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Social connections, immigration-related factors, and self-rated physical and mental health among Asian Americans☆

Wei Zhang*, Van M. Ta

University of Hawaii at Manoa, Honolulu, HI, United States

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ABSTRACT

Focusing on Asian Americans, this study examines how self-rated physical and mental health depends on the layered social connections (including 4 types: family cohesion, relative support, friend support, and neighborhood cohesion), socioeconomic status, and immigration-related factors (including nativity, length of residence in the U.S., and proficiency of the English language). It draws on the 2002–2003 National Latino and Asian American Study, a nationally representative household survey of Latino and Asian Americans. Findings of this study include: (1) there are significant differences in self-rated physical health among Asian Americans of different national origin, but their self-rated physical health differences diminish after indicators of socioeconomic status and immigration-related factors are considered; (2) four types of social connections are all related to the self-rated physical and mental health of Asian Americans, but the patterns of the associations as well as the mechanisms linking the associations vary; and (3) family cohesion has independent and direct effects on both self-rated physical and mental health over and above controls and mediators, whereas the effects of other social connection measures are partially mediated by socioeconomic status and immigration-related factors. In sum, this study indicates the significant effects of social connections, socioeconomic status, and immigration-related factors on the self-rated physical and mental health of Asian Americans.

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Introduction

In recent decades, Asian Americans have been increasingly acknowledged as one of the fastest growing racial minorities in the United States (Barnes & Bennett, 2002; Kitano & Daniels, 1995). According to the 2000 U.S. census, Asians grew by 5 million or 72% from 1990 to 2000 if multiracial Asians are counted in the Asian category. By contrast, the entire U.S. population increased by only 13% (Barnes & Bennett, 2002). In response to such a rapid growth of Asian Americans, an emerging literature has begun to examine their health and well-being in relation to a variety of social factors, including socioeconomic status (SES) or subjective social status (e.g., Leu et al., 2008), and immigration-related factors and acculturation (Breslau & Chang, 2006; Erosheva, Walton, & Takeuchi, 2007; Frisbie, Cho, & Hummer, 2001; Leu et al., 2008; Mutchler, Prakash, & Burr, 2007; Salant & Lauderdale, 2003; Takeuchi et al., 2007). Realizing a great deal of within-group heterogeneity, many empirical studies have now stratified Asian Americans into smaller segments by national origin to facilitate between-group comparisons (Breslau & Chang, 2006; Frisbie et al., 2001; Leu et al., 2008; Mutchler et al., 2007; Takeuchi et al., 2007).

These efforts have led us one step forward towards understanding the well-being of Asian Americans. However, an important aspect of Asian culture, social connection, warrants further attention. Various layers of social connections, that have been found to be differentially related to better mental health in a community survey (Lin, Ye, & Ensel, 1999), might play significant roles in affecting Asian Americans' health. Using the 2002–2003 National Latino and Asian American Study, this study intends to examine: (1) whether social connections including the inner layer of family cohesion, the intermediary layer of relative support and friend support, and the outer layer of neighborhood social cohesion, are associated with better self-rated physical and mental health; and, (2) whether socioeconomic status and immigration-related factors such as nativity, length of residence in the U.S., and proficiency of the English language, mediate the effects of social connections on the self-rated physical and mental health. We examined these critical issues with all Asian American respondents,

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* Corresponding author. Sociology, University of Hawaii at Manoa, 2424 Maile Way, Saunders 204, Honolulu, HI 96822, United States. Tel.: +1 510 717 9837.
E-mail address: weizhang@hawaii.edu (W. Zhang).

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taking into account demographics and national origin, such that panethnic as well as subgroup variation in self-rated physical and mental health can be explicitly studied. In the following Background section, we first presented the relevant theoretical arguments and empirical evidence, on the basis of which specific hypotheses were then introduced.

Background

Some published reports share the common conclusion that the health of Asian Americans is as good as, or better than, the health of non-Hispanic Whites in the United States. For instance, in comparison with Whites and members of other racial groups, Asians were found to have similar or better self-rated health (e.g., McGee, Liao, Cao, & Cooper, 1999), considerably lower mortality rates (Hummer, Rogers, Nam, & LeClere, 1999; Lauderdale & Kestenbaum, 2002), and longer life expectancy and lower levels of disability prevalence (Hayward & Heron, 1999; Waidmann & Liu, 2000). As a panethnic whole, Asian Americans experience the same causes of death but at significantly lower rates (National Center for Health Statistics, 2004). To explain the general health advantage observed among Asian Americans, previous studies suggested the effects of cultural buffering. For instance, compared to the U.S.'s mainstream culture, Hispanic or Asian cultures are more likely to have norms and values promoting healthy behaviors, including better nutrition and having strong familial and social support networks (Hummer, Biegler, et al., 1999; Hummer, Rogers, et al., 1999).

