HHS Public Access

Author manuscript

J Marriage Fam. Author manuscript; available in PMC 2019 April 01.

Published in final edited form as:

J Marriage Fam. 2018 April ; 80(2): 555–568. doi:10.1111/jomf.12447.

Language Acculturation, Acculturation-Related Stress, and Marital Quality in Chinese American Couples

Yang Hou, **Lisa A. Neff**, and **Su Yeong Kim**

University of Texas at Austin, Department of Human Development and Family Sciences, 108 East Dean Keeton St., Stop A2702, Austin, TX 78712-1248

Abstract

The current study examines the longitudinal indirect pathways linking language acculturation to marital quality. Three waves of data were collected from 416 Chinese American couples over eight years ($M_{age.wave1}$ = 48 for husbands, 44 for wives). Actor-partner interdependence model analyses revealed that for both husbands and wives, lower levels of language acculturation were associated with higher levels of stress over being stereotyped as a perpetual foreigner. Individuals' foreigner stress, in turn, was directly related to greater levels of their own and their partners' marital warmth, suggesting that foreigner stress may have some positive relational effects. However, individuals' foreigner stress also was associated with increases in their own depressive symptoms, which predicted higher levels of marital hostility in the partner. Overall, these results underscore the complexity of how language acculturation and foreigner stress relate to marital quality and the importance of considering the interdependence of the marital system.

Keywords

acculturation; Asian Americans; dyadic/couple data; marriage; longitudinal; stress; coping; and/or resiliency

Culturally informed ecological perspectives for understanding marital outcomes among ethnic minorities underscore the importance of considering the broader cultural contexts in which couples reside. Specifically, these perspectives argue that ethnic minorities' experiences with acculturation (i.e., the process and extent of adopting the language and cultural values of the majority culture) should have significant implications for their marital well-being (Helms, Supple, & Proulx, 2011). However, to date, only a few empirical studies have investigated the association between acculturation experiences and marital quality. This work, which has focused primarily on Latino families, has demonstrated that levels of acculturation and the stress of cultural adaption often predicts poor marital quality (Flores, Tschann, VanOss Marin, & Pantoja, 2004; L. Garcia, Hurwitz, & Kraus, 2005; Helms et al., 2014). However, acculturation-related stressors may not always be harmful for marriage; growing research suggests that stressful experiences can have both positive and negative implications for marital quality through different mechanisms or under different conditions

Yang Hou, houyang223@gmail.com, (512) 660-2236
Lisa A. Neff, lneff@austin.utexas.edu, (512) 475-6886
Su Yeong Kim, sykim@prc.utexas.edu, (512) 471-5524

(Randall & Bodenmann, 2009; Story & Bradbury, 2004). Therefore, further research is needed not only to examine the generalizability of prior results to other minority groups, but also to examine the potential for acculturation-related stressors to have dual effects on marital quality.

To this end, the current study investigates the longitudinal pathways linking acculturation experiences and marital quality in an understudied population, Chinese American couples. Chinese Americans represent the largest ethnic group of Asian Americans (U.S. Census Bureau, 2010). Asian Americans are the fastest growing ethnic minority group in the United States (U.S. Census Bureau, 2013) and comprise 25 percent of all first-generation immigrants in the U.S. (Pew Research Center, 2013). Specifically, we examine whether language acculturation level (i.e., English proficiency) indirectly relates to later marital quality through acculturation-related stress and depressive symptoms. We particularly focus on one salient, yet understudied source of acculturation-related stress for Asian Americans: experiences of perpetual foreigner stereotype. Asian Americans are often perceived as perpetual foreigners regardless of whether they are U.S. citizens or not, given their distinct physical appearance, culture, and language relative to European and Black Americans, who are considered as “real” Americans (Armenta et al., 2013; Ong, Burrow, Fuller-Rowell, Ja, & Sue, 2013; Sue, Bucceri, Lin, Nadal, & Torino, 2009). Stress over being stereotyped as a perpetual foreigner, which we refer to as foreigner stress, can have significant effects on individual and family adjustment, such as increasing psychological distress and family conflicts (Armenta et al., 2013; Hou, Kim, & Wang, 2016; Ong et al., 2013). To take into account the interdependence of the marital system (Cox & Paley, 2003), the current study examines how individuals’ acculturation experiences influence not only their own but also their partners’ marital behaviors. Finally, we also explore whether the effects of individuals’ foreigner stress on their own marital quality depends on their partners’ experiences with foreigner stress.

BACKGROUND

Acculturation Experiences and Marital Quality

Acculturation refers to both the process of adapting to the new culture and the level of endorsement of the new culture; acculturation involves multiple domains, such as learning the dominant cultural values and practices as well as acquiring mainstream language (Kang, 2006). Experiences related to acculturation are perhaps one of the most important contexts for marriage in ethnic minority families. In fact, a few prior studies have demonstrated that higher levels of acculturation (e.g., more oriented to American culture) predict greater marital distress, conflict, and reported violence. These effects are probably due to changes in family values (e.g., reduced emphasis on family harmony) and gender roles (Flores et al., 2004; L. Garcia et al., 2005; Negy & Snyder, 1997). However, these studies focused primarily on changes in cultural values and practices in Latino families. How acculturation, particularly language acculturation, relates to marital well-being among Asian Americans remains unclear. Language acculturation is a key component of acculturation which may have unique effects on marital outcomes in Asian Americans. For instance, research has demonstrated that the effects of language acculturation (i.e., English proficiency) on

individual outcomes (e.g., perceived stress, family conflicts) are larger than the effects of other domains of acculturation in Asian Americans (e.g., culture values and practices; Kang, 2006). Likewise, the effects of language acculturation on marital well-being may differ from the effects of adopting the dominant cultural values and practices. Instead of decreasing marital quality, greater language acculturation may have dual effects on marital well-being through its effect on reducing foreigner stress, as discussed below.

Research has shown that Asian Americans exhibiting lower levels of language acculturation are more likely to be stereotyped as perpetual foreigners (Kim, Wang, Deng, Alvarez, & Li, 2011). Unlike overt discrimination which involves treating people with less courtesy and respect because of their group membership, experiences of being stereotyped as a perpetual foreigner are usually manifested in more ambiguous and unintentional ways, and thus can be regarded as a more subtle form of discrimination (Ong et al., 2013; Sue et al., 2009). For example, others may assume the individual is a foreigner and ask “what country are you from” or assume that the individual has poor English skills (Armenta et al., 2013; Sue et al., 2009). Although such stereotypes may be true for some immigrants, these experiences can still be perceived as stressful, as being treated as an outsider, even when the treatment is unintentional, undermines individuals’ desires to fit in with society (Armenta et al., 2013; Sue et al., 2009). Unfortunately, experiences of perpetual foreigner stereotype are uniquely prevalent in everyday lives of Asian Americans, particularly among immigrants (Ong et al., 2013; Sue et al., 2009). Experiences of being stereotyped as a perpetual foreigner have been associated with various measures of Asian Americans’ adjustment, such as more depressive symptoms and lower levels of life satisfaction (Armenta et al., 2013; Kim et al., 2011).

