for profiles of brokering for mothers, the *Protective* group exhibited lower levels of delinquent behaviors and higher levels of resilience and sleep quality compared to the other three groups. The *Protective* group also had lower levels of depressive symptoms, anxiety, and physical functioning problems than the *Risk* group. Moreover, the *Protective* group had higher levels of life meaning than the *Risk* and *Less-Involved* groups. The *Risk* group reported higher levels of delinquent behaviors and depressive symptoms than did the *Moderate* group, and had more problems with physical functioning than the other groups. For profiles of brokering for fathers, the *Protective* group exhibited lower levels of delinquent behaviors and higher levels of sleep quality than the *Moderate* and *Risk* groups. The *Protective* group also had lower levels of depressive symptoms and anxiety than the *Risk* group. Additionally, the *Risk* group had higher levels of delinquent behaviors, depressive symptoms, and anxiety than the *Moderate* group. The *Less-Involved* group was similar to the *Moderate* group on all adolescent well-being indicators for both maternal and paternal profiles. The *Less-Involved* group and the *Moderate* group were also similar to the *Protective* group on some measures of adolescent outcomes (e.g., anxiety, physical functioning) for profiles of brokering for mothers and fathers.

Table 3 Analysis of variance contrasting indicators of latent profile analyses across profiles

	Moderate		Protective		Risk		Less-involved		Test statistics		
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>F</i>	<i>p</i>	Partial η^2
Brokering for mothers-contextual stress profiles: $F(3, 596)$											
BM frequency	4.70 _a	1.04	5.07 _b	1.02	4.59 _{ac}	1.18	4.28 _c	1.25	7.65	<.001	0.04
BM centrality	3.52 _a	0.56	4.51 _b	0.47	3.70 _c	0.60	2.50 _d	0.64	211.98	<.001	0.52
BM efficacy	3.50 _a	0.49	4.28 _b	0.53	2.96 _c	0.65	2.77 _c	0.60	147.11	<.001	0.43
BM positive emotions	2.82 _a	1.38	4.24 _b	1.65	3.23 _a	1.43	2.05 _c	0.97	43.41	<.001	0.18
BM negative emotions	1.85 _a	0.66	1.55 _b	0.67	3.64 _c	0.99	2.20 _d	0.77	144.96	<.001	0.42
BM negative feelings	2.35 _a	0.56	1.87 _b	0.63	3.24 _c	0.73	2.61 _d	0.72	73.21	<.001	0.27
BM stress	1.31 _{ac}	0.68	1.46 _a	0.86	2.29 _b	0.86	1.16 _c	0.67	45.16	<.001	0.19
BM positive relationship	3.69 _a	0.44	4.58 _b	0.39	3.51 _c	0.71	2.72 _d	0.52	235.96	<.001	0.54
BM parental dependence	2.97 _a	0.59	3.76 _b	0.68	3.23 _c	0.69	2.43 _d	0.58	79.35	<.001	0.29
Discrimination	1.57 _a	0.41	1.43 _b	0.44	2.02 _c	0.58	1.69 _d	0.49	27.77	<.001	0.12
Foreigner stress	2.42 _a	0.65	2.26 _a	0.91	2.84 _b	0.75	2.27 _a	0.68	12.28	<.001	0.06
Economic stress	1.79 _a	0.62	1.76 _a	0.67	2.55 _b	0.71	1.79 _a	0.58	33.27	<.001	0.14
Brokering for fathers-contextual stress profiles: $F(3, 519)$											
BF frequency	3.96 _a	1.31	4.49 _b	1.34	4.00 _{ab}	1.38	1.92 _c	1.34	13.50	<.001	0.07
BF centrality	3.06 _a	0.71	4.20 _b	0.55	3.12 _a	0.93	1.47 _c	0.54	165.20	<.001	0.49
BF efficacy	3.24 _a	0.54	3.94 _b	0.55	2.87 _c	0.62	1.84 _d	0.68	142.70	<.001	0.45
BF positive emotions	2.05 _{ab}	1.07	3.88 _a	1.80	2.52 _b	1.31	1.29 _a	0.78	66.12	<.001	0.28
BF negative emotions	1.61 _a	0.57	1.52 _a	0.63	3.76 _b	0.95	1.21 _a	0.44	224.48	<.001	0.56
BF negative feelings	2.44 _a	0.61	2.08 _b	0.67	3.29 _c	0.62	1.69 _d	0.62	69.53	<.001	0.29
BF stress	0.95 _a	0.67	1.30 _b	0.83	1.82 _c	0.94	0.18 _d	0.35	35.43	<.001	0.17
BF positive relationship	3.20 _a	0.50	4.17 _b	0.50	3.00 _c	0.78	1.61 _d	0.60	227.30	<.001	0.57
BF parental dependence	2.53 _a	0.59	3.36 _b	0.72	2.93 _c	0.69	1.68 _d	0.70	83.65	<.001	0.33
Discrimination	1.59 _a	0.44	1.53 _a	0.46	1.99 _b	0.56	1.71 _{ab}	0.48	14.34	<.001	0.08
Foreigner stress	2.36 _a	0.67	2.45 _{ab}	0.85	2.72 _b	0.63	2.34 _a	0.62	3.53	=.02	0.02
Economic stress	1.82 _a	0.61	1.80 _a	0.65	2.39 _b	0.79	1.85 _a	0.72	12.27	<.001	0.07

