# Adolescent Survival Expectations: Variations by Race, Ethnicity, and Nativity

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## Abstract

Adolescent survival expectations are linked to a range of problem behaviors, poor health, and later socioeconomic disadvantage, yet scholars have not examined how survival expectations are differentially patterned by race, ethnicity, and/or nativity. This is a critical omission given that many risk factors for low survival expectations are themselves stratified by race and ethnicity. Using the National Longitudinal Study of Adolescent to Adult Health, we modeled racial, ethnic, and immigrant group differences in trajectories of adolescent survival expectations and assess whether these differences are accounted for by family, neighborhood, and/or other risk factors (e.g., health care access, substance use, exposure to violence). Findings indicated that most racial, ethnic, and immigrant groups were more pessimistic about their survival than were non-Hispanic whites, with the exception of Cuban youth, who were the most optimistic. Foreign-born Mexican youth had the lowest survival expectations, contrary to expectations from the "healthy-immigrant" hypothesis.

## Keywords

Uncertain (or pessimistic) survival expectations are emerging as an important marker of inequality in the United States (Mirowsky and Ross 2000; Swisher and Warner 2013; Wilson and Daly 1997), as adolescent pessimism about future survival has been linked to a range of deleterious behaviors, such as delinquency, fighting and violence, and suicide attempts (Borowsky, Ireland, and Resnick 2009; Brezina, Tekin, and Topalli 2009; Harris, Duncan, and Boisjoly 2002). Such pessimism is also associated with poor health and socioeconomic disadvantage in adulthood (Duke, Borowsky, et al. 2011; McDade et al. 2011; Nguyen et al. 2012). The consequences of risk-taking behaviors are long lasting; thus, greater attention is needed to the nuances contributing to the emergence and patterning of disparities in well-being during adolescence, itself a unique developmental stage in which behavioral patterns—health enhancing and health compromising—become established.

Established correlates of pessimistic survival expectations include low family socioeconomic status (SES), residence in disadvantaged neighborhoods, and exposure to violence (Fischhoff et al. 2010; Swisher and Warner 2013; Warner and Swisher 2014). Less is known, however, about inequalities in adolescent survival expectations by race, ethnicity, and nativity, despite the fact that many of the risk factors for low survival expectations are themselves highly stratified in the United States. To this end, we examined racial, ethnic, and

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immigrant differences in survival expectations from adolescence through young adulthood. Given the great diversity within the growing Hispanic population, we also explore variations across Hispanic subgroups by country of origin (i.e., Mexican, Puerto Rican, Cuban) and by generational status among both Hispanic and Asian adolescents. Using data from the first three waves of the National Longitudinal Study of Adolescent to Adult Health (Add Health), we modeled racial, ethnic, and immigrant group differences in trajectories of survival expectations and assessed whether observed differences across groups were accounted for by family (e.g., SES) and neighborhood characteristics (e.g., neighborhood poverty) as well as other risk factors (e.g., lack of health care, exposure to violence).

## BACKGROUND

### Adolescent Survival Expectations

Contrary to popular notions of perceived invincibility, research suggests that some adolescents, particularly those exposed to violence and other hazards, have grave concerns about their safety and are uncertain of their future survival (Borowsky et al. 2009; Fischhoff et al. 2010; Swisher and Warner 2013). Pessimistic survival expectations have been linked to numerous problem behaviors, including fighting, weapon use, delinquency, unsafe sexual behavior, HIV/AIDS transmission, depression, low self-esteem, high school dropout, unemployment, suicide attempts, cigarette use, and even fast-food consumption (Borowsky et al. 2009; Brezina et al. 2009; Duke, Borowsky, et al. 2011; Harris et al. 2002; Jamieson and Romer 2008; McDade et al. 2011). They are also associated with lower educational attainment and income in young adulthood (Nguyen et al. 2012). Thus, survival expectations may be considered a barometer of existing inequality and environmental risks and may be a better indicator of perceived life chances among younger populations than measures of social position, such as income or education (McDade et al. 2011).