Although experiences of being stereotyped as a perpetual foreigner may be an important source of stress for the marriages of Asian American couples, no prior study has directly examined the effect of foreigner stress on marital quality within this population. Some relevant studies have examined the association between other acculturation-related stressors (e.g., overt discrimination, cultural adaption stress) and marital well-being in Latino and African American couples, however (Helms et al., 2014; Riina & McHale, 2010; Trail, Goff, Bradbury, & Karney, 2012). For example, Helms et al. (2014) identified cultural adaptation stress (i.e., pressures to learn English, new cultural values and behaviors, and pressures against acculturation) as an important external stressor that has unique indirect effects (above and beyond the effects of economic stress) on Mexican American couples’ marital negativity through couples’ depressive symptoms. Based on this prior work, foreigner stress, a specific type of acculturation-related stress that is particularly relevant to Asian Americans (Ong et al., 2013; Sue et al., 2009), may also have unique effects on Asian American couples’ marital quality above and beyond economic stress.

The Influence of Foreigner Stress on Marital Quality

Theories of stress spillover and resilience in marriage suggest that the increases in foreigner stress resulting from lower levels of language acculturation may have dual effects on marital quality. On the one hand, a wealth of research has established that stressors originating outside of the marriage can undermine marital interactions—increasing negativity and decreasing positivity—by increasing psychological problems such as depressive symptoms

(Randall & Bodenmann, 2009; Story & Bradbury, 2004). As a result, external stress is often linked to declines in marital satisfaction over time (Bodenmann, Ledermann, & Bradbury, 2007; Riina & McHale, 2010; Story & Repetti, 2006; Trail et al., 2012). For example, Benner and Kim (2010) demonstrated that Chinese American couples' economic pressure was associated with more depressive symptoms, which in turn were related to greater hostility in marital interactions. According to this body of research under a stress spillover perspective, then, foreigner stress may increase couples' depressive symptoms, which should serve to increase marital hostility and decrease marital warmth between partners.

On the other hand, a growing literature suggests that external stressors may not always be harmful for marriage. Resilience in marriage perspectives on stress propose that challenging circumstances may inspire greater dyadic coping efforts and thus provide couples with opportunities to improve their interaction style and deepen their commitment and intimacy (Story & Bradbury, 2004). For instance, disclosing a stressful personal problem to a partner is often associated with increases in positive marital behaviors, such as the seeking and provision of comfort and support (Collins & Feeney, 2000). Consistent with this perspective, some studies have found that stressful negative experiences, such as testicular cancer and the death of a child, are associated with marital improvements (e.g., a stronger bond) among some participants (Gritz, Wellisch, Siau, & Wang, 1990; Lehman, Lang, Wortman, & Sorenson, 1989). More relevant to the current study, theories of minority stress suggest that stress stemming from stigma or discrimination may enhance closeness between partners and increase appreciation for the relationship for some couples (e.g., Frost, 2014). Specifically, discrimination can increase individuals' identification with their own group (Branscombe, Schmitt, & Harvey, 1999). When couples face this type of stress, they may be more likely to provide support to each other due to their sense that "we are in this together". Thus, according to this body of research, foreigner stress, a subtle form of discrimination, may lead to improvement in the marital relationship by increasing marital warmth.

Interdependence in Marital System

Understanding the circumstances in which foreigner stress may undermine versus enhance marital quality may require taking into account the interdependence present in the marital system (Cox & Paley, 2003). That is, individuals' stress and depressive symptoms may influence not only their own marital behaviors (actor effects), but also the marital behaviors of the partner (partner effects ; Bodenmann et al., 2007; Story & Repetti, 2006; Trail et al., 2012). For example, Helms et al. (2014) found that husbands' depressive symptoms were positively associated with wives' marital negativity. Thus, the current study utilizes the actor-partner interdependence model (APIM; Kenny, Kashy, & Cook, 2006) to estimate actor effects and partner effects simultaneously.

Moreover, the manner in which husbands and wives respond to their partners' stress may depend on their own experiences of stress (actor-partner interaction effects). According to the dyadic coping perspective (Bodenmann, 2005), when individuals experience lower levels of stress, they have more psychological resources available for responding to their partners' stress in a positive, constructive manner. In other words, stress may take less of a toll on the marriage if it is experienced by one rather than both partners. Consistent with this idea, a

study on newlywed couples found that wives' marital satisfaction was less negatively affected by husbands' stress when wives' own levels of stress were low (Neff & Karney, 2007). Hence, we also examined the actor-partner interaction effects of foreigner stress on marital quality.

The Present Study

The current study aims to examine the longitudinal pathways linking language acculturation, foreigner stress, depressive symptoms, and marital quality among Chinese Americans, using a sample of couples with adolescent children. The conceptual model is presented in Figure 1. Lower levels of language acculturation are hypothesized to predict higher feelings of foreigner stress. Foreigner stress, in turn, may have a positive effect on marital warmth according to resilience in marriage perspectives on stress (Story & Bradbury, 2004), and/or have a negative effect on marital quality (i.e., higher levels of marital hostility and lower levels of marital warmth) through increasing depressive symptoms according to stress spillover literature (Karney & Neff, 2013; Randall & Bodenmann, 2009). Moreover, given the interdependence of the marital system, we propose that these effects would be found not only at an intrapersonal level (actor effects, A paths), but also at an interpersonal level (partner effects, P paths). We also explore potential interaction effects between husbands' and wives' foreigner stress on marital outcomes (actor-partner interaction effects, I paths). We propose that one partner's foreigner stress may be more likely to associated with marital warmth when the other partner within the couple experience low (vs. high) levels of foreigner stress.

METHOD

Participants

The current study relied on data collected as part of a larger three-wave longitudinal study of 444 Chinese American families with adolescent children. On average, husbands were 48 years old (SD = 6.15) and wives were 44 years old (SD = 4.79) at Wave 1. The majority of husbands (87%) and wives (90%) were immigrants. The mean age at the time of immigration was 30 years old for husbands (SD = 10.17) and 28 years old for wives (SD = 8.93). Length of time in the United States averaged 17.93 years for husbands (SD = 10.21) and 15.81 years for wives (SD = 8.23). Most of the participating families hailed from Hong Kong or southern provinces of China; fewer than 10 families originated from Taiwan. The majority spoke Cantonese as their home language; less than 10% of the families spoke Mandarin. The majority of husbands (84%) and wives (77%) were employed at least part-time at Wave 1. Their occupations ranged from unskilled laborers (e.g., construction worker or janitor) to professionals (e.g., banker or computer programmer). Median and average parental education level was a high school degree. Median and average family income was between $30,001 and $45,000 at Wave 1.

A small percentage of couples (n=28, 6.3%) divorced during the study period. Given that the purpose of the current study was to investigate whether acculturation predicts residualized changes in the quality of marital interactions over time, these couples were excluded from analyses. Notably, couples who divorced did not differ from couples whose marriages

remained intact in any of the Wave 1 study variables (ps > .05). Thus, the current study relied on data provided by the 416 couples whose marriages remained intact over the 8 year study period.