Within a row, means with different subscripts were significantly different from each other. Significant *F* statistics are bolded

Sensitivity Analysis

Three sets of analyses were conducted to assess the sensitivity and generalizability of the results. The first analyses examined whether there was consistency in adolescent profile membership across models. A Chi-square difference test demonstrated that adolescent membership in profiles of brokering for mothers and fathers were significantly related, $\chi^2(9) = 354.08$, $p < .001$. The majority of adolescents (56%) were in the same profile, whether they were brokering for their mother or their father. The second set of analyses examined whether there were adolescent gender differences in profile distribution. Chi-square difference tests revealed that adolescent gender was not significantly related to profiles of brokering for fathers, $\chi^2(3) = 3.83$, $p = .28$, but it was significantly related to profiles of brokering for mothers, $\chi^2(3) = 11.30$, $p = .01$. We further tested how adolescent gender specifically related to profiles

of brokering for mothers by using multinomial logistic regressions. A reference group of profiles of brokering for mothers was rotated to get all possible comparisons. We found that boys (vs. girls) were less likely to be in the less-involved group, $B = -.48$, $SE = .22$, $p = .03$, and the risk group, $B = -.77$, $SE = .26$, $p < .01$, compared to the moderate group.

We then analyzed whether any significant interaction effects emerged between (a) profiles of brokering for mothers and profiles of brokering for fathers, (b) profiles of brokering for mothers and adolescent gender, and (c) profiles of brokering for fathers and adolescent gender by using MANCOVA tests similar to those in the main analyses. We found no significant interaction effects between profiles of brokering for mothers and fathers, suggesting that the effects of profiles of brokering for mothers and fathers on adolescent outcomes are independent from each other. We also did not find significant moderating effects of adolescent

Table 4 Analysis of covariance contrasting wave 1 brokering-contextual stress profiles on wave 2 adolescent outcomes

	Moderate		Protective		Risk		Less-involved		Test statistics		
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>F</i> (3, 473)	<i>p</i>	Partial η^2
Brokering for mothers-contextual stress profiles											
Delinquent behaviors	0.24 _a	0.21	0.19 _b	0.21	0.33 _c	0.24	0.31 _{ac}	0.22	6.45	<.001	0.04
Depressive symptoms	1.51 _a	0.36	1.45 _a	0.39	1.74 _b	0.47	1.60 _{ab}	0.36	7.45	<.001	0.05
Anxiety	1.65 _a	0.59	1.60 _a	0.66	2.07 _b	0.78	1.77 _a	0.63	7.81	<.001	0.05
Life meaning	3.73 _{ab}	0.70	3.96 _a	0.78	3.45 _b	0.97	3.57 _b	0.81	5.18	<.001	0.03
Resilience	3.56 _a	0.59	3.76 _b	0.74	3.35 _a	0.74	3.45 _a	0.63	5.27	<.01	0.03
Physical functioning problems	1.43 _a	0.62	1.42 _a	0.68	1.83 _b	0.98	1.47 _a	0.61	5.43	<.001	0.03
Sleep quality	3.07 _a	1.04	3.58 _b	1.07	2.81 _a	1.06	2.97 _a	0.93	6.05	<.01	0.04
Brokering for fathers-contextual stress profiles											
Delinquent behaviors	0.27 _a	0.20	0.20 _b	0.20	0.37 _c	0.28	0.27 _{abc}	0.20	7.89	<.001	0.05
Depressive symptoms	1.54 _a	0.35	1.46 _a	0.38	1.73 _b	0.47	1.62 _{ab}	0.41	7.35	<.001	0.04
Anxiety	1.70 _a	0.61	1.57 _a	0.61	2.19 _b	0.70	1.69 _a	0.67	13.27	<.001	0.08
Life meaning	3.66 _a	0.73	3.85 _a	0.80	3.51 _a	0.82	3.62 _a	0.87	2.86	=.04	0.02
Resilience	3.49 _a	0.58	3.69 _b	0.76	3.41 _a	0.59	3.52 _{ab}	0.64	3.96	<.01	0.02
Physical functioning problems	1.46	0.65	1.42	0.69	1.66	0.69	1.66	0.90	2.37	=.07	0.01
Sleep quality	3.03 _a	0.98	3.41 _b	1.08	2.71 _a	1.03	2.91 _{ab}	1.07	6.84	<.001	0.04