Concerns about the many behavioral, health, and socioeconomic consequences of pessimistic survival expectations have prompted research that seeks to better understand the sources of such negative appraisals. Although there may be personality (e.g., impulsivity) or psychological (e.g., depression) predictors of pessimistic survival expectations, recent work has focused on risk factors within adolescent social environments, particularly, neighborhoods.

For example, using data from Add Health, Swisher and Warner (2013) observed lower survival expectations among youth living in poor neighborhoods. The link between neighborhood disadvantage and uncertainty about future survival is also evidenced in Anderson's (1999) classic ethnographic study of the inner city, which vividly depicted the constant fear and threat of violence experienced by youth growing up in areas of concentrated disadvantage. Violent victimization is particularly consequential for youth survival expectations, as Warner and Swisher (2014) found exposure to violence of various forms (childhood physical abuse, intimate partner violence, and street victimization) to be associated with lower survival expectations. Fischhoff and colleagues (2010) similarly found adolescents' mortality expectations were significantly correlated with violent victimization and perceptions that their neighborhoods and schools were unsafe.

### Linking Racial-ethnic Inequality and Adolescent Survival Expectations

When examining inequalities in survival expectations (and more general indicators of health and well-being) across racial and ethnic subgroups, it is critical to consider the structural constraints within which the life course unfolds (Viruell-Fuentes 2007). Family poverty, neighborhood disadvantage, exposure to violence, and other health-related risk factors (e.g., access to health care) are significantly stratified by race and ethnicity in the United States and likely contribute to the emergence and maintenance of racial and ethnic disparities in survival expectations. According to the American Community Survey (ACS), between 2007 and 2011, African Americans had the highest poverty rates in the United States (25.8%), followed closely by persons of Hispanic origin at 23.2% (Macartney, Bishaw, and Fontenot 2013). ACS data also show that poverty status varies considerably across Hispanic subgroups, with Cubans having considerably lower poverty rates (16.2%) than persons originating from Mexico (24.9%) or Puerto Rico (25.6%). In addition, the Pew Hispanic Center found that in 2011, 49.6% of Mexican-origin youth were in poverty. Non-Hispanic whites had the lowest rates of poverty (9.9%), with Asians only slightly higher at, 11.6%.

The likelihood of living in a poor neighborhood also differs dramatically by race and ethnicity. Sampson and Sharkey (2008) describe these differences in terms of a "durable inequality" in neighborhood poverty that persists over decades, both

within and between generations. Black householders are about six times more likely than white householders to live in poor neighborhoods for spells of 10 or more years (Quillian 2003), and black and Hispanic youth spend almost half their childhoods in poor neighborhoods, compared to white children, who spend only 5% of theirs in such circumstances (Timberlake 2007). Exploring the intergenerational transmission of poverty, Sharkey (2008) found that black children growing up in the poorest neighborhoods were much more likely than white children to remain in poor neighborhoods in adulthood, a phenomenon he refers to as "inheriting the ghetto." Although less residentially segregated than blacks, Hispanics and Asians live in neighborhoods considerably more impoverished than whites (Iceland and Nelson 2008; Timberlake 2007).

In addition to economic disadvantages and physical disorder, these impoverished neighborhoods are often plagued with violence. Exposure to violence among youth has reached epidemic levels (Zimmerman and Messner 2013). Among youth, blacks remain significantly more likely to experience violent victimizations than do white or Hispanic youth (White and Lauritsen 2012). Hayes-Bautista and colleagues (2002) identified a "Latino Adolescent Male Mortality Peak" after observing mortality rates among male Latino adolescents that were twice those of non-Hispanic whites, largely attributable to homicides and motor vehicle accidents. Compared to other groups, Asians experience relatively low rates of violence and victimization (Snyder and Sickmund 2006).

