

Socioeconomic Stress and Academic Adjustment Among Asian American Adolescents: The Protective Role of Family Obligation

By: Lisa Kiang, Kandace Andrews, [Gabriela L. Stein](#), [Andrew J. Supple](#), [Laura M. Gonzalez](#)

Kiang, L., Andrews, K., Stein, G.L., Supple, A.J., & Gonzalez, L.M. (2013) Socioeconomic stress and academic adjustment among Asian American adolescents: The protective role of family obligation. *Journal of Youth and Adolescence*, 42(6), 837-847. doi: 10.1007/s10964-013-9916-6.

The final publication is available at <http://dx.doi.org/10.1007/s10964-013-9916-6>

*****Reprinted with permission. No further reproduction is authorized without written permission from Springer-Verlag. This version of the document is not the version of record. Figures and/or pictures may be missing from this format of the document. *****

Abstract:

Socioeconomic stress has long been found to place youth at risk, with low family income conferring disadvantages in adolescents' school achievement and success. This study investigates the role of socioeconomic stress on academic adjustment, and pinpoints family obligation as a possible buffer of negative associations. We examined direct and interactive effects at two time points in the same sample of Asian American adolescents—early high school ($N = 180$ 9th–10th graders; 60 % female) and 2 years later in late high school ($N = 156$ 11th–12th graders; 87 % of original sample). Results suggest that socioeconomic stress is indeed associated with poor academic adjustment, measured broadly through self-reported GPA, importance of academic success, and educational aspirations and expectations. Family obligation was positively related to adjustment, and also was found to buffer the negative effects of socioeconomic stress, but only during adolescents' later high school years. Adolescents reporting more family obligation experienced less of the negative effects of financial stress on academic outcomes than those reporting lower obligation. Cultural and developmental implications are discussed in light of these direct and moderating effects.

Keywords: Socioeconomic stress | Family obligation | Academic adjustment | Asian American adolescents

Article:

Introduction

Theoretical models of family economic stress have long associated socioeconomic hardship with risk factors in child and adolescent development, including chronic experiences of stress and diverse indicators of poor psychosocial well-being (Conger et al. 1992; Garcia Coll 1990; McLoyd 1998). More specifically, socioeconomic stress has been consistently linked to

adolescents' academic adjustment, with low family income conferring disadvantages in school achievement and success (Brody et al. 1995; Sirin 2005). Although a relatively large body of literature has established such maladaptive links, aside from a few exceptions (e.g., Mistry et al. 2009), prior research pinpointing negative effects of socioeconomic stress on academic outcomes predominantly has focused on adolescents from European American and African American backgrounds to the exclusion of adolescents from immigrant backgrounds, and particularly those with Asian ancestry. Our work extends the current literature on how socioeconomic stress shapes adolescents' lives by focusing on an understudied sample of Asian American youth; using a risk and resilience framework to not only document negative effects of socioeconomic stress on academic adjustment (broadly measured through self-reported GPA, importance of academic success, and academic aspirations and expectations) but to also identify family obligation as a potentially protective factor in adolescents' lives; and comparing direct and interactive effects of socioeconomic stress and family obligation at two different developmental periods, namely, during the early years of high school and again in adolescents' later high school years. By identifying risk and protective factors associated with academic adjustment, and considering developmental differences related to family processes, we can extend existing knowledge and ultimately determine ways to best foster Asian youths' adjustment.

Socioeconomic Stress Among Asian American Youth

Immigrant youth from under-researched Asian backgrounds represent a particularly interesting case for studying both socioeconomic stress and academic adjustment given that the model minority stereotype presumes that each of these areas are highly relevant to their group, but not especially problematic (Oyserman and Sakamoto 1997). In terms of socioeconomic status, a common misperception is that Asian families are generally well-adjusted and do not suffer from financial hardships as much as families from other ethnic minority groups. Official accounts do suggest that Asian American households report a relatively high median income (65,469, compared to 51,861 for non-Hispanic whites) (U.S. Census 2011). However, these average income levels do not preclude the fact that socioeconomic stress, if experienced, can still negatively impact outcomes. Moreover, it is important to note that these same federal reports also suggest that 12 % of Asian American families live below the poverty line, which is actually similar to the rates found among non-Hispanic whites. It is also critical to acknowledge that individuals from Asian backgrounds represent a highly diverse panethnic group and the degree to which each family experiences socioeconomic adversity likely depends on factors such as specific country of origin, individual reasons for immigration, and refugee or citizenship status. As one example of such ethnic variability, recent reports document a substantial difference between the yearly median income for South Asian Indians (90,711) and Bangladeshis (48,471) (U.S. Census 2011). Hence, rather than assume that socioeconomic stressors are not universally salient for Asian American families, it seems critical to examine how financial struggles can in fact influence these adolescents' lives and ultimate adjustment.