Note: Within a row, means with different subscripts were significantly different from each other. Significant *F* statistics are bolded. Covariates included adolescent age, gender, nativity, and parental educational level

gender on the relations between language brokering groups and adolescent outcomes, suggesting that the relations between language brokering groups and adolescent outcomes are similar for boys and girls.

Discussion

Prior studies on language brokering have justified the importance of language brokering in the development of Mexican American children whose parents lack English skills, though the findings are mixed in terms of whether the effect is positive or negative (Weisskirch 2017). As the multifaceted nature of language brokering is being uncovered, researchers have found that how children perceive their brokering experiences works jointly with objective aspects of brokering in determining the role this activity plays in their lives (Kam and Lazarevic 2014b; Kim et al. 2017). More recently, scholars have begun to realize the need to consider language brokering together with the contexts in which the brokers are embedded, given that language brokering is a highly contextualized activity (Kam et al. 2017).

Guided by the integrative model for the study of minority children and the adapting cultural systems framework (Coll et al. 1996; White et al. 2018), we adopted a person-

centered approach in the current study to investigate how contextual stressors facing adolescents from Mexican immigrant families can be coupled with language brokering experiences to prospectively influence adolescent outcomes. Our results confirmed that language brokering is a multi-dimensional experience. Consistent with our hypothesis, we identified four profiles with various combinations of contextual stressors and language brokering experiences that relate to differential adolescent outcomes: *Moderate*, *Protective*, *Risk*, and *Less-involved*. In most cases, for the multiple developmental outcomes examined, the *Protective* profile is associated with the most favorable adolescent outcomes, whereas the *Risk* profile is related to the least favorable adolescent outcomes. The *Moderate* and *Less-involved* profiles are associated with similar adolescent outcomes, which are somewhere between those associated with the *Protective* profile and those associated with the *Risk* profile.

Brokering—Contextual Stress Profiles

Instead of considering contextual stressors facing Mexico-origin adolescents in immigrant families separately from their language brokering experiences, in the current study we incorporated a set of contextual stressors and multiple dimensions of the language brokering experiences

simultaneously, in order to identify brokering—stress profiles. By doing so, we were better able to capture the complexity of how the experiences of contextual stressors and language brokering co-occur in the lives of adolescents with Mexican immigrant parents.

The largest group of adolescents in our study (*Moderate*) reported moderate levels of contextual stressors and had moderate scores on all language brokering dimensions, including brokering frequency and centrality, positive language brokering experiences (i.e., efficacy, positive emotions, positive relationship with parents, and parental dependence), and negative language brokering experiences (i.e., negative emotions, negative feelings, and brokering stress). Similarly, Kam et al. (2017) found a brokering group (labeled as infrequent-ambivalents) characterized by moderate to low levels of brokering frequency, positive brokering beliefs, and negative brokering beliefs. As postulated by (Orellana et al. 2003), adolescents classified into this group may view language brokering as a normal way to assist their families. The current study, however, moves beyond identifying profiles based solely on language brokering dimensions, to incorporate contextual stressors into the profiles. Our results indicated that the moderate experience of language brokering is accompanied by moderate levels of multiple contextual stressors (i.e., discrimination, foreigner stress, and economic stress).