Procedure

Participants were initially recruited in 2002 from seven middle schools in major metropolitan areas of Northern California. With the aid of school administrators, Chinese American students were identified. All eligible families were sent a letter describing the research project in both English and Chinese (traditional and simplified). Forty-seven percent of eligible families indicated interest in the study and returned the parent consent and adolescent assent forms; these families then received a packet of questionnaires for the mother, father, and target adolescent in the household. Participants were instructed to complete the questionnaires alone and not to discuss their answers with others. They also were instructed to seal their questionnaires in the provided envelopes immediately after completion. Approximately 2–3 weeks after sending the packet, research assistants visited each school to collect the completed questionnaires during the students' lunch periods. Among the families who agreed to participate, 76% returned surveys (444 families). In 2006, 350 families (312 fathers and 338 mothers) participated in the Wave 2 survey; data collection followed the same procedure as in Wave 1. Finally, 330 families (282 fathers and 308 mothers) provided data at Wave 3 in 2010. At this wave, questionnaires were distributed and collected either through the mail or online. Families who returned questionnaires were compensated a nominal amount of money ($30 at Wave 1, $50 at Wave 2, and $130 at Wave 3) for their participation.

Questionnaires were prepared in English and Chinese (traditional and simplified). The questionnaires were first translated to Chinese and then back-translated to English. Any inconsistencies with the original English version scale were resolved by bilingual/bicultural research assistants with careful consideration of culturally appropriate meanings of items. Around 71% of parents used the Chinese language version of the questionnaire and the majority (85%) of adolescents used the English version.

Attrition rates from Wave 1 to Wave 2 and from Wave 1 to Wave 3 were 21% and 26%, respectively. Attrition analyses were conducted at Waves 2 and 3 to compare all study variables of parents who participated vs. those who had dropped out. Only one significant difference emerged: foreign-born husbands were less likely than U.S.-born husbands to have continued participating (χ^2 (1) = 4.16, p= .04). Because full information maximum likelihood (FIML) estimation method (Muthén & Muthén, 1998 – 2015) was used to handle missing data, the sample size for the main modeling was 416 despite the attrition.

Measures

Language acculturation—Language acculturation (i.e., English proficiency) was assessed using two items: "how well do you speak and understand English?" and "how well do you read and write English?" These items were validated in Chinese American samples in Kim et al. (2011). Participants responded on a 5-point scale ranging from 1 (*not at all well*) to 5 (*extremely well*). Higher mean scores reflect better English skills. Although

language acculturation was assessed at all three waves of the larger study, the current study utilized language acculturation levels at Wave 1 only (α = .96 for both husbands and wives).

Stress over perpetual foreigner stereotype—Participants' foreigner stress was assessed with five items that have been validated in Chinese American samples in previous research (Benner & Kim, 2009). Participants reported how stressful each experience (e.g., "People criticize me for not speaking/writing English well" and "People assume I am from another country") was on a scale ranging from 1 (*not stressful*) to 4 (*very stressful*). Higher mean scores reflect higher foreigner stress. If participants had not encountered one of these experiences, they received a score of 1 (*not stressful*) on the item. Foreigner stress was examined at Wave 2 and Wave 3; however, to provide a better temporal ordering of the variables in our proposed model, only the Wave 2 assessment was used in the current study (α = .89 for husbands, α = .86 for wives).

Depressive symptoms—Husbands' and wives' depressive symptoms were measured using the 20-item Center for Epidemiologic Studies of Depression Scale (Radloff, 1977). The scale has been widely used for various populations including Chinese Americans (Bromberger, Harlow, Avis, Kravitz, & Cordal, 2004; Hou, Kim, Hazen, & Benner, 2017). Participants indicated how often they experienced depressive symptoms during the past week on a scale of 0 (*rarely or none of the time*) to 3 (*most or all of the time*). Sample items include "Bothered by things usually not bothered by" and "Could not shake off the blues (feeling down or bad) even with help from family or friends". Higher mean scores reflect more depressive symptoms. Depressive symptoms were assessed across three waves, and the current study used the Wave 2 assessment (α = .90 for husbands, α = .87 for wives).

Marital quality—Marital warmth and hostility were measured across three waves using items adopted from Conger et al. (2002). The current study used the Waves 1 and 3 assessments. The warmth scale included 8 items measuring participants' engagement in positive and affectionate behaviors toward their spouse, such as "Act loving, affectionate, and caring toward him/her" and "Help him/her do something that was important to him/her." The hostility scale consisted of 6 items assessing participants' engagement in critical or negative behaviors toward their spouse, such as "Shout or yell at him/her because you were mad at him/her" and "Criticize him/her or his/her ideas." The items have been validated in Chinese American samples in previous studies (Hou et al., 2017; Kim, Wang, Orozco-Lapray, Shen, & Murtuza, 2013). Participants reported how often they engaged in these behaviors during the past month on a scale ranging from 1 (*never*) to 7 (*always*). For the warmth scale, higher mean scores indicate greater warmth (αs = .91 to .94 across waves and informants). For the hostility scale, higher mean scores indicate greater hostility (αs = .82 to .83 across waves and informants).

Covariates—The current study also assessed several important covariates at Wave 1. First, marital warmth and hostility at Wave 1 were included as covariates for marital warmth and hostility at Wave 3 in all analyses to examine whether language acculturation predicts relative change in marital quality from Wave 1 to Wave 3. Second, given that economic stress and work stress have been widely associated with marital quality (Bodenmann et al.,

2007; Randall & Bodenmann, 2009), the current study included husbands' and wives' economic stress and employment status (0 = *unemployed*, 1= *employed at least part-time*) as covariates for marital warmth and hostility at Wave 3. For economic stress, husbands and wives reported separately on two items on a five-point scale: "Think back over the past 3 months. How much difficulty did you have with paying your bills?," (1 = *a great deal*, 5 = *none at all*) and "Think back over the past 3 months. Generally, at the end of each month, how much money did you end up with?," (1= *more than enough*, 5 = *very short*). These items have been validated in previous studies of Chinese American families (Mistry, Benner, Tan, & Kim, 2009). A mean score of these two items was created (after reverse coding the first item), with higher scores reflecting higher economic stress (α = .69 and .78 for husbands and wives, respectively). Third, we included individuals' education level (1 = *no formal schooling*, 9 = *finished graduate degree*) and nativity (0 = *non-U.S. born*, 1 = *U.S. born*) as covariates of all study variables given their potential associations with all variables in the model (Kang, 2006).

Analytical Approach

Our conceptual model (Figure 1) was tested in three steps under the structural equation modeling framework. First, we tested a basic model without any covariates. This model estimated the intrapersonal associations (actor effects, A paths) and interpersonal associations (partner effects, P paths) among language acculturation, foreigner stress, depressive symptoms, and marital warmth and hostility, simultaneously. Moreover, the interactive effects between actor and partner scores on foreigner stress were simultaneously estimated (actor-partner interaction effects, I paths). The interaction terms were computed by multiplying the husband's and wife's scores after first centering all predictors (grand mean across gender). Furthermore, this model accounted for the covariance between husbands and wives in all study variables. In the second step, we introduced Wave 1 marital warmth and hostility, participants' employment status and economic stress as covariates predicting Wave 3 marital warmth and hostility, as well as participants' education level and nativity as covariates for all study variables. In the third step, we aimed to get the most parsimonious model as recommended by Garcia, Kenny, and Ledermann (2015). Specifically, we test whether the actor effects, partner effects, and interaction effects varied across gender by comparing more constrained models to a baseline model in which all actor, partner, and actor-partner interaction effects were freely estimated across gender. The Satorra-Bentler Scaled Chi-square (S-Bχ^2) test was used to determine whether a more constrained model fit the data significantly worse than a less constrained one (Satorra & Bentler, 2001).