Also consequential are experiences of racialized policing, police violence, and excessive force, with minorities—and predominantly minority neighborhoods—becoming increasingly criminalized (e.g., racial profiling, stop-and-frisk practices). Rios (2011:160) describes the criminalization of black and Latino adolescent males as an "all-encompassing feature of everyday life." Goffman (2014) similarly notes how police surveillance, harassment, and violence lead to a life constantly "on the run" for many within poor and minority neighborhoods. Such disproportionate minority contact, which further stigmatizes and marginalizes youth, has been documented at all stages of the criminal justice system (see Piquero 2008), culminating in significant racial and ethnic disparities in the mass imprisonment characterizing the United States today (Pettit and Western 2004).

Strong gradients in morbidity, mortality, access to health care, and other health risks across racial and ethnic groups may also lead to disparities in adolescent survival expectations. Previous research and vital statistics data show that blacks are disadvantaged relative to whites (and Asians) across most indicators of health. A recent review of the health disparities literature further indicates black children are disadvantaged compared to white children in terms of all-cause mortality and many chronic diseases (Flores 2010). Black youth are more likely to have poor or fair health, asthma, disabilities, emergency room visits, and other conditions, such as skin allergies and vision problems (Mehta, Lee and Ylitalo 2013). Further, they are also more likely to experience or anticipate poorer health care access, injuries, morbidity, and mortality, all of which may contribute to lower survival expectations (U.S. Department of Health and Human Services 2014).

The relative health of Hispanic adolescents is more complicated, due to the considerable diversity of experiences associated with nativity, country of origin, and immigrant generation. Despite the disadvantages of lower SES and stressors associated with the immigration process, Hispanic immigrants in the United States display *lower* rates of morbidity and mortality than would be expected, a phenomenon termed the "Hispanic health paradox" or "immigrant health advantage." Though this health advantage has been most frequently observed among older adults or infants (Hummer et al. 2007; Markides and Coreil 1986), some studies do document Hispanic and immigrant youths' avoidance of health-compromising behaviors. For instance, Hispanic immigrant youths are less likely than U.S.-born peers to drink alcohol or smoke cigarettes (Blum et al. 2000), be obese (Gordon-Larsen et al. 2003; Kandula, Kersey, and Lurie 2004), or engage in risky sex (Guarini et al. 2011) or violent behavior (Greenman and Xie 2008). On the other hand, Hispanic youth are less likely to have access to health-promoting resources, like healthy foods (Moore and Diez Roux 2006), medical facilities and health insurance (Flores and Tomany-Korman 2008), and routine health care (Weinick and Krauss 2000). Over time in the United States, however, Hispanic immigrant youth increasingly exhibit the health-compromising behavior and poorer health of native-born youth, including delinquency, violence, substance use, sexual debut, obesity, and poor diets (Gordon-Larsen et al. 2003; Greenman and Xie 2008; Kandula et al. 2004; Warner, Krebs, and Fishbein 2008).

Past studies using a simplistic acculturation framework have been widely criticized for taking an individual-centered approach (Hunt, Schneider,

and Comer 2004; Viruell-Fuentes 2007) that ignores social structural inequalities and contextual factors. More recent scholarship emphasizes a "social-determinants-of-health" framework, which considers the structural and contextual factors shaping immigrant adaptation (Acevedo-Garcia et al. 2012). Related to this framework is the recognition of the ways in which racism and discrimination against immigrants and U.S.-born racial and ethnic minorities—at institutional and individual levels— undermines health, well-being, and life chances (e.g., employment, upward mobility; Braveman and Barclay 2009; Williams and Sternthal 2010). Such experiences can be a source of chronic stress to racial and ethnic minorities and immigrants that further undermines well-being, even among youth (Fisher, Wallace, and Fenton 2000).