With levels of contextual stressors similar to those reported by the *Moderate* group, adolescents can also report language brokering in other ways. Compared to the *Moderate* group, the *Protective* brokers—the second-largest group—engaged in language brokering more frequently, and reported higher levels of centrality and positive brokering experiences, but lower levels of negative brokering experiences. The co-occurrence of high centrality and positive brokering experiences may be explained by social identity theory, which posits that individuals are inclined to think positively about their social groups so as to maintain a positive self-image (Tajfel and Turner 2004). Another explanation may be that adolescents who report efficacious and positive brokering experiences are more likely to regard language brokering as a central part of their lives and to feel a sense of accomplishment or pride.

A third group, reporting moderate levels of contextual stressors, is the *Less-involved* group; this was also the smallest group. Adolescents in this group reported the lowest frequency of language brokering and the lowest degree of centrality. In other words, language brokering was not perceived to be as important for the *Less-involved* adolescents as it was for adolescents in other groups. The emergence of this profile is consistent with prior findings that language brokering, conceived of as a type of family responsibility, represents only a minor part of life for some adolescents (Villanueva and Buriel 2010). Additionally, the

current results confirmed the importance of considering the objective aspects of language brokering together with the subjective aspects, as noted by past research (Kam and Lazarevic 2014a). If we focused only on the frequency and/or centrality of brokering, we would not be able to distinguish the *Risk* group from the *Moderate* group, who obviously have perceived language brokering differently and may exhibit different outcomes.

The aforementioned three profiles were all characterized by moderate levels of contextual stress. The fourth profile (*Risk*), in contrast, experienced high levels of contextual stress. Moreover, brokers classified into the *Risk* group also tended to experience language brokering negatively. Their brokering frequency and centrality were similar to those reported by the *Moderate* group, yet they seemed to have much lower efficacy and experienced more negative emotions, negative feelings, and brokering stress. In other words, the *Risk* group experienced both contextual stressors and the stress of language brokering more intensely. It is possible that there was a spillover effect of stress, such that the negative experiences of language brokering were transmitted to other aspects of life, or vice versa.

Brokering—Contextual Stress Profiles and Adolescent Outcomes

In the process of relating the four profiles that emerged in the present investigation to adolescent outcomes, we found that language brokering can be a source of both protection and risk depending on how the multifaceted nature of the language brokering experience is coupled with contextual stressors. This helps explain the mixed results from prior language brokering research. When brokering for mothers, the *Protective* group (characterized by high levels of brokering frequency and positive brokering experiences, but low levels of negative brokering experiences) evidenced more positive outcomes than both the *Moderate* group (characterized by neutral brokering experiences) and the *Less-involved* group (characterized by low brokering frequency and low scores on all other brokering dimensions), even though all three of these groups reported similar levels of contextual stress. The benefits of being in the *Protective* group were clear on measures of delinquent behavior, resilience, and sleep quality. This pattern was also generally found for profiles of brokering for fathers.

The favorable language brokering characteristics (high levels of positive and low levels of negative brokering experiences) that comprise the *Protective* profile may help to explain why the *Protective* group demonstrated better adolescent outcomes than the *Moderate* group and the *Less-Involved* group in terms of delinquent behavior, resilience, and sleep quality, even though they perceived similar amounts of contextual stress. Our findings are consistent

with previous studies demonstrating that more positive language brokering experiences (such as a high level of efficacy) and fewer negative brokering experiences (such as a lower level of burden) were related to positive adolescent adjustment via an overall sense of self-efficacy and self-esteem (Weisskirch 2013). Our findings are also consistent with previous studies on adolescents providing family assistance (such as language brokering), which show that family assistance buffers and attenuates the negative effect of stressors in the lives of Mexico-origin adolescents (Corona et al. 2012; Telzer and Fuligni 2009). Similarly, when youth brokers experience moderate levels of contextual stressors, the positive experiences of language brokering appear to be protective. This may occur because adolescent brokers can feel a sense of accomplishment by performing an important task that facilitates the family's interactions in U.S. society (Roche et al. 2015).