There are a variety of reasons to expect adverse associations between socioeconomic stress and adolescents' academic outcomes. Drawing from research with other ethnic minority groups, poverty can influence cognitive and socioemotional functioning, which have direct repercussions on school achievement (McLoyd 1998). A number of indirect influences also can be seen. For example, socioeconomic stress might contribute to adolescents' feelings of distress or hopelessness, as well as family conflict, which can then have indirect effects on children's academic commitment and success (Eamon 2002). Family economic stress also might require adolescents to assist their families or work at a part-time job thereby potentially interfering with their academics (Lillydahl 1990; Schill et al. 1985). Collectively, based on prior research that has identified both direct and indirect effects of socioeconomic stress, we anticipated that, for Asian American youth, experiencing more stress would be related to lower academic adjustment. We considered a range of academic outcomes (e.g., GPA, importance of academic success, academic aspirations and expectations) to demonstrate the diverse implications that socioeconomic stress can have on adolescents' development.

The academic arena itself plays a particularly prominent role in the lives of Asian youth. Children from immigrant families are often socialized to believe that education is a major key to economic mobility; hence, among these families there tends to be a strong emphasis on school achievement (Portes and Rumbaut 2001). Similarly, for many immigrant youth, excelling in school might be perceived as one way to help their family succeed and ultimately achieve the "American Dream" (Fuligni et al. 1999). Given the cultural importance of education among Asian immigrant families, identifying possible obstacles or risk factors in adolescents' academic success is crucial; yet, this group in particular is often overlooked in terms of resources and concerns over academic adjustment. Referring again to the model minority myth, these cultural stereotypes might come into play in the wrongful assumption that most Asian youth are largely high achievers, hard workers, academically motivated, and well-adjusted (Suzuki 2002). There are numerous implications in terms of having to face such a stereotype (Choi 2007), and most relevant to the current study is the fact that some adolescents may be mistakenly ignored in terms of the academic and other struggles that they actually encounter. We thus address these pressing concerns and notable gaps in the literature by explicitly focusing on both socioeconomic stress and academic outcomes among Asian youth, and identifying family obligation as a putative moderator of such stress.

Family Obligation as a Protective Buffer

A resiliency framework pinpoints specific features that protect against risk and encourage healthy adjustment, adaptation, and social and psychological competence despite stress or adversity (Luthar and Cicchetti 2000; Masten 2001). In the face of socioeconomic stress, what resiliency factors might counteract any negative effects and promote healthy outcomes? Paradoxically, family financial stressors might present youth with a greater need to help out around the house and assist their families as best they can which could then lead to positive outcomes. Indeed, a familistic orientation and positive attitudes toward family obligation, which

can be broadly defined as values and expectations regarding family assistance and support, have been implicated as culturally-protective factors in youth development, perhaps because they promote social support and close family relationships (McHale et al. 2005; Organista et al. 2003; Umana-Taylor et al. 2011). Assisting one's family might also contribute to internal feelings of purpose or meaning, which could then permeate other forms of achievement or academic goals (Kiang 2012).

Family cultural values are particularly relevant to Asian youth (Lieber et al. 2004; Phinney et al. 2000). Prior research has found that Asian Americans report high levels of family obligation and often view school success as one of the most important and meaningful ways that they can assist and help their families advance, socially and economically (Fuligni et al. 1999; Fuligni 2001). In the literature, positive links between family obligation and adolescents' academic outcomes have been demonstrated among diverse immigrant samples (Fuligni et al. 2005b). Moderating effects also have been found. For instance, among Latinos, who also tend to report strong familistic connections, family obligation buffered adolescents from negative effects of stress on risky behaviors and depression (Umana-Taylor et al. 2011). Although economic stress was included in their conceptualization of risk, academic adjustment was not examined as an outcome.

Taken together, based on prior research supporting the benefits of family obligation (Fuligni et al. 2005a; Umana-Taylor et al. 2011), we similarly expected to find positive associations between these family attitudes and academic outcomes. Although, to our knowledge, family obligation has not yet been examined as protective factor in terms of the detrimental effects of socioeconomic stress on academic adjustment, we also expected that family obligation would act as a resiliency factor and weaken the negative impact of socioeconomic stress. Furthermore, one additional layer of complexity that we explored was whether associations among socioeconomic stress, family obligation, and academic outcomes might vary based on adolescents' developmental status (e.g., year in high school).

Developmental Considerations

Longitudinal associations between adolescents' experiences of socioeconomic stress and their academic achievement have been documented (Duncan et al. 1998). However, rather than model change over time, multiple waves of data can be used to determine whether direct and interactive effects of socioeconomic stress and family obligation are more or less relevant to the same youth but at different times in their lives. In terms of academic outcomes, we might expect a developmental shift in the salience of educational aspirations and importance attributed to academics as youth more seriously contemplate their pending high school graduation and plans for the future. The developmental context of late high school would then differentially influence the relationship between socioeconomic struggles, family obligation, and these academic outcomes, especially as youth have to make decisions about whether to stay home, enter the workforce, or go to college. In contrast, the developmental context of younger high school

students could be more concerned with the transition to high school and focus less on pressing graduation concerns. Moreover, younger adolescents might also be more limited in the actual support that they can readily provide to their families (e.g., less likely to have a job outside of the home, not able to drive to help run errands).