All path models were estimated with Mplus 7.31 (Muthén & 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 path analyses. To address non-normality of variables (i.e., depressive symptoms) in the model, maximum likelihood estimation with robust standard errors was used for all models. In path analyses, both direct and indirect effects are estimated simultaneously. Inferences for the indirect effects were estimated using the delta method (Muthén & Muthén, 1998 – 2015).

RESULTS

Descriptive Statistics

Bivariate correlations, means and standard deviations of all study variables are reported in Table 1. As expected, participants' language acculturation was negatively associated with their own and their partners' foreigner stress. Participants' foreigner stress was positively associated with their own and their partners' depressive symptoms as well as with their own (but not their partners') marital hostility. Participants' depressive symptoms were positively related to their own and their partners' marital hostility, and negatively related to their own (but not their partners') marital warmth. Correlations between husbands' and wives' scores on all study variables were moderate to high, highlighting the non-independence of dyadic data. In addition, there was moderate stability in both marital warmth and hostility from Wave 1 to Wave 3.

Linking Acculturation, Foreigner Stress, Depressive Symptoms, and Marital Quality

We first tested the conceptual model, shown in Figure 1, without covariates. The model fit was adequate, $\chi^2(6) = 8.583$, $p = .198$, CFI = .991, RMSEA = 0.032 [0.000, 0.076], SRMR=.021. Then, we included all covariates into the model including Wave 1 marital warmth and hostility, economic stress, employment status, education level, and nativity. The model fit for this model was adequate, $\chi^2(60) = 87.848$, $p = .011$, CFI = .977, RMSEA = 0.033 [0.016, 0.048], SRMR = .042. Path parameters for the focal paths showed a consistent pattern across the two models. Next, using the second model with all covariates as the baseline model, we tested whether the paths varied across husbands and wives. Constraining all actor, partner, and interaction effects to be equivalent across husbands and wives did not yield a significant reduction in model fit, $\Delta S\text{-}B\chi^2(18) = 24.162$, $p = .147$. Thus, to be parsimonious, this more constrained model was reported as the final model. Model fit of this final model was good, $\chi^2(78) = 112.010$, $p = .007$, CFI = .973, RMSEA = 0.032 [0.017, 0.045], SRMR = .045. The unstandardized parameter estimates of the final model were presented in Figure 2. As described below, results of this model revealed evidence for both the helpful and harmful effects of foreigner stress on marriage.

Findings aligning with the resilience in marriage hypothesis—We found that participants who reported lower levels of language acculturation at Wave 1 felt more stress over being stereotyped as a foreigner at Wave 2. Supporting the notion that stressful life events can enhance closeness and intimacy between partners, individuals' foreigner stress at Wave 2 was directly associated with higher levels of their own and their partners' marital warmth at Wave 3. Note that such effect of individuals' foreigner stress on marital warmth depended on partners' levels of foreigner stress as we found a significant negative interaction effect between actors' and partners' foreigner stress at Wave 2 on spouses' marital warmth at Wave 3. This interaction was plotted in Figure 3, with comparisons made at 1 *SD* from the mean of the predictors. Consistent with our hypothesis, simple slope analyses revealed that the positive association between partners' foreigner stress and individuals' warmth toward their partner was stronger when individuals' own foreigner stress was low ($b = .30$, $SE = .13$, $p = .02$) versus high ($b = .12$, $SE = .09$, $p = .17$). In other words, foreigner stress may serve to mobilize expressions of love and support within the

marriage, especially when one of the two spouses experience low levels of stress. Lastly, testing of indirect effects from language acculturation to foreigner stress to marital quality demonstrated that individuals' language acculturation had a negative indirect effect on their own (Path A1→ Path A2 in Figure 2; $b = -.082$, $SE = .030$, $p = .007$) and their partners' (Path A1→ Path P1; $b = -.077$, $SE = .033$, $p = .020$) marital warmth.

Findings consistent with the stress spillover hypothesis—Supporting the stress spillover hypothesis, we found that foreigner stress also related to more concurrent depressive symptoms, which in turn, predicted lower levels of individuals' own marital warmth and higher levels of partners' marital hostility at Wave 3. Testing of indirect effects from individuals' language acculturation to foreigner stress to depressive symptoms to marital outcomes demonstrated significant indirect positive effects to their own marital warmth (Path A1→ Path A3 → Path A4; $b = .025$, $SE = .011$, $p = .019$) and negative effects to their partners' marital hostility (Path A1→ Path A3 → Path P2; $b = -.024$, $SE = .012$, $p = .036$).

Supplementary analysis—Because foreigner stress and depressive symptoms were assessed at the same wave of data collection, we also tested an alternative model in which the order of foreigner stress and depressive symptoms were reversed. The model fit of this alternative model, $\chi^2(78) = 137.273$, $p < .001$, CFI = .952, RMSEA = 0.043 [0.031, 0.054], SRMR=.047, was not as good as the proposed model. This provide further evidence for our hypothesis that it is greater levels of foreigner stress lead to more depressive symptoms rather than the reverse.

DISCUSSION

Despite past theoretical and empirical work suggesting associations between acculturation and marital quality (Flores et al., 2004; L. Garcia et al., 2005; Helms et al., 2011; Kisselev, Brown, & Brown, 2010), there is a dearth of studies examining the mechanisms through which acculturation may influence marital quality over time, particularly among Asian American couples. Consequently, the current study hearkens to the call by Helms, Supple, and Proulx (2011) for more studies examining marital well-being among ethnic minority populations from a dyadic approach that attends to the acculturation experiences. Using an actor-partner interdependence model approach (Cox & Paley, 2003; Kenny et al., 2006), the current study is the first study, to our knowledge, to investigate foreigner stress (a particularly salient acculturation-related stressor for Asian Americans) and depressive symptoms as potential mediators linking language acculturation to couples' marital quality over time. Overall, analyses revealed a complex pattern of direct and indirect effects that generally supported our hypotheses.

We found that husbands and wives who have lower levels of language acculturation experienced higher levels of foreigner stress. This is consistent with prior work indicating that Chinese Americans who have lower English proficiency were more likely to experience perpetual foreigner stereotype (Kim et al., 2011). Subsequently, increases in spouses' feelings of foreigner stress seemed to exhibit dual effects on marital outcomes. On the one hand, husbands' and wives' foreigner stress was positively associated with their own

depressive symptoms; depressive symptoms, in turn, were negatively associated with individuals' own marital warmth and positively associated with their partners' marital hostility. These negative, indirect effects of foreigner stress on marital quality through spouses' depressive symptoms are consistent with the broader literature on stress spillover in marriage (Bodenmann et al., 2007; Conger & Donnellan, 2007; Helms et al., 2014; Karney & Neff, 2013; Story & Bradbury, 2004). It has been well-established that when marriages develop in a context filled with numerous stressful life events, marriages tend to suffer (Karney & Neff, 2013). However, prior work linking external stress to marital quality is rather limited in the scope of life stressors examined. Most research in this area has focused on the effects of work stress, financial strain, or minor daily hassles (Bodenmann et al., 2007; Conger & Donnellan, 2007; Karney & Neff, 2013). The current study extends this literature by highlighting the unique effects of a societally important, yet often understudied source of stress – the stress of being stereotyped as a foreigner for Asian Americans – on marital quality, above and beyond the effects of economic stress.