Research on social connections and health is not new and can be dated back to the work of Durkheim, who documented a link between social isolation and reduced psychological well-being (Durkheim, 1897, 1951). Since then, studies exploring the importance of social networks on health have grown tremendously. There is a wide range of literature in social epidemiology (e.g., Kawachi & Berkman, 2000) suggesting the beneficial effects of social networks, including friends and family, on individual health. More recently, an extensive literature in sociology has started to document a positive association between neighborhood level social connection such as social cohesion (Sampson, Morenoff, & Earls, 1999; Sampson, Morenoff, & Gannon-Rowley, 2002) and individual well-being (e.g., Browning & Cagney, 2002; Hawe & Shiell, 2000; Ross, Mirowsky, & Pribesh, 2001). However, there is little empirical work simultaneously comparing different types or layers of social connections in relation to health (e.g., Mulvaney-Day, Alegria, & Sribney, 2007). To the best of our knowledge, there is no study that has examined how individual and community layers of social connections differentially affect self-rated health among Asian Americans and whether SES and immigration-related factors are potential mediators.

Multiple layers of social connections for Asian Americans

According to Lin et al. (1999), individuals are embedded in a nested support system: starting from the ego, social relations extend outward to intimate ties such as marital relationships, then to the intermediary bonding such as relative or friend networks, and finally to the outer-most layer such as community ties. Various layers of social support may impact health differently. For instance, Lin et al. (1999) found that intimate ties have direct and the greatest effects on distress among layers of support structure.

Asian Americans have strong familistic attitudes and behaviors, and are more likely to use kin for emotional or instrumental support compared to other ethnic groups. The health advantage of Asian Americans, therefore, may be partially attributed to the centrality of family relationships and responsibilities (Chung, 1991; Ross-Sheriff, 1991). For example, exchange of assistance amongst generations is one of the vivid indicators of family solidarity and cohesion among Chinese Americans (Lin & Liu, 1993). Accordingly, we present our first hypothesis as the following:

Hypothesis 1
The perception of family cohesion, the inner-most layer of social connections and defined as affective involvement or binding within the nuclear family, has direct and independent effects on the self-rated physical and mental health of Asian Americans over and above respondents' demographic characteristics, SES, and immigration-related factors.

In addition to family cohesion, Asian Americans also rely heavily on support from extended family and friends, which reflects the importance of the collective orientation in the Asian culture (Slonim, 1991). Asian Americans tend to be well represented in business groups and voluntary ethnic organizations, and the latter are often patterned after family relationships and constitute personalized social support (Kim & McKenry, 1998). Kim and McKenry (1998) compared social networks and support among African Americans, Asian Americans, Caucasians, and Hispanics and found that Asian Americans are more likely to spend social evenings with friends and relatives and in group recreations compared to others. Accordingly, we present the second hypothesis as the following:

Hypothesis 2
Strong relative support or friend support has significant effects on the self-rated health of Asian Americans. Given that the quantity and quality of this intermediary support are likely to be contingent on an individual's social status as well as communication skills (e.g., Mirowsky & Ross, 2003), it is expected that their effects on the self-rated health are likely to be mediated by SES and immigration-related factors.

One example of the outer-most layer of support structure is community ties or social cohesion. Among various definitions of social capital, Putnam (1993) conceptualized social capital in an extensive fashion as "features of social organization, such as networks, norms, and trust, which facilitate coordination and cooperation for mutual benefits" (1993: 36). Similarly, Sampson et al. (1999) developed the concept of collective efficacy to distinguish it with social networks. They emphasize mutual trust and solidarity among local residents (social cohesion) and expectations for action (informal social control) in explaining the impact of aggregate level social connection on an individual well-being. Focusing on social cohesion, we introduce the third hypothesis as the following:

Hypothesis 3
Asian Americans' perception of neighborhood solidarity or social cohesion is also related to their self-rated health, but its effect is likely to be mediated by the respondent's SES and immigration-related factors.

In the following subsection, we discussed reasons why SES and immigration-related factors might be the important mediators linking certain types of social connections and self-rated health.

SES and immigration-related factors

The effects of certain types of social connection on health can be partially explained by their close relationships with SES and

immigration-related factors. Social connection has long been regarded in the literature as one of the proxies or consequences of SES (e.g., Adler & Newman, 2002; Phelan & Link, 2005), and often used empirically as an important mediator linking SES and health (e.g., Gorman & Sivaganesan, 2007; Taylor & Seeman, 1999). This logic is appropriate when discussing certain types of social connection such as friendship ties or neighborhood cohesion, which are closely related to individual resources of knowledge, money, power, and prestige. However, maintaining close kinship ties such as having strong family cohesion, a culture habit, may have independent effects on health despite individual social locations. This is especially true among immigrant communities, where intimate family ties, competing with acculturation stressors, benefit immigrants both economically and emotionally (Finch & Vega, 2003; Mulvaney-Day et al., 2007). Accordingly, we expect that SES is differentially associated with layers of social connections: while SES may explain the effects of friend support or social cohesion; it may not mediate the effects of family cohesion whose effect on the self-rated health might be more direct.

In addition to SES, immigration-related factors are also likely to be influenced by the availability of family or friend ties. For instance, the maintenance of functional liaisons with kin through a chain-migration pattern is often very typical among Asians Americans (Boyd, 1971; Pian, 1980). Language exchanges among friend networks promote English proficiency, which facilitates further communications and increases access to information and health services (Reynolds, 2004; Stuart, Minas, Klimidis, & O'Connell, 1996). One study (Takeuchi et al., 2007) found that Asian men who spoke English proficiently had lower rates of lifetime and 12-month mental disorders compared with non-proficient speakers. So we expect that immigration-related factors such as English proficiency might be associated with better self-rated health among Asian Americans, adjusting for the effects of social connections and sociodemographics.