Some empirical work does support differences in the extent to which socioeconomic stress affects development. Educational disparities associated with family income and backgrounds tend to increase as students advance in school (Caro et al. 2009). Other studies argue that family economic conditions in early and middle childhood are more important for shaping ability and achievement than are economic conditions during adolescence (Duncan et al. 1998), perhaps because family socioeconomic status tends to increase as children get older. To shed light on these key and competing developmental concerns, we used our data to determine whether the effects of socioeconomic stress and family obligation on academic adjustment are different for adolescents when they are in early versus late high school years. Given our range of outcomes included, we also explored whether the impact of developmental stage would be particularly strong for those outcomes focused on the future (e.g., educational aspirations) compared to more immediate concerns (e.g., grades).

The Present Study

The present research seeks to examine whether socioeconomic stress hinders adolescents' academic outcomes, as well as to identify family obligation as a possible moderator of any negative effects. Based on prior research (Brody et al. 1995; McLoyd 1998; Sirin 2005), we expected that socioeconomic stress would be associated with lower academic adjustment among our sample of adolescents from Asian American backgrounds. Consistent with recent work that points to positive benefits of family obligation (Fuligni et al. 2005a; Umana-Taylor et al. 2011), we expected that family obligation would be linked positively to academic adjustment, both directly and via moderation against negative effects of socioeconomic stress. We also explored whether direct and interactive associations found are consistent across different periods of development, namely, for adolescents who are in the earlier versus later years of high school. We contribute to the literature by examining understudied Asian American youth, considering multiple indices of academic outcomes, and using two waves of data to explore developmental variations in effects. In addition, previous research commonly has measured socioeconomic stress according to variables created from family income, parental education, and/or parental occupational prestige (Caro et al. 2009; Radziszewska et al. 1996). Rather than rely on such proxies, we used a more direct measure of family economic strain as our primary independent variable.

Methods

Participants

Participants at the initial time of recruitment were 180 9th (48.3 %) and 10th grade Asian American adolescents (60 % female). The average age was 14.97 ($SD = .84$). Approximately 74 % of the sample was US-born or second-generation. The remaining 26 % were first-generation or foreign-born. An open-ended, self-report item indicated that adolescents represented a range of specific ethnic identifications including: Hmong (28 %), multiethnic (within Asian groups; e.g., Cambodian and Chinese) (22 %), South Asian (e.g., Indian, Pakistani) (11 %), Chinese (8 %), and pan-ethnic (i.e., Asian) (8 %). The remaining 23 % represented small clusters of ethnicities such as Montagnard, Laotian, Vietnamese, Filipino/a, Japanese, Korean, and Thai.

Procedures

Using a stratified sampling procedure, public high schools in the Southeastern U.S. were targeted for recruitment. Adolescents were ultimately drawn from six schools that varied in terms of academic achievement and ethnic diversity. For initial recruitment, all 9th–10th grade students who were identified through school enrollment forms as Asian were convened in small groups and invited to participate in a study on their culture and daily lives. Parental consent and adolescent assent forms were distributed. Researchers returned for a follow-up visit and those students who returned their forms were given a packet of questionnaires, which took about 35–40 min to complete. Upon completion, adolescents were given instructions and materials for a two-week daily diary study, not reported on here. At the end of the daily diary period, researchers returned to schools to collect materials and to give adolescents \$25 for participating.

Adolescents were asked to participate in follow-ups in consecutive years that consisted of the questionnaire packet only. The current study focuses on data collected in the first wave of the study, when students were in 9th–10th grades (Wave 1), and two years later when students were in 11th–12th grades (labeled Wave 2 for the current article). Data for the follow-up were collected during school visits and students who were absent or no longer enrolled in the school were sent questionnaires through the postal mail. Approximately 87 % of the original sample was retained in W2, and these participants did not differ from those who participated only in W1 on any demographic or key study variables, using a $p < .01$ cutoff given the number of tests run. In W2 of the study, adolescents were given \$15 for participating.

Measures

Socioeconomic Stress

Socioeconomic stress was measured using an index of family economic strain or financial insecurity (Brumbach et al. 2009). On a 0 = *no* to 1 = *yes* scale, adolescents were asked to indicate whether their families experienced economic stressors. We included five items (e.g., were without home telephone service or cell phone service because there was not enough money, were worried whether food would run out before there was more money to buy more). Adolescents were instructed to think about the past 12 months in their responses. Responses

were summed across all items. The internal consistencies found in the present study were .67 and .69 at Waves 1 and 2, respectively, which are similar to those found in prior research on adolescents (e.g., $\alpha = .68$; Brumbach et al. 2009).