It is not surprising that the *Risk* group (characterized by low levels of positive language brokering experiences, but high levels of negative language brokering experiences and contextual stress) reported the least favorable adolescent outcomes across the behavioral, psychological, and physical health domains. These negative effects are salient for anxiety levels (when brokering for mother and/or father) and physical functioning problems (when brokering for mother). The significant disadvantage of being in the *Risk* group (vs. the *Protective* group) was noted for all indicators except for life meaning and physical functioning problems when brokering for fathers. These findings are consistent with those from two distinct lines of research on contextual stressors and language brokering. Studies on contextual stressors have shown how stress in multiple domains (family, peers, and socio-cultural) can relate to a range of mental health disorder symptomatology among Mexico-origin adolescents (Zeiders et al. 2013). Studies on language brokering have illustrated how negative language brokering experiences relate to mental health problems, risky behaviors, and substance use in Latino language brokers (e.g., Kam 2011; Kam and Lazarevic 2014b). Therefore, as posited by the accumulation model of risk (Walsemann et al. 2016), negative language brokering experiences—when combined with a stressful contextual environment, as in the case of *Risk* brokers—represent a heightened risk for adverse developmental outcomes in adolescents.

Gender Differences

Adolescents' distribution across profiles of brokering for mothers and brokering for fathers was largely consistent. The majority of the current sample (56%) maintained consistent profile membership whether brokering for their mother or their father. This suggests that brokers tend to perceive their brokering experiences similarly, regardless of

which parent is involved. Moreover, we found that the patterns of brokering experiences for mothers and fathers tend to relate to adolescent outcomes independently and similarly, with a few variations on some measures of adolescent outcomes. That said, it is still worth investigating brokering for mothers and fathers separately because (a) there is still a notable portion (44%) of adolescents who have inconsistent membership in brokering for mothers versus fathers, and (b) membership in profiles of brokering for mothers and profiles for fathers predict adolescent outcomes independently.

In terms of brokers' gender, we found that boys (vs. girls) were less likely to be identified as *Risk* and *Less-involved* brokers when brokering for mothers (not for fathers). Given the evidence that boys are more likely than girls to be English-dominant (Weisskirch 2005), they may undergo less stress when brokering and feel more efficacious about brokering for their English-limited parents. The relationship between brokering—contextual stress profiles and adolescent outcomes, however, did not differ for boys and girls. Future researchers can take a closer look at why the distribution for brokering—contextual stress profiles would vary by gender.

Limitations and Future Research

There are several limitations to our study. First, our sample is comprised of adolescents from Mexican immigrant families with disadvantaged socioeconomic status. We are not able to identify profiles in which economic stress and/or other types of contextual stress are low, and are thus not able to compare adolescent outcomes between our existing profiles and profiles characterized by low levels of contextual stressors. Future research should sample Mexican immigrant families with more diverse backgrounds to capture the nuances of how contextual stressors can be combined with language brokering experiences. Additionally, the results of this study are limited to Mexican American brokers from low-SES immigrant families in central Texas. Future studies should test whether the current results are generalizable to language brokers with different countries of origin who live in different regions of the United States and beyond.

Third, the current study included only two waves of data collection during early adolescence. Given that language brokering is a dynamic and multifaceted experience that may vary over time (Tilghman-Osborne et al. 2016), future research should collect more waves of data spanning multiple developmental stages to examine the stability and change of profile membership through early, middle, and late adolescence. Future research may also test the influence of a stable/changing profile membership on the development of adolescent language brokers. It should also be

noted that some of the measures (i.e., *parental dependence due to brokering* and *negative emotions during brokering*) have low reliability ($\alpha = 0.59\text{--}0.68$) within the current sample. We found the reliability acceptable since the three items in the former scale measured different aspects of parental dependence (e.g., “I feel more knowledgeable than my parent because I translate for him/her” and “My parent is not in control of the situation when he/she asks me to translate”) and the items in the latter scale each measured a distinct emotion (e.g., angry and sad). Future researchers, however, should be cautious when interpreting the results of these measures.

Last but not least, although we included multiple indicators of language brokering and contextual stressors, we did not take into consideration the variations of brokering context (e.g., brokering at home vs. brokering in a medical setting). Frequency and the subjective experiences of language brokering are different across brokering contexts (Anguiano 2017; Roche et al. 2015). Therefore, future research may examine further how brokering experiences in different contexts may contribute to broker—stress profiles.