In sum, we differentiate social connections into three layers, which are family cohesion (the inner layer), relative support and friend support (the intermediary layer), and social cohesion (the outer layer), and examine their differential relationships to the self-rated physical and mental health of Asian Americans, in relation to SES and immigration-related factors.

Method

Sample

To test the proposed hypotheses, we used the 2002–2003 National Latino and Asian American Study (NLAAS), a nationally representative household survey of Latino and Asian Americans based on a stratified area probability sample design that involves three steps (Heeringa et al., 2004). The first step was the core sampling: city or contiguous census blocks were selected based on population density. Housing units were then sampled within each block and one adult was sampled within each selected housing unit. The second step was high-density supplemental sampling, which was used to oversample census block with greater than 5% of Asian households. The third step was the recruitment of secondary respondents from previously sampled households. Respondents were required to be at least 18 years old. The interview was administered in the respondent's choice of language such as English, Chinese, Vietnamese, or Tagalog by bilingual lay interviewers.

For our study, we focused on Asian Americans, including Chinese, Filipino, Vietnamese, and individuals of "other" Asian ancestry ("Other Asian Americans"). A total of 2095 Asian Americans (1611 primary respondents; 484 secondary respondents) were recruited. Weighted response rates were 69.3% for primary respondents and 73.6% for secondary respondents (see Takeuchi et al., 2007 for further detail about the Asian sample). Response rates for variables in our analysis were very high: there are no missing data for gender, age, marital status, education, household income, employment status, and self-rated physical health. Less than 1% of the data were missing for immigration-related factors and self-rated mental health. Less than 3% of the data were missing for the social connection indexes (e.g., family cohesion, relative support, friend support, and social cohesion) after average imputation. Average indexes of social connection were computed for respondents who completed at least 50% of the questions for each index. After listwise deletion of missing cases, the analytical sample was reduced to 2034, including 497 Vietnamese, 499 Filipinos, 579 Chinese, and 459 Other Asian Americans.

Measurement

Dependent variables

The dependent variables for this study are self-rated physical and mental health. Respondents were asked, "How would you rate your overall physical health—excellent, very good, good, fair or poor?" Consistent with previous studies (Frisbie et al., 2001; McGee et al., 1999), we collapsed this measure into two categories: (1) poor and fair; and (2) good, very good, and excellent. Self-rated mental health was measured with a similar question and coded in the same manner. It is well documented in the literature that self-rated health measures have both construct and criterion validity (Patrick & Erickson, 1993), thus, are robust indicators of individual health status that predicts morbidity, mortality, subsequent disability, and health care utilization (Benyamini & Idler, 1999; Ferraro, Farmer, & Wybraniec, 1997; Idler & Benyamini, 1997; Idler & Kasl, 1995; Malmstrom, Sundquist, & Johansson, 1999; Mossey & Shapiro, 1982; Wilson & Kaplan, 1995).

Independent variables

Social connection, the focal independent variable of this study, was measured using four indexes including social cohesion, family cohesion, relative support, and friend support. All measures were average indexes with higher scores reflecting higher levels of social connection. As has been recommended in the literature (Mulvaney-Day et al., 2007), we normalized these indexes to zero mean and one standard deviation in the bivariate and multivariate analysis. Social cohesion, the four-item index (mean = 3.16, SD = 0.61, range = 1–4), gauges whether people in the neighborhood: (1) can be trusted; (2) get along with each other (Sampson, Raudenbush, & Earls, 1997); (3) help in an emergency (National Institute of Mental Health, 1994); and (4) look out for one another (Bearman, Jones, & Udry, 1997). All items load on a single factor above 0.77 and the alpha reliability is over 0.81, which is consistent with prior research on Latino Americans (Mulvaney-Day et al., 2007).

Family and friend support were measured by three items, which assessed respondents' ability to rely on extended family or friends for emotional support. To measure family support (mean = 2.88, SD = 0.85, range = 1–4), respondents were asked: (1) how often they talk on the phone or get together with relatives; (2) how much they can rely on relatives for help with a serious problem; and (3) how much they can open up to family and talk about their worries. All items loaded on a single factor above 0.61, and the alpha reliability is 0.69. The friend support index (mean = 2.79, SD = 0.87, range = 1–4) consists of three parallel items in which the word family or relatives was replaced with friends. The items loaded on a single factor above 0.69 and

the alpha reliability is 0.76, which is comparable with prior research on Latino Americans using NLAAS.

The family cohesion average index (mean = 3.68, SD = 0.51, range = 1–4) measures respondents' sense of family. It is a three-item index, gauging the respondent's attitude towards the following items: (1) family members like to spend free time with each other; (2) family members feel very close to each other; and (3) family togetherness is very important. All items load on a single factor above 0.83 and the alpha reliability is over 0.83.