Family Obligation

A 12-item scale was used to assess adolescents' attitudes toward family obligation and the provision of family assistance (Fuligni et al. 1999, 2002). Adolescents were asked to determine how important each item is on a five-point scale ranging from *Not At All Important* to *Very Important* with higher scores reflecting higher family obligation. Sample items include, "Help take care of brothers and sisters," "Run errands that the family needs done," and "Help out around the house." Items concerning attitudes toward future support and obligation were also presented using a six-item scale. Samples include, "Help your parents financially in the future," "Spend time with your parents even after you no longer live with them," and "Help take care of your brothers and sisters in the future." Following prior research (e.g., Kiang and Fuligni 2009), both scales were combined and averaged to reflect an overall index of family obligation ($\alpha = .86-.88$).

Self-Reported Grade Point Average (GPA)

Adolescents were asked to write-in their current Grade Point Average. Although a recent meta-analysis suggests that self-reports of GPA may be systematically inflated and should be used with caution, they still generally predict outcomes to a similar extent as actual GPA (Kuncel et al. 2005). Indeed, as shown in Table 1, patterns of association between our measure of GPA and other academic outcomes were as expected. Further, in a follow-up study in which school reports of GPA were collected on a small subset of this sample ($N = 46$), self and official reports of GPA were significantly correlated ($r = .85, p < .001$). However, due to some missing data and undecipherable responses (e.g., "98", "9/10"), analyses with this variable were conducted with a more limited sample.

[Table 1 Omitted]

Importance of Academic Success

Importance of academic success was assessed through a six-item scale asking adolescents to place importance on doing well and succeeding in school. This measure was based on research from Eccles (1983) and has been used successfully in prior work (e.g., Fuligni et al. 2005a). On a scale ranging from 1 *not important* to 5 *very important*, students reported how important the following things are to them: that you do well in school, that you get good grades, that you get an 'A' on almost every test, that you go to college after high school, that you be one of the best students in your class, that you go to the best college after high school. Items were averaged and the internal consistencies were .85-.86.

Educational Aspirations and Expectations

Also drawn from Eccles (1983), to assess educational aspirations, adolescents were asked, “How far would you like to go in school?” Response options were 1 = *finish some high school*, 2 = *graduate from high school*, 3 = *graduate from a 2-year college*, 4 = *graduate from a 4-year college*, 5 = *graduate from law, medical, or graduate school*. One item was similarly used to assess educational expectations. Adolescents were asked, “How far do you think you actually will go in school?” Identical response options as for educational aspirations were used.

Results

Preliminary Analyses

Bivariate correlations among primary study variables are shown in Table 1, stratified by study wave. As shown, in both earlier and later years of high school, high socioeconomic stress was consistently associated with poor academic outcomes, as defined by all four indices of GPA, importance of academic success, and educational aspirations and expectations. In both waves of the study, family obligation was positively associated with adolescents’ reported importance of academic success. In wave W1, family obligation was also linked with higher educational expectations, although this association was only marginally significant. In W2, family obligation was significantly associated with higher educational aspirations. As would be expected, all academic outcome variables were significantly associated with each other. Remaining relations, though not statistically significant, were in expected directions.

Means and SDs are also shown in Table 1. Variable means appeared to be generally stable over time. In W2, significantly higher levels of socioeconomic stress were reported [$t(147) = -2.21, p < .05$] compared to W1. Higher GPA at W2 was also reported [$t(73) = -2.58, p < .05$]. Remaining means did not significantly vary across the two waves of the study [$ts(145-147) = 1.38-1.92, ns$]. Each measure at W1 was significantly correlated with measurements at W2, which further suggests temporal stability among the constructs. These correlations ranged from .47 to .69, $p < .001$.

Main and Interactive Effects of Socioeconomic Stress and Family Obligation on Adjustment

To examine main and interactive effects of socioeconomic stress and family obligation on adolescents’ academic adjustment, a series of hierarchical multiple regressions were conducted. Main effects of socioeconomic stress and family obligation were entered first, followed by their interaction. Variables were centered before creating the interaction term. Gender was also entered in the initial step as a covariate given that prior research has documented gender differences in academic adjustment among Asian American youth (Kiang et al. 2012; Qin 2006). Regressions were conducted separately for each outcome and within W1 and W2.

Early High School (9th–10th Grades)

Results for W1 are shown in Table 2. As expected, and consistent with bivariate correlations, socioeconomic stress was negatively associated with all four academic adjustment outcomes. Main effects of family obligation were also found in terms of positive links with importance of academic success and educational expectations. These initial models accounted for 11–15 % of the variance in outcome variables. No other main effects or interactions were found, but an interaction between socioeconomic stress and family obligation approached significance in terms of adolescents' importance of academic success.