Contributions

The current study contributes to the literature, both theoretically and practically, in several ways. First and foremost, our study is the first to classify young brokers into groups with distinct contextual stress – language brokering profiles based on both the contextual stressors they confront and their multidimensional language brokering experiences. Our results indicated that brokers’ language brokering experiences are heterogeneous when they face moderate levels of contextual stressors (i.e., the *Moderate* group, the *Protective* group, and the *Less-Involved* group shared similar levels of contextual stressors), whereas brokering experiences tend to be negative when brokers face high levels of contextual stressors (i.e., the *Risk* group). Our findings highlight the importance of considering language brokering experiences and contextual stressors simultaneously, thereby allowing us to offer a new perspective for understanding the experiences of Mexico-origin adolescents in immigrant families. It is important to note, though, that while a person-centered approach allows us to test the combinations of language brokering experiences and contextual stressors in a holistic way, it cannot isolate the variables to pinpoint the contribution of each variable separately. We suggest that research on language brokering should emphasize both person-centered approaches and variable-centered approaches. We need person-centered research to explore how the multiple dimensions of language brokering and the contextual factors naturally combine. It is equally important to test which variable is the driver of certain adolescent outcomes using a variable-centered approach.

Our findings also empirically supported the adapting cultural systems framework (White et al. 2018), which holds that language brokering, as an important aspect of children’s socialization, indeed interacts with contextual stressors to influence their development. Our findings suggest that positive language brokering experiences (as seen in the *Protective* profile) are beneficial for adolescents’ development by protecting brokers from the detrimental effects of contextual stressors. In contrast, negative language brokering experiences (as seen in the *Risk* profile) are more likely to combine with high levels of contextual stressors, relating to the worst adolescent outcomes among all brokers. One practical implication of these findings is that to promote positive development in adolescent brokers from Mexican immigrant families, policies and interventions can be designed to encourage more positive experiences of language brokering. The brokering—contextual stress profiles indicate that we should target those living in more stressful environments and/or those who have more negative language brokering experiences. The results showing that the *Protective* group had better adolescent outcomes than both the *Moderate* group and the *Less-Involved* group suggest that promoting positive brokering experiences may be more effective than reducing engagement in brokering (which may not be possible for some families, in any case) to improve adolescent adjustment.

Additionally, the current results contribute to the literature on how language brokering affects adolescent brokers, by including physical health indicators as an adolescent outcome variable. Future research may include other physical health indicators to aid in our understanding of the impact of language brokering experiences on adolescent development.

Conclusion

With latent profile analysis, the current study considered diverse language brokering experiences (e.g., frequency, centrality, positive language brokering experiences, and negative language brokering experiences) in the context of contextual stressors (i.e., economic stress, discrimination, and foreigner stress) to identify distinct broker—contextual stress profiles among Mexico-origin adolescents from immigrant families. We also related the four profiles to different adolescent outcomes spanning behavioral, psychological, and physical domains. Our findings indicate that positive language brokering experiences (i.e., the *Protective* profile) are a resilience factor for adolescent development, given moderate levels of contextual stress, whereas negative language brokering experiences are more likely to be a risk factor that combines with high levels of contextual stress (i.e., the *Risk* profile), hindering developmental outcomes.

The findings further suggest that promoting positive language brokering experiences may be a more effective way to improve adolescent behavioral, psychological, and physical adjustment compared to simply reducing language brokering frequency. Our findings underscore the need to examine contextual stressors in conjunction with co-occurring language brokering experiences to gain a more meaningful understanding of adolescent adjustment in Mexico-origin immigrant families.

Authors' Contributions S.Y.K. created the design of the study, conceived of the study and drafted portions of the manuscript; Y.H. performed the statistical analysis and drafted portions of the manuscript. J.S. drafted portions of the manuscript. S.J.S., S.C., M.Z., K.M. P., and D.P.M. provided critical review and editing of the manuscript. All authors read and approved the final manuscript.

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Data Sharing Declaration This manuscript's data will not be deposited.

Compliance with Ethical Standards

Conflict of Interest The authors declare that they have no conflict of interest.

Ethical Approval All procedures performed in studies involving human participants were in accordance with the ethical standards of the institutional and/or national research committee and with the 1964 Helsinki declaration and its later amendments or comparable ethical standards.

Informed Consent Informed consent was obtained from all individual participants included in the study.

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