On the other hand, individuals' feelings of foreigner stress were also directly and positively associated with both own and partner levels of marital warmth. This finding is consistent with resilience in marriage perspectives, which suggest that external stressors may not always be harmful for relationships; rather, stressful life events can mobilize couples' coping efforts and provide spouses with opportunities to support one another and affirm their relational bond (Story & Bradbury, 2004). This mobilization of communal coping efforts is especially likely when couples are faced with stressors that are uncontrollable – stressors for which partners cannot be seen as blameworthy. In these circumstances, the couple tends to view the stress as a negative event that they need to face and overcome together (e.g., cancer; Gritz et al., 1990; Lehman et al., 1989). Foreigner stress may operate in a similar fashion. Foreigner stress originates from the stereotypes of outgroup members (Armenta et al., 2013); thus, such negative treatments from the outgroup member may emotionally bring spouses of a minority group together (e.g., Frost, 2014). Future studies should further examine these potential mechanisms.

It is important to note that the positive association between individuals' foreigner stress and marital warmth depended on partners' levels of foreigner stress. As prior scholars have pointed out, an identical stressor may have very different effects on couples depending on various factors that await specification through further research (Story & Bradbury, 2004). Our study uncovered one potential moderator of the effect of foreigner stress on marital outcomes. Specifically, the actor-partner interaction effect of foreigner stress on marital warmth revealed that one spouse's foreigner stress was positively associated with marital warmth only when the other partner experienced low (but not high) levels of foreigner stress. This finding is consistent with the dyadic coping perspective indicating that individuals may be more likely to respond more positively toward their partners' stress when their own stress was low (Bodenmann, 2005). This finding highlights the importance of taking a dyadic coping perspective in order to attain a more comprehensive understanding of the effect of acculturation-related stressors (e.g., foreigner stress) on marital quality.

In addition, our findings complement prior work highlighting that marital warmth and hostility are two distinct dimensions of marital quality (Cutrona et al., 2003; Ross, O'Neal,

Arnold, & Mancini, 2017). Specifically, we found evidence for the differential effects of foreigner stress on marital warmth and hostility. The effect of foreigner stress on marital hostility was consistent with the stress spillover hypothesis (Bodenmann et al., 2007; Conger & Donnellan, 2007; Karney & Neff, 2013), such that foreigner stress related to higher levels of marital hostility indirectly though increasing depressive symptoms. In contrast, the relation between foreigner stress and marital warmth is more complicated. Foreigner stress can slightly decrease marital warmth through increasing depressive symptoms; however, consistent with resilience in marriage perspectives (Story & Bradbury, 2004) and the dyadic coping perspective (Bodenmann, 2005) foreigner stress can also increase marital warmth directly, especially if one partner is experiencing low levels of foreigner stress. Thus, it seems that although stress is likely to increase negative aspects of marital quality, it does not necessarily decrease positive aspects.

Overall, our findings suggest that acculturation experiences (language acculturation and foreigner stress) have significant and complicated implications for marital quality. These findings complement prior studies on ethnic minority couples' marital quality (Flores et al., 2004; Helms et al., 2014; Kisselev et al., 2010) by highlighting acculturation experiences as an important social context for Asian American couples' marriage. Besides the general stressors faced by couples of all ethnic groups (e.g., economic stress), ethnic minority couples may experience acculturation-related stressors (e.g., foreigner stress) that could have unique effects on their marital quality. It is important for marital researchers and practitioners who work with ethnic minority couples to keep this in mind. Moreover, our study demonstrated not only actor effects but also partner effects and actor-partner interaction effects, which highlight the importance of including both husbands and wives in marital research and of considering the interdependence between them when studying marital outcomes.

Strengths and Limitations

The present study bridges the acculturation literature with theories of stress spillover and resilience in marriage by demonstrating both positive and negative indirect pathways from language acculturation to marital quality through foreigner stress and depressive symptoms in Chinese American couples. We used rigorous methods to test our research hypotheses. First, we used a three-wave longitudinal design with predictors, mediators, and outcomes assessed at different waves, which allows better inference for causal relationships as it provides a temporal ordering of variables and allows us to control for prior levels of marital outcome variables. Second, we included a relatively larger sample compared to most prior studies on ethnic minority couples. Third, incorporating the actor-partner interdependence model enabled us to consider the dyadic nature of husbands and wives' data and to not only examine actor and partner pathways but also to explore actor-partner interaction effects. Finally, by focusing on an ethnic homogeneous group of Chinese American couples and considering within-group variations of acculturation experiences and marital quality, our study provided more nuanced understanding of how their acculturation experiences relate to their marital quality longitudinally.

Despite these strengths, it is important to note some limitations when considering the current study's implications. First, Asian Americans are not homogeneous (Xia, Do, & Xie, 2013). Although, we predict that our results could be generalized to other Asian American populations in light of prior studies demonstrating that perpetual foreigner stereotype is relevant to Asian Americans in general (Armenta et al., 2013; Sue et al., 2009), other Asian American populations should also be included in future studies. Second, the generalizability of our findings to other Chinese American samples also needs to be tested. Our participants come from Northern California, an area with a large population of Chinese Americans. Ethnically concentrated neighborhoods may hinder language acculturation, but it may also reduce stress for individuals' with low levels of English proficiency and protect ethnic minorities from discriminatory treatment (White, Zeiders, Knight, Roosa, & Tein, 2014). Therefore, future studies involving participants from communities with lower levels of ethnic concentration may find even stronger link between language acculturation and foreigner stress, and stronger effect of foreigner stress on Chinese American couples' marital interaction.

Third, another generalizability issue is that our participants were middle-aged couples who had adolescent children. Whether our findings generalize to other types of couples, such as couples without children or couples with younger children should be examined in future studies. That said, the marital literature often focuses on younger couples in the earlier stages of marriage (Karney & Bradbury, 1995). Thus, the current longitudinal data of middle-aged couples make a contribution to the marital literature. Fourth, our study excluded the small sample of participants (n = 28) who divorced during the study period because we focused on change of marital quality of the same couples. Future studies with larger samples of divorced couples can investigate whether and to what degree acculturation stressors push some couples completely apart. Fifth, the current study relied on self-reported data. We recommend future studies to use alternative measurement approaches (e.g., use standardized test of English proficiency, observation of marital warmth and hostility) to test whether our findings can be replicated. Finally, this is a correlational study, and we cannot ascertain causal relationships, although our multiple-wave longitudinal data and testing of an alternative model provides additional support for the ordering of model constructs.