[Table 2 Omitted]

Late High School (11th–12th Grades)

Table 3 illustrates regression results from W2 of the study. Again, main effects of socioeconomic stress were found for all four adjustment variables. Main effects of family obligation were also found with respect to importance of academic success and educational aspirations. With the exception of GPA, the initial models themselves were significant, explaining between 9 and 18 % of the variance in adjustment. In addition, three interactive effects were found.

[Table 3 Omitted]

Specifically, as shown in Fig. 1, strong attitudes toward family obligation protected youth from the negative effects of socioeconomic stress. Simple slopes analyses suggested that experiencing socioeconomic stress was associated with lower importance of academic success, but only for adolescents who reported low levels of family obligation ($b = -.29, p < .001$). For adolescents who indicated strong importance towards helping and assisting their families, the association between socioeconomic hardships and academic importance was not statistically significant ($b = -.10, ns$). Similar buffering effects were found for educational aspirations (Fig. 2) and expectations (Fig. 3). Although simple slopes for adolescents who reported both high and low levels of family obligation were significant, the effect of socioeconomic stress on aspirations appeared stronger for adolescents with low ($b = -.48, p < .001$) compared to high ($b = -.20, p < .05$) endorsements. In terms of expectations, the effect of socioeconomic stress was statistically significant for adolescents who reported low levels of family obligation ($b = -.30, p < .001$), but not for those with high obligation ($b = -.12, ns$), which again supports the protective role of family obligation on adolescents' academic adjustment.

[Figure 1 Omitted]

[Figure 2 Omitted]

[Figure 3 Omitted]

Discussion

The impact of socioeconomic stress on the adjustment of adolescents from Asian American backgrounds has not been a topic of much attention, especially when compared to research focusing on these themes among other ethnic groups. The primary aim of the current study was to address this gap in the literature by examining whether experiencing family financial hardship is associated with poor academic adjustment, widely measured through multiple outcome variables including GPA, importance of academic success, and educational aspirations and expectations. In the face of these negative influences, we also were interested in pinpointing family obligation as a possible buffer and considering whether main and interactive effects of socioeconomic stress and family obligation might developmentally vary over time.

In line with prior research with other ethnic groups (Brody et al. 1995; McLoyd 1998; Sirin 2005), we found that socioeconomic stress is indeed a significant risk factor in Asian American adolescents' academic outcomes. Although average levels of socioeconomic stress were relatively low for the sample as a whole, more experiences of household financial stress were associated with lower self-reported GPA, lower valuing of academic success, and lower educational aspirations and expectations. These negative associations were consistent for adolescents in both early (9th–10th grades) and late (11th–12th grades) high school years. It thus appears that socioeconomic struggles can be critical issues for American adolescents with Asian ancestry, who are often widely presumed to be the model minority and generally well-adjusted (Oyserman and Sakamoto 1997; Suzuki 2002). Notably, gender also had a main effect on several academic outcomes, which is consistent with prior work that points to females faring better than males in the academic arena (Kiang et al. 2012; Qin 2006).

Providing some resilience in the face of stress, we found family obligation to act as a positive resource in adolescents' lives. Direct effects were found whereby family obligation was associated with various indicators of positive academic adjustment in both early and later years of high school. These results are congruent with previous research documenting the virtues of family obligation (McHale et al. 2005; Organista et al. 2003; Umana-Taylor et al. 2011), and positive links between family obligation and academic outcomes more specifically (Fuligni et al. 2005a). Moreover, in the later high school years, family obligation buffered the negative effect of socioeconomic strain on adjustment variables such as importance of academic success and educational aspirations and expectations. More specifically, the academic risks that were associated with socioeconomic stress were attenuated in older adolescents who endorsed the importance of family assistance compared to those who reported low levels of family obligation.

Although these results demonstrate that family obligation can serve as a resiliency factor in helping older adolescents deal with the negative effects of socioeconomic stress, several unanswered questions remain. For example, one important topic for future research is to explore

whether the protective effect of family obligation also extends to other negative experiences (e.g., acculturative stress, normative stress, discrimination). Similarly, do the positive effects of family obligation generalize to adolescents' from diverse ethnic groups? Our focus on an Asian sample was important in addressing a dearth in the literature, but also limits the generalizability of our results. Constructs of family assistance and closeness might be especially meaningful to adolescents from Asian backgrounds (Lieber et al. 2004; Phinney et al. 2000), but whether or not its benefits are equally noteworthy among other samples, particularly in light of protecting against socioeconomic stress, remains largely unknown. Notably, recent evidence does point to family obligation as being associated positively with academic adjustment among both European American and Chinese adolescents (Pomerantz et al. 2011), and as an effective moderator against stress among Latino samples (Umana-Taylor et al. 2011). More work along these themes would be informative.