Recent research has also moved beyond a binary conceptualization of Hispanic (versus non-Hispanic) that ignores the considerable heterogeneity across Hispanic subgroups differentiated by country of origin and generational status. There are stark demographic differences between Hispanic subgroups that likely have implications for the current investigation. For example, the poverty rate is significantly higher among Puerto Ricans than among Cubans (Ramirez and De La Cruz 2002); Puerto Ricans are more residentially segregated than Mexicans or Cubans (Iceland and Nelson 2008) and are least likely to experience upward residential mobility (South, Crowder, and Chavez 2005). Puerto Rican youth are also the most likely among Hispanics to experience violence (Estrada-Martinez et al. 2011), and they have a higher prevalence of chronic medical conditions (Mendoza et al. 1991). Hispanic subgroup differences in health are equal to, and in some cases even surpass, those observed across major ethnic groups (Flores et al. 1999).

Although the bulk of scholarship focuses on white, black, and Hispanic youth, the few studies of Asian youth generally find they experience fewer disadvantages than their black and Hispanic peers and subsequently engage in fewer risk behaviors. Data from the national Youth Risk Behavior Surveillance System (Lowry et al. 2011) found Asians the least likely to drink alcohol, use drugs, get in fights, carry a weapon, or be sexually active. However, Asian Americans do experience considerable discrimination (Fisher et al. 2000). Moreover, as is true for Hispanics, acculturation is associated with increased health risks among Asian youth (Unger et al. 2004). Further, health services are underutilized among both U.S.-born and immigrant Asian youth (Flores and Tomany-Korman 2008).

## The Current Study

Despite recent scholarship exploring the structural determinants of adolescent survival expectations (Swisher and Warner 2013), researchers have not yet examined racial, ethnic, and/or immigrant differences in such expectations. The current study, thus, examines differences in survival expectations across white, black, Hispanic, and Asian youth. Further, we distinguish between Puerto Ricans, Mexicans, and Cubans and between foreign-born versus native-born Mexicans, Cubans, and Asians (sample size limitations precluded us from delineating Asian subgroups). Such an intersectional conceptualization is necessary to recognize and account for the ways in which race, ethnicity, and nativity operate jointly and simultaneously to shape social location and health outcomes (Viruell-Fuentes, Miranda, and Abdulrahim 2012).

Adolescence is a critical time for the screening and prevention of major medical conditions that contribute to persistent racial-ethnic disparities in morbidity and mortality in adulthood (Callahan, Hickson, and Cooper 2006). The significant adversities experienced by racial and ethnic minorities in such a developmentally sensitive period of the life course launch "chains of disadvantage" (Umberson et al. 2014) that have cumulative effects on health trajectories, compromising both objective and subjective indicators of health and well-being across the life course. We also examine whether youth survival expectations are stable or fluid over time. The few longitudinal studies of survival expectations document that they are not stable (e.g., Borowsky et al. 2009; Duke, Skay, et al. 2011; Swisher and Warner 2013) and that youth tend to become more optimistic with age. In addition, this study examines the degree to which differences in survival expectations across racial and ethnic groups might be accounted for by environmental risks, such as neighborhood poverty, exposure to violence, measures of current health status and access to health care, family characteristics, and other behavioral risk factors.

As a first study focused on racial, ethnic, and immigrant differences in survival expectations, any hypotheses are necessarily somewhat speculative. However, given the multiple disadvantages of low family SES, neighborhood disadvantage, and exposure to violence, as well as lower actual longevity (of which youth may or may not be cognizant), we expect black youth to have the lowest survival expectations. As a whole, we expect Hispanic youth to have the next poorest survival expectations, though we also expect considerable heterogeneity

by country of origin and generational status. Given their higher SES, we expect Cuban youth to have the highest survival expectations among Hispanics and, conversely, that Mexican and Puerto Rican youth will have the poorest survival expectations. In terms of generational status, the "healthy-immigrant" effect leads us to expect survival expectations to generally decline from first to subsequent generations. Provided their relatively higher family SES and neighborhood advantage, we expect white youth to exhibit the most optimistic survival expectations of all groups, and we anticipate that Asian youth will have survival expectations similar to those of white youth, with potential diminishment by generational status.