We examined two blocks of variables that might mediate the relationship between social connection and self-rated health. The first block was SES: education (less than high school, high school, some college, and college and greater), annual household income (<$15,000, $15,000–$34,999, $35,000–$74,999, and ≥$75,000), and employment status (employed, unemployed, and not in labor force). The second block consisted of immigration-related factors, including nativity, length of residence in the U.S., and proficiency of the English language. Similar to some of the previous studies (Frisbie et al., 2001; LeClere, Jensen, & Biddlecom, 1994), immigration status (e.g., nativity and length of residence in the U.S.) was divided into four categories: U.S.-born; immigrant, duration 0–4 years; immigrant, duration 5–10 years; and immigrant, duration 11 years or more. A mean index on English proficiency (range = 1–4) was created from three questions that asked how well (from poor [1] to excellent [4]) respondents: (a) spoke, (b) read, and (c) wrote English. All items load on a single factor above 0.96 and the alpha reliability is over 0.97. Then, a dichotomous variable, English proficiency, was created by contrasting respondents with poor/fair English (average index < 3) to respondents with good/excellent English (average index ≥ 3). Approximately 59% of the respondents reported having good/excellent English skills.

We included national origin (Vietnamese, Chinese, Filipino, and Other Asian Americans) and controlled for demographic factors such as age groups (in years) (18–24, 25–34, 35–49, 50–64, ≥65), gender (*female*: 0 = male, 1 = female), and marital status (married/cohabiting, divorced/separated/widowed, and never married).

Analytical strategy

We first examined the sample characteristics of Asian Americans by national origin. Following this, bivariate analysis was conducted to examine the association of each variable with social connection indexes. Then a series of nested logistic regression models were estimated to test the relationship between social connections and self-rated poor/fair physical health or mental health. The first model estimated the total effects of social connections, controlling for age, gender, national origin, and marital status. The second model incorporated SES factors including education, household income, and employment status. The third model incorporated immigration-related factors including nativity, length of residence, and English proficiency. Reductions in the main effects and significance levels after the introduction of these variables would indicate the importance of SES and immigration-related factors as mechanisms linking social connection and the self-rated health. Consistent with previous studies (e.g., Mulvaney-Day et al., 2007), insignificant social connection indexes were removed from final models because some of the indexes were highly collinear and one index could potentially mask the effect of another. As expected, there were strong correlations among social connection indexes. For example, friend support was significantly correlated with relative support ($r = 0.43$). So when relative support was found to be insignificant, it was removed from the final models.

Results

Distribution of sociodemographics, immigration-related factors, and self-rated health by national origin

Table 1 shows significant diversity in demographics, SES, immigration-related factors, and the self-rated health in the sample. Other Asian Americans had higher proportions of a college or more education compared to Chinese, Filipinos and Vietnamese. Filipinos reported the highest household income among the four groups. For employment status, Chinese were most likely to be employed, followed by Filipinos. Consistent with previous literature (e.g., Frisbie et al., 2001), Vietnamese was the most disadvantaged group with respect to every indicator of SES: they have the lowest educational attainment and household income, and the highest unemployment rate. Compared to others, Other Asian Americans were young. Divorce or separation rate ranged from roughly 7% for Other Asian Americans to slightly less than 10% for Chinese and Filipinos.

In terms of immigration status, the proportion of U.S.-born Vietnamese was the lowest (3.6%), followed by Chinese (21.2%), Filipinos (31.7%), and Other Asian Americans (32.9%). Other Asian Americans consisted of the largest proportion of very recent immigrants. For English proficiency, over three-fourths of Filipinos and Other Asian Americans reported having good/excellent English skills. By contrast, only slightly more than 27% of Vietnamese reported good/excellent English proficiency in reading, writing, and speaking. Compared to Other Asian Americans and Filipinos, Vietnamese and Chinese reported higher proportions of poor/fair self-rated physical and mental health.

Association of each variable with social connection indexes

Table 2 documents mean values of neighborhood social cohesion, family cohesion, relative support, and friend support indexes by categories of self-rated health, indicators of SES and immigration-related factors, and national origin. Self-rated physical health had highly significant associations with all the indexes of social connection. Similarly, self-rated mental health had highly significant association with family cohesion, relative support, and friend support; but it had insignificant association with social cohesion. Due to this reason, social cohesion index was removed from the final models in Table 4 when self-rated poor/fair mental health was the dependent variable.

Educational attainment was significantly related to family cohesion, relative support, and friend support, but not all in the ways expected: while it was positively related to relative and friend support, it was negatively related to family cohesion. Higher household income was positively and significantly associated with all indexes of social connections. Employment status was only significantly related to relative support and friend support. In terms of migration status, the U.S.-born respondents had the highest mean values of social cohesion, relative support, and friend support, but the lowest mean value of family cohesion as compared with the foreign-born. English proficiency was significantly associated with all indexes of social connection: respondents with good/excellent language skills were more likely to have more social cohesion, relative support, and friend support, but less family cohesion. National origin was significantly related to all four indexes of social connection: Filipinos had the highest mean values for social cohesion and relative support; Vietnamese had the highest average value for family cohesion.

Table 1
Distributions of sociodemographics and immigration-related factors of adults by national origin: U.S. Asian Americans in the national Latino and Asian American Study 2002–2003.