The specific mechanisms by which such family cultural values have a positive effect are also unclear. Perhaps helping to maintain family functioning and generally assisting one's family promotes family closeness, which is beneficial in and of itself (Dmitrieva et al. 2004). Alternatively, it is possible that family obligation affects other areas in adolescents' lives which can then protect against risks to achievement and boost academic success. In line with this idea, recent research suggests that daily acts of family assistance is directly related to adolescents' purpose or meaning in life (Kiang 2012). Such purpose could then help to promote adolescents' academic aspirations, goals, and achievements, despite their experience of obstacles that might thwart those positive outcomes.

Developmentally, moderating effects of family obligation were only found for adolescents in later years of high school. In fact, although the interactions between family obligation and socioeconomic stress among early high school students were not statistically significant, several of the interaction terms were in opposite directions compared to those found in later high school. One explanation for these differences is that family obligation tends to become increasingly salient as adolescents mature, are able to take on more responsibilities, and gain more practical ways to assist their families (Fuligni and Pedersen 2002). For example, although virtually all children can help with various household chores, it is not until the later years of high school that children can drive, which may make it easier to run errands for the family, take on an afterschool job, or engage in more diverse assistance behaviors. It is also possible that, with impending high school graduation, issues such as socioeconomic stress and family obligation are in the forefront of adolescents' lives and come together in more marked ways to impact their academic adjustment. A third explanation is that socioeconomic stress may interact with family obligation differently when it is experienced at a more chronic level. By the time adolescents reach the later years of high school, they presumably have had a longer opportunity to experience socioeconomic stress and it is thus possible that these experiences of chronic stress differentially interacted with family obligation to predict academic outcomes. Notably, average levels of socioeconomic stress were also significantly higher in later years of high school than in earlier

years. These mean differences could be potentially due to older adolescents being more aware of their family's financial situations, and perhaps the moderating effect of family obligation does not become relevant until adolescents gain such awareness and/or socioeconomic stress reaches a certain threshold. It is also notable that interactive effects were not found for GPA, which could have been due to limitations in self-reports of the construct or the idea that the interactive effects of socioeconomic stress and family obligation are more salient for academic outcomes that are more future-oriented (e.g., aspirations, importance of academics) rather than those that are more immediate in nature. Clearly, more research is needed to better disentangle the differential developmental patterns that we found.

Although the focus of this article was on concurrent reports examined at two different developmental periods, multiple waves of data also can be used to investigate longitudinal associations among constructs. For example, using our data in a different way, we conducted post hoc analyses to help shed light on the developmental differences that we found. We ran a series of regressions using W1 reports of socioeconomic stress and family obligation to predict W2 outcomes, after controlling for outcomes at W1. With the exception of one interactive effect that approached significance in terms of GPA ($b = .65, p = .07$), and one main effect of W1 socioeconomic stress predicting importance of academic success at W2 ($b = -.15, p < .01$), no other main effects or interactions were found. Given that early reports had little influence on later outcomes, these results confirm our overall findings that suggest that socioeconomic and family constructs are more salient in later versus earlier years of high school. These results also suggest that family stress and resilience processes function in a more temporally proximal manner rather than over time, which supports our initial framework in examining the immediate impact of family obligation and its relevance across differential phases of development.

It was somewhat surprising that socioeconomic stress and family obligation were not correlated with each other. It would be reasonable to expect that more financial hardships would be related to adolescents' obligations to step in and assist their families, either by their working at a part-time job to contribute to family income, or by helping out around the house while parents work. One explanation is that our measure of family obligations assessed attitudes toward assistance behaviors rather than the behaviors themselves. Nonetheless, the fact that these are independent constructs supports the need to further examine how such family attitudes are socialized or learned. Prior work suggests that family obligation is a culturally-based construct that may be tied closely to cultural values and ethnic identity (Kiang and Fuligni 2009). Perhaps examining ethnic identity development as one potential pathway towards family obligation would be an interesting avenue for future research. Indeed, our results highlight the benefits of cultivating attitudes toward family obligation as a resiliency factor. Determining how individual differences in family obligation develop would be helpful in understanding ways to enhance such attitudes and thus promote adolescent outcomes.

Taken together, there are several important implications regarding the main effects found and the manner in which socioeconomic stress and family obligation interacted in predicting academic

outcomes. Our results suggest that assuming that Asian Americans adolescents are uniformly on a path to high achievement seems unreasonable and potentially flawed. However, many teachers and other school staff may observe such a phenomenon with Asian youth performing well. To reconcile these perspectives, our findings speak to the possibility that high family obligation, which is often found among Asian youth (Lieber et al. 2004; Phinney et al. 2000), helps to compensate for the negative effects of socioeconomic stress and maintain the high achieving stereotype. In addition, given that the actual buffering effects of family obligation did not emerge as statistically significant until the later high school years, future research and intervention efforts that are focused on somewhat younger high school students might allow more of an opportunity to observe adverse effects of low family socioeconomic stress and to subsequently intervene early in order to promote better academic outcomes. Indeed, the model minority stereotype involves a complex interplay between adolescent characteristics and both in-school and out-of-school experiences (Lee 1994), and our work contributes to the understanding that Asian youths' school achievement is considerably multifaceted.