Conclusion

The current study makes significant contributions to the literature by integrating the culturally informed ecological perspective with theories of stress spillover and resilience in marriage to investigate longitudinal indirect links from language acculturation to marital quality. Our findings provide support for all these perspectives by showing both positive and negative indirect pathways linking language acculturation, foreigner stress, depressive symptoms, and marital quality. Our study also found evidence for actor effects, partner effects, and actor-partner interaction effects, highlighting the interdependent dyadic nature of the marital system. Taken together, our study underscores acculturation experiences as an important contextual factor of marital relationship in Asian Americans and the complexity of how external stressors relate to marital quality.

Acknowledgments

Support for this research was provided through awards to Su Yeong Kim from (1) Eunice Kennedy Shriver National Institute of Child Health and Human Development 5R03HD051629-02 (2) Office of the Vice President for Research Grant/Special Research Grant from the University of Texas at Austin (3) Jacobs Foundation Young Investigator Grant (4) American Psychological Association Office of Ethnic Minority Affairs, Promoting Psychological Research and Training on Health Disparities Issues at Ethnic Minority Serving Institutions Grant (5) American Psychological Foundation/Council of Graduate Departments of Psychology, Ruth G. and Joseph D. Matarazzo Grant (6) California Association of Family and Consumer Sciences, Extended Education Fund (7) American Association of Family and Consumer Sciences, Massachusetts Avenue Building Assets Fund, and (8) Eunice Kennedy Shriver National Institute of Child Health and Human Development 5R24HD042849-14 grant awarded to the Population Research Center at The University of Texas at Austin.

References

Armenta BE, Lee RM, Pituc ST, Jung KR, Park IJ, Soto JA, … Schwartz SJ. Where are you from? A validation of the Foreigner Objectification Scale and the psychological correlates of foreigner objectification among Asian Americans and Latinos. Cultural Diversity and Ethnic Minority Psychology. 2013; 19:131–142. DOI: 10.1037/a0031547 [PubMed: 23647327]

Benner AD, Kim SY. Intergenerational experiences of discrimination in Chinese American families: Influences of socialization and stress. Journal of Marriage and Family. 2009; 71:862–877. DOI: 10.1111/j.1741-3737.2009.00640.x [PubMed: 20161516]

Benner AD, Kim SY. Understanding Chinese American adolescents' developmental outcomes: Insights from the family stress model. Journal of Research on Adolescence. 2010; 20:1–12. DOI: 10.1111/j.1532-7795.2009.00629.x [PubMed: 20454605]

Bodenmann, G. Dyadic coping and its significance for marital functioning. In: Revenson, Tracey A.Kayser, Karen, Bodenmann, Guy, editors. Couples coping with stress: Emerging perspectives on dyadic coping. Washington, DC: American Psychological Association; 2005. p. 33-49.

Bodenmann G, Ledermann T, Bradbury TN. Stress, sex, and satisfaction in marriage. Personal Relationships. 2007; 14:551–569. DOI: 10.1111/j.1475-6811.2007.00171.x

Branscombe NR, Schmitt MT, Harvey RD. Perceiving pervasive discrimination among African Americans: Implications for group identification and well-being. Journal of Personality and Social Psychology. 1999; 77:135–149. DOI: 10.1037/0022-3514.77.1.135

Bromberger JT, Harlow S, Avis N, Kravitz HM, Cordal A. Racial/ethnic differences in the prevalence of depressive symptoms among middle-aged women: the Study of Women's Health Across the Nation (SWAN). American Journal of Public Health. 2004; 94:1378–1385. DOI: 10.2105/AJPH.94.8.1378 [PubMed: 15284047]

Collins NL, Feeney BC. A safe haven: An attachment theory perspective on support seeking and caregiving in intimate relationships. Journal of Personality and Social Psychology. 2000; 78:1053–1073. DOI: 10.1037/0022-3514.78.6.1053 [PubMed: 10870908]

Conger RD, Donnellan MB. An interactionist perspective on the socioeconomic context of human development. Annual Review of Psychology. 2007; 58:175–199. DOI: 10.1146/annurev.psych.58.110405.085551

Conger RD, Wallace LE, Sun Y, Simons RL, McLoyd VC, Brody GH. Economic pressure in African American families: A replication and extension of the family stress model. Developmental Psychology. 2002; 38:179–193. DOI: 10.1037/0012-1649.38.2.179 [PubMed: 11881755]

Cox MJ, Paley B. Understanding families as systems. Current Directions in Psychological Science. 2003; 12:193–196. DOI: 10.1111/1467-8721.01259

Cutrona CE, Russell DW, Abraham WT, Gardner KA, Melby JN, Bryant C, Conger RD. Neighborhood context and financial strain as predictors of marital interaction and marital quality in African American couples. Personal Relationships. 2003; 10:389–409. DOI: 10.1111/1475-6811.00056 [PubMed: 17955056]

Flores E, Tschann JM, VanOss Marin B, Pantoja P. Marital conflict and acculturation among Mexican American husbands and wives. Cultural Diversity and Ethnic Minority Psychology. 2004; 10:39–52. DOI: 10.1037/1099-9809.10.1.39 [PubMed: 14992629]

Frost DM. Redemptive framings of minority stress and their association with closeness in same-sex relationships. Journal of Couple & Relationship Therapy. 2014; 13:219–239. DOI: 10.1080/15332691.2013.871616

Garcia L, Hurwitz EL, Kraus JF. Acculturation and reported intimate partner violence among Latinas in Los Angeles. Journal of Interpersonal Violence. 2005; 20:569–590. DOI: 10.1177/0886260504271582 [PubMed: 15788555]

Garcia RL, Kenny DA, Ledermann T. Moderation in the actor–partner interdependence model. Personal Relationships. 2015; 22:8–29. DOI: 10.1111/pere.12060

Gritz ER, Wellisch DK, Siau J, Wang HJ. Long-term effects of testicular cancer on marital relationships. Psychosomatics. 1990; 31:301–312. DOI: 10.1016/S0033-3182(90)72168-8 [PubMed: 2167494]

Helms HM, Supple AJ, Proulx CM. Mexican-origin couples in the early years of parenthood: Marital well-being in ecological context. Journal of Family Theory & Review. 2011; 3:67–95. DOI: 10.1111/j.1756-2589.2011.00085.x

Helms HM, Supple AJ, Su J, Rodriguez Y, Cavanaugh AM, Hengstebeck ND. Economic pressure, cultural adaptation stress, and marital quality among Mexican-origin couples. Journal of Family Psychology. 2014; 28:77–87. DOI: 10.1037/a0035738 [PubMed: 24512286]

Hou Y, Kim SY, Hazen N, Benner AD. Parents' perceived discrimination and adolescent adjustment in Chinese American families: Mediating family processes. Child Development. 2017; 88:317–331. DOI: 10.1111/cdev.12603 [PubMed: 27546314]

Hou Y, Kim SY, Wang Y. Parental acculturative stressors and adolescent adjustment through interparental and parent–child relationships in Chinese American families. Journal of Youth and Adolescence. 2016; 45:1466–1481. DOI: 10.1007/s10964-016-0441-2 [PubMed: 26885827]

Kang SM. Measurement of acculturation, scale formats, and language competence: Their implications for adjustment. Journal of Cross-Cultural Psychology. 2006; 37:669–693. DOI: 10.1177/0022022106292077

Karney BR, Bradbury TN. The longitudinal course of marital quality and stability: A review of theory, methods, and research. Psychological Bulletin. 1995; 118:3–34. DOI: 10.1037/0033-2909.118.1.3 [PubMed: 7644604]

Karney, BR., Neff, LA. Couples and stress: How demands outside a relationship affect intimacy within the relationship. In: Simpson, JA., Campbell, L., editors. The Oxford Handbook of Close Relationships. New York, NY: Oxford University Press; 2013. p. 664-684.