Characteristic	Vietnamese	Filipino	Chinese	Other Asian Americans
Gender				
Male	47.3	46.3	47.3	50.5
Female	52.7	53.7	52.7	49.5
Age (years)				
18–24	11.5	16.8	11.6	13.1
25–34	20.1	20.4	24.2	37.3
35–49	36.4	33.1	37.3	29.4
50–64	22.5	20.4	19.9	14.6
≥65	9.5	9.2	7.1	5.7
Marital status				
Married/cohabiting	73.8	68.3	68.7	70.2
Divorced/separated/widowed	7.0	9.6	9.8	6.8
Never married	19.1	22.0	21.4	23.1
Education (years)				
Less than high school (<12)	28.4	10.4	14.0	5.7
High school graduate (12)	22.3	18.8	15.4	13.3
Some college (13–15)	25.2	33.3	19.5	24.8
College or more (≥16)	24.1	37.5	51.1	56.2
Household income ($)				
<15,000	25.8	12.6	17.8	13.9
15,000–34,999	22.7	11.2	14.0	11.1
35,000–74,999	26.2	28.3	23.8	30.7
≥75,000	25.4	47.9	44.4	44.2
Employment status				
Employed	62.8	67.5	68.4	66.7
Unemployed	9.9	5.8	6.0	6.1
Not in labor force	27.4	26.7	25.6	27.2
Immigration status				
0–4 years	13.1	9.8	11.2	23.1
5–10 years	26.6	7.6	13.5	8.1
≥11 years	56.7	50.9	54.1	35.9
U.S.-born	3.6	31.7	21.2	32.9
English proficiency				
Good/excellent	27.2	82.2	52.2	78.0
Poor/fair	72.8	17.8	47.8	22.0
Self-rated physical health				
Poor/fair	21.9	11.4	21.2	9.4
Good/very good/excellent	78.1	88.6	78.8	90.6
Self-rated mental health				
Poor/fair	12.7	7.0	12.4	5.0
Good/very good/excellent	87.3	93.0	87.6	95.0
All persons (no.)	497	499	579	459

Note: percentages are reported. Except for rounding error, percentages sum to 100.0%.

Effects of social connections, SES, and immigration-related factors on health

Tables 3 and 4 each present three logistic regression models, one table for self-rated poor/fair physical health and the other for self-rated poor/fair mental health. In each table, the first model includes the social connection measures, national origin, and demographic controls; the second model incorporates SES indicators (education, household income, and employment status) and, the third model adds immigration-related factors (nativity, length of residence, and English proficiency).

Self-rated poor/fair physical health

According to Model 1 of Table 3, family cohesion and friend support were significantly associated with self-rated poor/fair physical health, after controlling for gender, age, marital status, and national origin. Compared to others with poor family cohesion and less friend support, respondents with strong family cohesion (odds ratio [OR] = 0.82) and more friend support (OR = 0.71) were significantly less likely to report poor/fair physical health.

When education, household income, and employment status were added in Model 2, all of which were significant, the effect of friend support decreases, whereas the effect of family cohesion remains intact and significant. This indicates that some of the effect of friend support on self-rated poor/fair physical health was explained by the respondents' SES. There was a monotonic decrease in the odds ratios as education (OR = 0.75, OR = 0.68, OR = 0.58) or income (OR = 0.74, OR = 0.66, OR = 0.53) increased, indicating that individual SES and self-rated poor/fair physical health were negatively related in a gradient fashion.

The effects of immigration-related factors on self-rated poor/fair physical health were indicated in Model 3 of Table 3: while recent immigrants were significantly less likely to report self-rated poor/fair physical health than their U.S.-born counterparts (OR = 0.47), respondents with good/excellent English skills reported substantially lower odds of having self-rated poor/fair physical health (OR = 0.28). The effect of friend support reduced in Model 3

Table 2
Mean social connection index values by self-rated physical and mental health, socioeconomic status, and immigration-related factors of adults: U.S. Asian Americans in the National Latino and Asian American study 2002–2003.