## DATA AND METHODS

We used data from Add Health, a nationally representative sample of adolescents in schools, grades 7 through 12, in 1995 (Bearman, Jones, and Udry 1997). The primary sampling frame included 80 representative high schools, and associated middle schools, stratified by region, urbanicity, school type, size, and racial-ethnic composition. A core sample of 20,745 adolescents was randomly selected from school rosters for in-home interviews. One year later (1996), respondents were surveyed again (Wave 2, $n = 14,738$); approximately six years later (2001–2002), participants were reinterviewed, with a response rate of about 80% (Wave 3, $n = 15,197$; respondents were ages 18–28). Respondents' home addresses at each wave were geocoded and census tract-level contextual data appended.

### Analytic Sample

Analyses were limited to respondents self-identifying as white, black, Mexican, Puerto Rican, Cuban, or Asian ($n = 19,500$). We used data from Waves 1, 2, and 3 of the in-home interviews and contextual databases. Although the growth curve analyses (described below) can use any available data at Level 1 (within person), data at Level 2 (between persons) must be complete. Therefore, from the subset of 19,500, we excluded respondents with missing data on core demographics (nativity, gender, family structure, and age; $n = 122$ [0.63%]), independent variables ($n = 1,743$ [8.94%]; largely due to missing data on family SES), and the dependent variable ($n = 250$ [1.28%]), along with 567 (2.91%) respondents whose addresses were not geocoded (exclusions not cumulative). Finally, to ensure adequate cell sizes across each age, we excluded observations for respondents at the

youngest age at Wave 1 (age 11) and the oldest ages at Wave 3 (26–28). In total, these exclusions resulted in a final analytic sample size of 17,100, contributing 41,860 observations.

### Measures

*Dependent Variable. Survival expectations* (time varying [TV]) were measured at all three waves via respondents' assessment of the likelihood that they will "survive to age 35." Response options were (a) almost no chance, (b) some chance but probably not, (c) a 50-50 chance, (d) a good chance, and (e) almost certain. While prior research (Borowsky et al. 2009; Duke, Borowsky, et al. 2011; Swisher and Warner 2013) dichotomized this into 1 = "a good chance or almost certain" (options [d] and [e]) and 0 = "all other categories" (options [a] through [c]), preliminary analyses revealed variation across racial, ethnic, and immigrant groups in the distribution of this measure that would be obscured by dichotomizing. Therefore we retained the original coding (ranging 0 = *almost no chance* to 4 = *almost certain*).

*Focal Independent Variables.* Respondents' race, ethnicity, and nativity were measured via dummy variables for black, Puerto Rican, foreign-born Mexican (both respondent and mother immigrant), second-generation Mexican (native-born respondent, immigrant mother), third-generation Mexican (both respondent and mother native born), foreign-born Cuban, native-born Cuban (there were too few native-born Cubans to distinguish between second and third generations), foreign-born Asian, second-generation Asian, and third-generation Asian. Although we recognize "Asian" is a heterogeneous group, there were too few Asians to delineate both ethnicity and nativity.

*Additional Independent Variables.* We included several TV and time-invariant (fixed characteristics or measures asked only at the baseline interview) individual, family, and neighborhood correlates of survival expectations.

*Physical Health and Well-being.* Adolescents' survival expectations may reflect assessments of their physical health and well-being and/or access to health-related resources. *Self-rated health* (TV; "In general, how is your health?") ranged from 0 = excellent to 4 = poor. Although research (Viruell-Fuentes et al. 2011) documents translational issues undermining the validity of this item

among Hispanic middle-aged and older adults, it has not been proven invalid among Hispanic adolescents. Supplemental analyses (not shown) indicated that self-rated health was correlated with objective health indicators similarly across our racial, ethnic, and immigrant groups, suggesting similar convergent validity across adolescent subgroups. Nonetheless, to account for possible translation issues, models also controlled for *interview language* (1 = English), which itself was not significantly associated with survival expectations. Additional TV indicators included respondents' receipt of *routine medical care* and whether they experienced *unmet medical needs* (0 = no, 1 = yes), both of which may gauge some of the structural barriers confronted by minorities and immigrants (Hunt et al. 2004; Viruell-Fuentes et al. 2012).