Kenny, DA., Kashy, DA., Cook, WL. The measurement of nonindependence. In: Kenny, DA.Kashy, DA., Cook, WL., editors. Dyadic data analysis. New York, NY: Guilford; 2006. p. 25-52.

Kim SY, Wang Y, Deng S, Alvarez R, Li J. Accent, perpetual foreigner stereotype, and perceived discrimination as indirect links between English proficiency and depressive symptoms in Chinese American adolescents. Developmental Psychology. 2011; 47:289–301. DOI: 10.1037/a0020712 [PubMed: 21244164]

Kim SY, Wang Y, Orozco-Lapray D, Shen Y, Murtuza M. Does "tiger parenting" exist? Parenting profiles of Chinese Americans and adolescent developmental outcomes. Asian American Journal of psychology. 2013; 4:7–18. DOI: 10.1037/a0030612 [PubMed: 23646228]

Kisselev P, Brown MA, Brown JD. Gender differences in language acculturation predict marital satisfaction: A dyadic analysis of Russian-speaking immigrant couples in the United States. Journal of Comparative Family Studies. 2010; 41:767–782.

Lehman DR, Lang EL, Wortman CB, Sorenson SB. Long-term effects of sudden bereavement: Marital and parent-child relationships and children's reactions. Journal of Family Psychology. 1989; 2:344–367. DOI: 10.1037/h0080505

Mistry RS, Benner AD, Tan CS, Kim SY. Family economic stress and academic well-being among Chinese-American youth: The influence of adolescents' perceptions of economic strain. Journal of Family Psychology. 2009; 23:279–290. DOI: 10.1037/a0015403 [PubMed: 19586191]

Muthén, LK., Muthén, BO. Mplus user's guide. 7. Los Angeles, CA: Muthén & Muthén; 1998–2015.

Neff LA, Karney BR. Stress crossover in newlywed marriage: A longitudinal and dyadic perspective. Journal of Marriage and Family. 2007; 69:594–607. DOI: 10.1111/j.1741-3737.2007.00394.x

Negy C, Snyder DK. Ethnicity and acculturation: Assessing Mexican American couples' relationships using the Marital Satisfaction Inventory—Revised. Psychological Assessment. 1997; 9:414–421. DOI: 10.1037/1040-3590.9.4.414

Ong AD, Burrow AL, Fuller-Rowell TE, Ja NM, Sue DW. Racial microaggressions and daily well-being among Asian Americans. Journal of Counseling Psychology. 2013; 60:188–199. DOI: 10.1037/a0031736 [PubMed: 23421777]

Pew Research Center. Second-generation Americans. 2013. Retrieved July 14, 2015, from http://www.pewsocialtrends.org/2013/02/07/second-generation-americans/

Radloff LS. The CES-D Scale: A self-report depression scale for research in the general population. Applied Psychological Measurement. 1977; 1:385–401. DOI: 10.1177/014662167700100306

Randall AK, Bodenmann G. The role of stress on close relationships and marital satisfaction. Clinical Psychology Review. 2009; 29:105–115. DOI: 10.1016/j.cpr.2008.10.004 [PubMed: 19167139]

Riina EM, McHale SM. Parents' experiences of discrimination and family relationship qualities: The role of gender. Family Relations. 2010; 59:283–296. DOI: 10.1111/j.1741-3729.2010.00602.x [PubMed: 22068292]

Ross DB, O'Neal CW, Arnold AL, Mancini JA. Money matters in marriage: Financial concerns, warmth, and hostility among military couples. Journal of Family and Economic Issues. 2017; :1–10. DOI: 10.1007/s10834-017-9522-y

Satorra A, Bentler PM. A scaled difference Chi-square test statistic for moment structure analysis. Psychometrika. 2001; 66:507–514. DOI: 10.1007/BF02296192

Story LB, Bradbury TN. Understanding marriage and stress: Essential questions and challenges. Clinical Psychology Review. 2004; 23:1139–1162. DOI: 10.1016/j.cpr.2003.10.002 [PubMed: 14729426]

Story LB, Repetti R. Daily occupational stressors and marital behavior. Journal of Family Psychology. 2006; 20:690–700. DOI: 10.1037/0893-3200.20.4.690 [PubMed: 17176205]

Sue DW, Bucceri J, Lin AI, Nadal KL, Torino GC. Racial microaggressions and the Asian American experience. Asian American Journal of Psychology. 2009; 13:88–101. DOI: 10.1037/1948-1985.S.1.88

Trail TE, Goff PA, Bradbury TN, Karney BR. The costs of racism for marriage: How racial discrimination hurts, and ethnic identity protects, newlywed marriages among Latinos. Personality and Social Psychology Bulletin. 2012; 38:454–465. DOI: 10.1177/0146167211429450 [PubMed: 22109252]

U.S. Census Bureau. The Asian population: 2010. 2010. Retrieved March 30, 2014, from http://www.census.gov/prod/cen2010/briefs/c2010br-11.pdf

U.S. Census Bureau. Asians fastest-growing race or ethnic group in 2012. 2013. Retrieved Junly 18, 2015, from http://www.census.gov/newsroom/press-releases/2013/cb13-112.html

White RB, Zeiders K, Knight G, Roosa M, Tein JY. Mexican origin youths' trajectories of perceived peer discrimination from middle childhood to adolescence: Variation by neighborhood ethnic concentration. Journal of Youth and Adolescence. 2014; 43:1700–1714. DOI: 10.1007/s10964-014-0098-7 [PubMed: 24488094]

Xia, YR., Do, KA., Xie, X. The adjustment of Asian American families to the US context: The ecology of strengths and stress. In: Peterson, Gary W., Bush, Kevin R., editors. Handbook of Marriage and the Family. 3. New York, NY: Springer; 2013. p. 705-722.

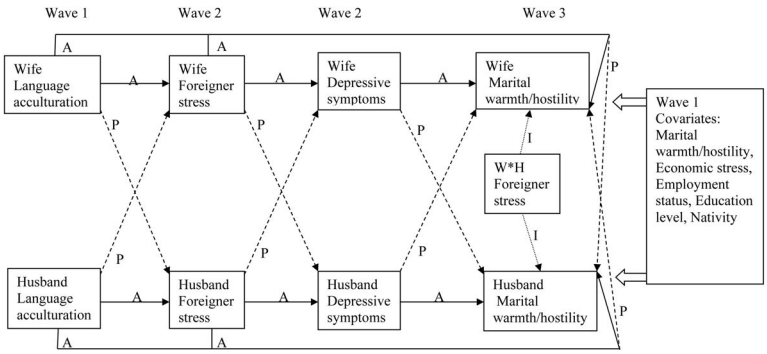

Figure 1. Conceptual Model Linking Language Acculturation, Foreigner Stress, Depressive Symptoms and Marital Warmth and Hostility

W=Wife, H=Husband. The current model is an extension of the Actor-Partner Interdependence Model. “A” paths represent actor effects, “P” paths represent partner effects, and “I” paths represent actor-partner interaction effects. Variables or residuals of variables were correlated between husbands and wives, and interaction products were allowed to correlate with the variables from which they were created (not shown for figure clarity).