Characteristic	Social cohesion	Family cohesion	Relative support	Friend support
Self-rated physical health				
Poor/fair	−0.13 (0.06)	−0.15 (0.07)	−0.28 (0.06)	−0.42 (0.06)
Good/very good/excellent	0.03 (0.02)	0.03 (0.02)	0.06 (0.02)	0.08 (0.02)
	**	**	***	***
Self-rated mental health				
Poor/fair	−0.11 (0.07)	−0.25 (0.10)	−0.44 (0.07)	−0.57 (0.07)
Good/very good/excellent	0.01 (0.02)	0.03 (0.02)	0.05 (0.02)	0.06 (0.02)
	NS	***	***	***
Education (years)				
Less than high school (<12)	0.01 (0.07)	0.23 (0.04)	−0.48 (0.06)	−0.59 (0.06)
High school graduate (12)	−0.10 (0.06)	−0.01 (0.05)	−0.14 (0.05)	−0.23 (0.05)
Some college (13–15)	0.00 (0.05)	−0.12 (0.05)	0.00 (0.04)	0.12 (0.04)
College or more (≥16)	0.03 (0.03)	−0.01 (0.03)	0.22 (0.03)	0.22 (0.03)
	NS	***	***	***
Household income ($)				
<15,000	−0.14 (0.06)	−0.12 (0.06)	−0.28 (0.06)	−0.14 (0.06)
15,000–34,999	−0.21 (0.06)	0.01 (0.06)	−0.18 (0.06)	−0.34 (0.06)
35,000–74,999	0.00 (0.04)	−0.02 (0.04)	−0.01 (0.04)	0.03 (0.04)
≥75,000	0.14 (0.03)	0.06 (0.03)	0.19 (0.03)	0.16 (0.03)
	***	*	***	***
Employment status				
Employed	0.00 (0.03)	0.02 (0.03)	0.04 (0.03)	0.03 (0.03)
Unemployed	−0.07 (0.09)	−0.17 (0.09)	−0.09 (0.09)	0.09 (0.08)
Not in labor force	0.01 (0.04)	0.00 (0.04)	−0.08 (0.05)	−0.11 (0.04)
	NS	NS	*	*
Immigration status				
0–4 years	−0.21 (0.06)	0.21 (0.05)	−0.01 (0.06)	0.02 (0.06)
5–10 years	−0.09 (0.06)	0.25 (0.04)	−0.42 (0.06)	−0.40 (0.06)
≥11 years	0.01 (0.03)	0.05 (0.03)	−0.05 (0.03)	−0.13 (0.03)
U.S.-born	0.16 (0.05)	−0.39 (0.06)	0.39 (0.04)	0.54 (0.04)
	***	***	***	***
English proficiency				
Good/excellent	0.09 (0.03)	−0.09 (0.03)	0.25 (0.03)	0.33 (0.03)
Poor/fair	−0.12 (0.04)	0.13 (0.03)	−0.37 (0.03)	−0.48 (0.03)
	***	***	***	***
National origin				
Vietnamese	0.01 (0.05)	0.18 (0.04)	−0.44 (0.05)	−0.54 (0.05)
Filipino	0.13 (0.04)	0.05 (0.04)	0.32 (0.04)	0.25 (0.04)
Chinese	−0.11 (0.04)	−0.21 (0.05)	−0.08 (0.04)	0.02 (0.04)
Other Asian Americans	−0.01 (0.05)	0.02 (0.05)	0.23 (0.04)	0.29 (0.04)
	***	***	***	***

Note: $N = 2034$; NS = non-significant, $^{*}p < 0.05$, $^{**}p < 0.01$, $^{***}p < 0.001$, for significance of association of each variable with the normalized average social connection indexes; standard errors are shown in parentheses.

suggesting that immigration-related factors slightly mediated the effects of friend support. In addition, differences in self-rated poor/fair physical health between Filipinos and Vietnamese as well as between Other Asian American and Vietnamese became insignificant after all the proposed mediators were taken into account.

Self-rated poor/fair mental health

When self-rated mental health was examined, similar patterns were found. Family cohesion, relative support, and friend support were significant in Model 1, thus, were kept in the subsequent models. As shown in Table 4, family cohesion remained significant throughout the models, whereas the effect of relative support and friend support reduced substantially after education, employment status, and English proficiency were taken into account. The significant association between education and self-rated poor/fair mental health provides support that education might be a unique aspect of SES and may benefit self-rated mental health directly or indirectly through developing human capital such as communication skills (see Model 3). In addition to SES, English proficiency played a significant role in maintaining good/excellent mental health among Asian Americans. Respondents who reported having good/excellent English skills were 0.29 less likely to report poor/fair mental health than those who had poor/fair English skills. No significant differences in self-rated mental health were found by national origin and marital status.

Discussion

In this study, the layered social connections are found to have differential impact on the self-rated physical and mental health of Asian Americans. While the effects of social cohesion, relative support, and friend support on self-rated physical and mental health were partially explained by SES and immigration-related factors, the effects of family cohesion were substantial and significant despite the inclusion of controls and mediators. This indicates the significant and independent role of family cohesion in promoting Asian Americans' health. The findings suggest that strong intimate family ties may be particularly protective for immigrants with lower SES and fewer resources. For instance,

Table 3
Self-rated physical health[b] on social connections and national origin with adjustment for demographics (Model 1), socioeconomic status (Model 2) and immigration-related factors (Model 3): U.S. Asian American in the National Latino and Asian American Study 2002–2003.