Acknowledgments

We would like to thank the schools and individual adolescents who participated in the study. Funding for the study, in part, was made possible by a Wake Forest University SBE grant awarded to LK.

Author contributions

LK designed and coordinated the larger study from which this manuscript is based. KA conceived of this manuscript's research questions. LK and KA performed the statistical analyses and drafted the manuscript. GS, AS, and LG participated in the interpretation of the data and helped to draft specific sections of the manuscript. All authors read and approved the final manuscript.

References

- Brody, G. H., Stoneman, Z., & Flor, D. (1995). Linking family processes and academic competence among rural African American youth. *Journal of Marriage and the Family*, 57(3), 567–579. doi:10.2307/353913.
- Brumbach, B. H., Figueredo, A. J., & Ellis, B. J. (2009). Effects of harsh and unpredictable environments in adolescence on development of life history strategies: A longitudinal test of an evolutionary model. *Human Nature*, 20, 25–51. doi:10.1007/s12110-009-9059-3.
- Caro, D. H., McDonald, J., & Willms, J. (2009). Socio-economic status and academic achievement trajectories from childhood to adolescence. *Canadian Journal of Education*, 32(3), 558–590.

Choi, Y. (2007). Academic achievement and problem behaviors among Asian Pacific Islander American adolescents. *Journal of Youth and Adolescence*, *36*, 403–415. doi:10.1007/s10964-006-9152-4.

Conger, R. D., Conger, K. J., Elder, G. H., & Lorenz, F. O. (1992). A family process model of economic hardship and adjustment of early adolescent boys. *Child Development*, *63*(3), 526–541. doi:10.2307/1131344.

Dmitrieva, J., Chen, C., Greenberger, E., & Gil-Rivas, V. (2004). Family relationships and adolescent psychosocial outcomes: Converging findings from Eastern and Western cultures. *Journal of Research on Adolescence*, *14*(4), 425–447. doi:10.1111/j.1532-7795.2004.00081.x.

Duncan, G., Yeung, W., Brooks-Gunn, J., & Smith, J. (1998). How much does childhood poverty affect the life chances of children? *American Sociological Review*, *63*, 406–423.

Eamon, M. (2002). Effects of poverty on mathematics and reading achievement of young adolescents. *The Journal of Early Adolescence*, *22*(1), 49–74. doi:10.1177/0272431602022001003.

Eccles, J. S. (1983). Expectancies, values, and academic behaviors. In J. T. Spence (Ed.), *Achievement and achievement motivation* (pp. 75–146). San Francisco, CA: Freeman.

Fuligni, A. J. (2001). Family obligation and the academic motivation of adolescents from Asian and Latin American, and European backgrounds. In A. J. Fuligni (Ed.), *Family obligation and assistance during adolescence: Contextual variations and developmental implications*, *New Directions in Child and Adolescent Development Monograph* (pp. 61–76). San Francisco: Jossey-Bass.

Fuligni, A. J., Alvarez, J., Bachman, M., & Ruble, D. N. (2005a). Family obligation and the academic motivation of young children from immigrant families. In C. R. Cooper, C. Garcia Coll, W. Bartko, H. Davis, & C. Chatman (Eds.), *Developmental pathways through middle childhood; Rethinking contexts and diversity as resources* (pp. 261–282). Mahwah, NJ: Lawrence Erlbaum Associates Publishers.

Fuligni, A. J., & Pedersen, S. (2002). Family obligation and the transition to young adulthood. *Developmental Psychology*, *38*(5), 856–868. doi:10.1037/0012-1649.38.5.856.

Fuligni, A. J., Tseng, V., & Lam, M. (1999). Attitudes toward family obligations among American adolescents with Asian, Latin American, and European backgrounds. *Child Development*, *70*(4), 1030–1044. doi:10.1111/1467-8624.00075.