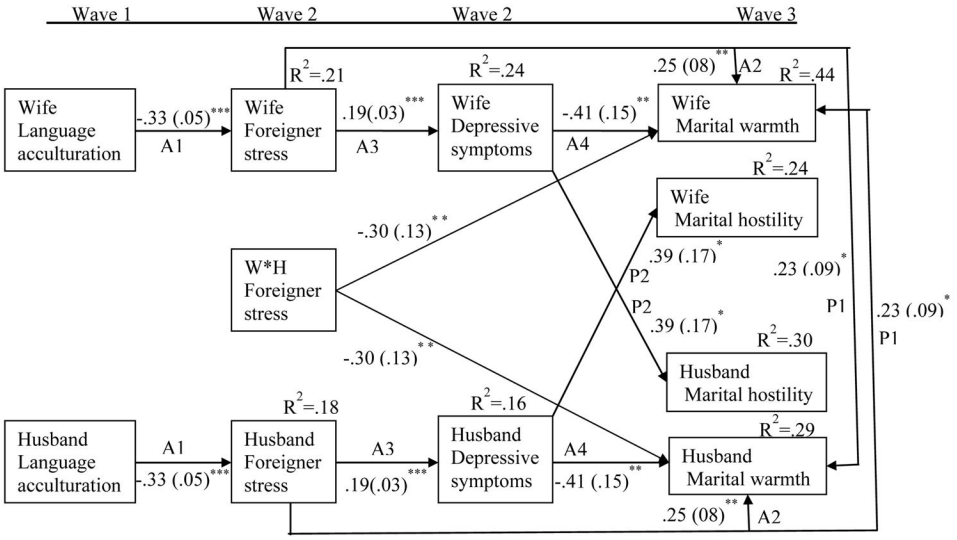

Figure 2. Linking Language Acculturation, Foreigner Stress, Depressive Symptoms and Marital Warmth and Hostility

Unstandardized path parameters (with standard error in parentheses) for significant paths are presented (N=416). W=Wife, H=Husband. R^2 is the percent of variance explained by the model. * p<.05, ** p<.01, *** p<.001. Covariates were not shown in the figure for clarify.

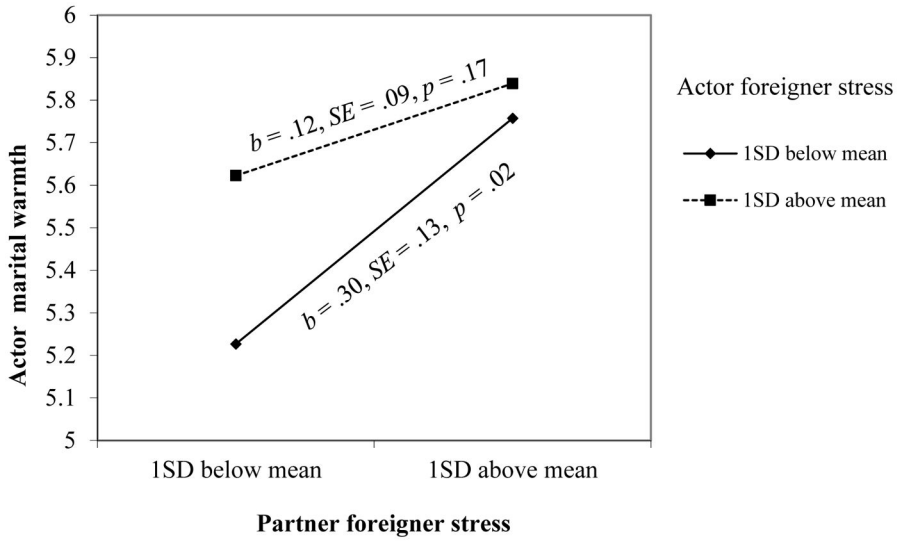

Figure 3. Plot of Actor-Partner Interaction Effects of Foreigner Stress on Marital Warmth

The positive association between partners' foreigner stress and individuals' warmth toward their partner was stronger when individuals' own levels of foreigner stress were low versus high. This interaction pattern was similar for wives and husbands (in the above figure, wives are the actor).

Table 1

Means, Standard Deviations, and Zero-Order Correlations among Study Variables

	1	2	3	4	5	6	7	8	9	10	11	*N*	*M*	*SD*
1. W1 Language acculturation	**.73*****	−.39***	−.19**	−.05	−.09	−.06	.01	−.38***	.15**	.68***	−.62***	357	2.49	1.37
2. W2 Foreigner stress	−.46***	**.38*****	.39***	.10	−.01	.06	−.05	.30***	−.09	−.20**	.23***	205	1.81	0.81
3. W2 Depressive symptoms	−.29***	.44***	**.37*****	−.12	.19**	−.14*	.21***	.28***	−.08	−.07	.09	263	0.62	0.43
4. W3 Marital warmth	.00	.12	−.14	**.40*****	−.24***	.40***	−.15*	−.04	.14*	.02	.09	242	5.57	1.19
5. W3 Marital hostility	−.08	.21**	.25***	−.13*	**.38*****	−.16*	.43***	.11	−.03	−.10	.12	236	2.51	1.12
6. W1 Marital warmth	−.07	.06	−.17**	.53***	−.14*	**.47*****	−.34***	−.02	.01	.00	.12*	341	5.65	1.06
7. W1 Marital hostility	−.05	.06	.21***	−.16*	.40***	−.35***	**.50*****	.02	.01	−.01	.00	341	2.41	0.86
8. W1 Economic stress	−.38***	.24***	.26***	−.10	.01	−.07	.04	**.58*****	−.24***	−.26***	.14*	354	2.24	0.86
9. W1 Employment status	.19***	−.05	−.04	−.04	.16*	−.10	.09	−.22***	**.03**	.16**	−.12*	353	0.84	0.37
10. W1 Education level	.65***	−.21**	−.27***	.11	−.05	.08	−.03	−.30***	.12*	**.62*****	−.42***	345	5.92	1.82
11. W1 Nativity	−.60***	.29***	.16**	.04	.07	.18***	−.01	.23***	−.11*	−.37***	**.67*****	341	0.87	0.33
N	380	212	285	247	246	349	346	380	378	371	373			
M	2.35	1.87	0.62	5.59	2.60	5.66	2.59	2.24	0.77	5.84	0.90		—	—
SD	1.32	0.88	0.38	1.22	1.06	1.08	0.85	0.91	0.42	1.71	0.31		—	—

Note: W1=Wave 1, W2=Wave 2, W3=Wave 3, The within-spouse correlations of husbands and descriptive statistics for husbands are above the diagonal, the within-spouse correlations of wives and descriptive statistics for wives are below the diagonal and the between-spouse correlations (between husbands and wives) are on the bolded diagonal.

* p<.05.

** p<.01.

*** p<.001.