Characteristic	Model 1	Model 2	Model 3
	OR [95% CI]	OR [95% CI]	OR [95% CI]
Social Connection Indexes			
Social cohesion	0.90 [0.79, 1.02]	0.91 [0.80, 1.03]	0.94 [0.83, 1.07]
Family cohesion	0.82 [0.73, 0.92]***	0.81 [0.72, 0.92]***	0.79 [0.69, 0.90]***
Friend support	0.71 [0.62, 0.82]***	0.77 [0.66, 0.89]***	0.81 [0.70, 0.94]**
Education (Less than high school[a])			
High school graduate		0.75 [0.51, 1.11]	0.83 [0.56, 1.23]
Some college		0.68 [0.46, 1.01]	0.90 [0.60, 1.35]
College or more		0.58 [0.40, 0.86]**	0.90 [0.60, 1.35]
Family income (<$15,000[a])			
$15,000–$34,999		0.74 [0.50, 1.10]	0.74 [0.50, 1.10]
$35,000–$74,000		0.66 [0.45, 0.96]*	0.70 [0.47, 1.03]
≥$75,000		0.53 [0.36, 0.78]***	0.60 [0.40, 0.90]*
Employment status (Employed[a])			
Unemployed		1.38 [0.85, 2.24]	1.47 [0.89, 2.41]
Not in labor force		1.66 [1.21, 2.27]**	1.73 [1.26, 2.38]***
Immigration status (U.S.-born[a])			
0–4 years			0.47 [0.27, 0.82]**
5–10 years			0.84 [0.51, 1.39]
≥11 years			0.82 [0.54, 1.23]
English proficiency (Poor/fair[a])			
Good/excellent			0.28 [0.19, 0.39]***
National origin (Vietnamese[a])			
Filipino	0.58 [0.40, 0.84]**	0.70 [0.47, 1.02]	1.08 [0.72, 1.64]
Chinese	1.12 [0.82, 1.54]	1.31 [0.94, 1.83]	1.43 [1.02, 2.01]*
Other Asian Americans	0.53 [0.35, 0.79]**	0.65 [0.43, 0.99]*	0.92 [0.59, 1.43]
Gender (Male[a])			
Female	1.44 [1.12, 1.85]***	1.22 [0.94, 1.59]	1.19 [0.91, 1.56]
Age (years) (18–24[a])			
25–34	0.83 [0.48, 1.41]	1.02 [0.58, 1.76]	0.85 [0.48, 1.50]
35–49	1.17 [0.67, 2.02]	1.49 [0.85, 2.61]	1.02 [0.57, 1.83]
50–64	1.80 [1.01, 3.20]*	1.99 [1.11, 3.57]*	1.33 [0.72, 2.44]
≥65	3.56 [1.89, 6.71]***	2.61 [1.35, 5.05]**	1.69 [0.85, 3.34]
Marital status (Married/cohabiting[a])			
Divorced	1.02 [0.67, 1.55]	0.87 [0.56, 1.35]	0.91 [0.58, 1.43]
Never married	1.11 [0.72, 1.71]	0.94 [0.60, 1.47]	0.94 [0.59, 1.49]

Note: $N = 2034$; * $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$; social cohesion, family cohesion, and friend support were normalized to have a zero mean and a standard deviation of one; OR = odds ratio; CI = confidence interval.
[a] Reference group.
[b] Reference group for self-rated physical health (good/very good/excellent).

Table 4
Self-rated mental health[b] on social connections and national origin with adjustment for demographics (Model 1), socioeconomic status (Model 2) and immigration-related factors (Model 3): U.S. Asian Americans in the National Latino and Asian American Study 2002–2003.

Characteristic	Model 1	Model 2	Model 3
	OR [95% CI]	OR [95% CI]	OR [95% CI]
Social Connection Indexes			
Family cohesion	0.78 [0.68, 0.89]***	0.75 [0.65, 0.86]***	0.71 [0.61, 0.82]***
Relative support	0.82 [0.69, 0.97]*	0.87 [0.73, 1.03]	0.91 [0.76, 1.08]
Friend support	0.65 [0.54, 0.78]***	0.71 [0.58, 0.85]***	0.75 [0.62, 0.91]**
Education (Less than high school[a])			
High school graduate		0.72 [0.46, 1.13]	0.80 [0.51, 1.26]
Some college		0.44 [0.27, 0.70]***	0.58 [0.35, 0.94]*
College or more		0.35 [0.22, 0.58]***	0.54 [0.33, 0.88]*
Family income (<$15,000[a])			
$15,000–$34,999		0.82 [0.50, 1.32]	0.82 [0.51, 1.34]
$35,000–$74,000		0.72 [0.45, 1.16]	0.79 [0.48, 1.29]
≥$75,000		0.75 [0.46, 1.24]	0.88 [0.53, 1.46]
Employment status (Employed[a])			
Unemployed		1.22 [0.65, 2.27]	1.32 [0.70, 2.49]
Not in labor force		1.61 [1.08, 2.40]*	1.71 [1.14, 2.57]*
Immigration status (U.S.-born[a])			
0–4 years			0.58 [0.27, 1.27]
5–10 years			1.48 [0.76, 2.89]
≥11 years			1.15 [0.66, 2.01]
English proficiency (Poor/fair[a])			
Good/excellent			0.29 [0.19, 0.47]***
National origin (Vietnamese[a])			
Filipino	0.82 [0.51, 1.32]	0.98 [0.60, 1.61]	1.60 [0.95, 2.70]
Chinese	1.27 [0.85, 1.90]	1.51 [0.99, 2.27]	1.66 [1.09, 2.53]*
Other Asian Americans	0.66 [0.38, 1.12]	0.86 [0.50, 1.50]	1.30 [0.73, 2.33]
Gender (Male[a])			
Female	1.65 [1.20, 2.28]**	1.36 [0.97, 1.90]	1.31 [0.93, 1.84]
Age (years) (18–24[a])			
25–34	1.17 [0.55, 2.49]	1.51 [0.70, 3.28]	1.19 [0.54, 2.63]
35–49	1.81 [0.86, 3.83]	2.34 [1.08, 5.05]*	1.52 [0.69, 3.37]
50–64	2.83 [1.31, 6.12]**	3.24 [1.47, 7.14]**	2.09 [0.92, 4.76]
≥65	4.09 [1.77, 9.46]***	3.06 [1.28, 7.33]*	1.89 [0.77, 4.67]*
Marital status (Married/cohabiting[a])			
Divorced	1.38 [0.85, 2.22]	1.23 [0.75, 2.03]	1.32 [0.79, 2.21]
Never married	1.40 [0.81, 2.42]	1.34 [0.76, 2.36]	1.33 [0.74, 2.37]