- Fuligni, A. J., Witkow, M. R., & Garcia, C. (2005b). Ethnic identity and the academic adjustment of adolescents from Mexican, Chinese, and European backgrounds. *Developmental Psychology, 41*, 799–811.
- Fuligni, A. J., Yip, T., & Tseng, V. (2002). The impact of family obligation on the daily activities and psychological well-being of Chinese American adolescents. *Child Development, 73*(1), 302–314. doi:10.1111/1467-8624.00407.
- Garcia Coll, C. T. (1990). Developmental outcome of minority infants: A process-oriented look into our beginnings. *Child Development, 61*(2), 270–289. doi:10.2307/1131094.
- Kiang, L. (2012). Deriving daily purpose through daily events and role fulfillment among Asian American youth. *Journal of Research on Adolescence, 22*(1), 185–198. doi:10.1111/j.1532-7795.2011.00767.x.
- Kiang, L., & Fuligni, A. J. (2009). Ethnic identity and family processes in adolescents with Latin American, Asian, and European backgrounds. *Journal of Youth and Adolescence, 38*, 228–241.
- Kiang, L., Supple, A. J., Stein, G., & Gonzalez, L. (2012). School connectedness and adjustment among Latin American and Asian adolescents in emerging immigrant communities. *Journal of Youth and Adolescence, 41*, 282–294.
- Kuncel, N. R., Crede, M., & Thomas, L. L. (2005). The validity of self-reported grade point averages, class ranks, and test scores: A meta-analysis and review of the literature. *Review of Educational Research, 75*, 63–82. doi:10.3102/00346543075001063.
- Lee, S. J. (1994). Behind the model-minority stereotype: Voices of high- and low-achieving Asian American students. *Anthropology and Education Quarterly, 25*, 413–429.
- Lieber, E., Nihira, K., & Mink, I. (2004). Filial piety, modernization, and the challenges of raising children for Chinese immigrants: Quantitative and qualitative evidence. *Ethos, 32*(3), 324–347. doi:10.1525/eth.2004.32.3.324.
- Lillydahl, J. (1990). Academic achievement and part-time employment of high school students. *The Journal of Economic Education, 21*(3), 307–316.
- Luthar, S. S., & Cicchetti, D. C. (2000). The construct of resilience: Implications for interventions and social policies. *Development and Psychopathology, 12*, 857–885.
- Masten, A. S. (2001). Ordinary magic: Resilience processes in development. *American Psychologist, 56*(3), 227–238. doi:10.1037/0003-066X.56.3.227.
- McHale, S. M., Updegraff, K. A., Shanahan, L. K., Crouter, A. C., & Killoren, S. E. (2005). Siblings' differential treatment in Mexican American families. *Journal of Marriage and Family, 67*, 1259–1274.

- McLoyd, V. (1998). Socioeconomic disadvantage and child development. *American Psychologist*, 53(2), 185–204. doi:10.1037/0003-066X.53.2.185.
- Mistry, R. S., Benner, A. D., Tan, C. S., & Kim, S. (2009). Family economic stress and academic well-being among Chinese-American youth: The influence of adolescents' perceptions of economic strain. *Journal of Family Psychology*, 23(3), 279–290. doi:10.1037/a0015403.
- Organista, P. B., Organista, K. C., & Kurasaki, K. (2003). The relationship between acculturation and ethnic minority mental health. In K. M. Chun, P. B. Organista, & G. Marin (Eds.) (2003). *Acculturation: Advances in theory, methods, and applied research*. Washington, D.C.: American Psychological Association. doi:10.1037/10472-010.
- Oyserman, D., & Sakamoto, I. (1997). Being Asian American: Identity, cultural constructs, and stereotype perception. *Journal of Applied Behavioral Science*, 33(4), 435–453.
- Phinney, J. S., Ong, A., & Madden, T. (2000). Cultural values and intergenerational value discrepancies in immigrant and non-immigrant families. *Child Development*, 71(2), 528–539. doi:10.1111/1467-8624.00162.
- Pomerantz, E. M., Qin, L., Wang, Q., & Chen, H. (2011). Changes in early adolescents' sense of responsibility to their parents in the United States and China: Implications for their academic functioning. *Child Development*, 86, 1136–1151. doi:10.1111/j.1467-8624.2011.01588.x.
- Portes, A., & Rumbaut, R. G. (2001). *Legacies: The story of the immigrant second generation*. New York: Russell Sage Foundation.
- Qin, D. (2006). The role of gender in immigrant children's educational adaptation. *Current Issues in Comparative Education*, 9(1), 8–19.
- Radziszewska, B., Richardson, J., Dent, C., & Flay, B. (1996). Parenting style and adolescent depressive symptoms, smoking, and academic achievement: Ethnic, gender, and sex differences. *Journal of Behavioral Medicine*, 19(3), 289–305.
- Schill, W., McCartin, R., & Meyer, K. (1985). Youth employment: Its relationship to academic and family variables. *Journal of Vocational Behavior*, 26, 155–163.
- Sirin, S. R. (2005). Socioeconomic status and academic achievement: A meta-analytic review of research. *Review of Educational Research*, 75(3), 417–453. doi:10.3102/00346543075003417.
- Suzuki, B. H. (2002). Revisiting the model minority stereotype: Implications for student affairs practice and higher education. *New Directions for Student Services*, 97, 21–32.
- Umana-Taylor, A. J., Updegraff, K. A., & Gonzales-Backen, M. A. (2011). Mexican-origin adolescent mothers' stressors and psychosocial functioning: Examining ethnic identity

affirmation and familism as moderators. *Journal of Youth and Adolescence*, 40(2), 140–157.
doi:10.1007/s10964-010-9511-z.

U.S. Census Bureau. (2011). *Asian American Heritage Month Profile American Stats*. Retrieved September 12, 2012 from http://www.census.gov/newsroom/releases/archives/facts_for_features_special_editions/cb11-ff06.html.