Note: $N = 2034$; *$p < 0.05$; **$p < 0.01$; ***$p < 0.001$; social cohesion, family cohesion, and friend support were normalized to have a zero mean and a standard deviation of one; OR = odds ratio; CI = confidence interval.
[a] Reference group.
[b] Reference group for self-rated mental health (good/very good/excellent).

family cohesion was found to be particularly beneficial for Vietnamese. Collectively, these findings indicate that although family cohesion is essential for all Asians Americans, it may have a stronger role for specific Asian subpopulations. The presence of strong family ties may make the absence of other socioeconomic resources for certain Asian subpopulation less harmful.

To get a comprehensive understanding of health status of Asian Americans, we examined self-rated physical as well as self-rated mental health. Findings show that self-rated good/very good/excellent mental health is higher than self-rated good/very good/excellent physical health across all groups of Asian Americans. This finding might be confounded by Asian Americans' tendency to report somatic symptoms than their emotional problems due to stigma related to mental disorders (Leong & Lau, 2001; Zhang, Snowden, & Sue, 1998). Besides this panethnic finding, the ethnic differences in self-rated physical and mental health displayed interesting patterns: while Vietnamese reported significantly worse physical health than Filipinos and Other Asians Americans; their self-rated mental health was not that different from Filipinos and Other Asian Americans. This finding, to some extent, may imply the stronger mental health benefits of family cohesion for Vietnamese.

As noted by past research, some ethnic groups such as Japanese, Chinese and Filipinos reported better physical health than other Asian ethnic groups including Vietnamese (e.g., Cho & Hummer, 2001; Frisbie et al., 2001). Our observations, however, suggest that Chinese reported similar health as Vietnamese, and worse health than Filipinos and Other Asian Americans. This inconsistency, to some extent, may indicate the potential differences in health evaluation by ethnic groups and immigration status. One recent study found that self-rated health is a relatively stronger predictor of mortality among long-term immigrants and native-born Hispanic respondents than among recent Hispanic immigrants (Finch, Hummer, Reindl, & Vega, 2002), which suggests that the interpretation of a given level of health may differ by one's nativity and length of residence in the U.S. Their findings on Latino Americans indicate the complexity might be involved in using self-rated health in analyzing health differences among the heterogeneous Asian group.

We also found that immigration-related factors were associated with self-rated health in different ways: compared with the U.S.-born and respondents with poor/fair English skills, recent immigrants and respondents with good/excellent English skills reported significantly better self-rated health. These findings, to some extent, suggest that immigration or acculturation is a complex process and its relationship with health tends to be multi-dimensional. Some aspect of it such as English proficiency might serve as a health benefit by increasing immigrants' utilization of health services (e.g., Suarez, 1994); others such as the longer residence in the U.S., which might be associated with a gradual adoption of unhealthy behaviors and lifestyles of the host country, might be a risk factor for Asian Americans' health.

The results of our investigation are intriguing; however, much remains to be explored. First, there were small samples sizes to make statistical inferences by Other Asian American group. In this study, Other Asian Americans reported the highest physical and mental health out of the four Asian groups. Upon further analysis, this may be largely due to the substantial proportion of young and well-educated immigrants from South Asian, Japan, and Korea. To get a more thorough understanding of the health status of Asian Americans, future surveys may consider sampling more South Asians, Japanese, and Koreans so that there are sufficient samples for each ethnic group to do comparative analyses.

In addition, given the possibility of a reciprocal relationship between SES and social connections, more sophisticated analytical strategies such as structural equation modeling or multi-level modeling may be used to test their dynamic interactions with health. Moreover, the findings are based on the cross-sectional study design, thus limiting the ability to establish causal relationships. With longitudinal data in the future, we will be able to study the changing trajectories of health status among Asian Americans over time and examine how the layered social connections contribute to the changes. Furthermore, the findings on the unique effects of family cohesion are inspiring, but in order to fully understand its complex relationship with health, we may need a mixed-method approach by appropriately integrating survey research with qualitative field research to gauge the nuances regarding how family cohesion interacts with SES or immigration-related factors and affects one's health.

Conclusion

Regardless of these and other limitations, this study contributes to the literature by examining an important topic—the relationship between three layers of social connections and self-rated health among Asian Americans. It was found that these three layers of social connections are all closely related to self-rated health, but the patterns of the associations as well as the mechanisms linking the associations vary. These findings have substantial policy implications. For example, given the particular importance of family and kinship ties among Asian Americans, future policy makers may consider encouraging and assisting family-oriented health care units within Asian communities and providing culturally competent care. Meanwhile, given the significant ethnic differences in SES as well as self-rated health among Asian Americans, those relatively poorer ethnic communities and families need to be identified and various social resources need to be allocated to improve their health status.

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