*Health Risks*. Involvement in risk behaviors undermines well-being, and individuals with diminished survival expectations may select themselves into risky situations; thus we included several indicators of health risks. *Exposure to violence* (TV) was measured by five items regarding the past-year frequency adolescents witnessed and/or were victims of violence (1 = experiencing any of these five incidents, else = 0). *Violent behavior* (TV) gauged past-year involvement with seven types of violent perpetration, such as physically harming someone, carrying/threatening/using a weapon, and group fighting. Response options were dichotomized (0 = never, 1 = one or more times) and the seven items summed.[1] Because it may affect perceptions of safety (Duke, Skay, et al. 2011), *gun access* (time invariant) measured presence of a gun in the respondents' home at Wave 1 (1 = yes, 0 = no).

*Neighborhood Characteristics*. Consistent with past research linking neighborhood characteristics to survival expectations (Borowsky et al. 2009; Swisher and Warner 2013), we included an index of *neighborhood disadvantage* (TV) comprising the census tract-level proportion of female-headed households, families earning less than $15,000, residents living below the federal poverty level, residents ages 25 and older with less than a high school education, households receiving public assistance, and the male unemployment rate ($\alpha$ = .94, .94, .87 at Waves 1, 2, and 3, respectively). Particularly relevant for Hispanic and Asian (especially immigrant) youth, our analyses included an indicator of *immigrant presence* (TV)—the proportion of foreign-born residents in the neighborhood. Because this measure was extremely skewed (50% of the sample

resided in tracts with less than 3.5% foreign-born residents), we collapsed it into quartiles. As indicators of the larger structural/contextual environment in which development unfolds, both measures are important correlates in recent scholarship attempting to move beyond purely acculturation-based explanations for immigrant well-being (Viruell-Fuentes 2007).

*Language Use and Time in the United States*. To further explore experiences and expectations among immigrants, *English language use* (TV) was created from the question, "Which language is usually spoken in your home?" (recoded into 1 = English, 0 = all other languages). We do not refer to this as a measure of acculturation, because language use may not signify cultural adoption (as often assumed in the literature), and language proficiency and preference are not interchangeable (and it is unclear which of the two our current measure captures; Gee, Walsemann, and Takeuchi 2010). *Time in the United States* was a continuous measure calculated at Wave 1 from respondents' age at arrival. Following Mirowsky's (1999) internal moderator approach—which allows inclusion of variables applicable only to some respondents (i.e., years in the United States applies only to immigrants)—U.S.-born respondents were coded '0' on this measure (see also McDonald and Kennedy 2004).

*Demographic Controls*. Analyses controlled for other key demographics to further isolate group differences. *Family SES* was a combination of parent's education and parent's occupational level (Ford, Bearman, and Moody 1999). Family structure was measured with a series of dummy variables for *living with two unmarried parents, a single parent,* or *some other family structure* at Wave 1; *living with two biological married parents* served as the reference category. We also controlled for respondents' gender with a dummy variable for *female*. Finally, given the age heterogeneity of the sample, all analyses controlled for *age* at baseline interview.

## Analytic Strategy

To assess change in adolescent survival expectations, we used a two-level hierarchical generalized linear model (HGLM) for ordinal outcomes with a cumulative logit link (Raudenbush and Bryk 2002). This approach allowed us to model trajectories of survival expectations with age while incorporating observations missing at random (we used respondents' age, centered at 12, as the metric of time).

Ordinal logistic HLM uses multiple logit functions, yielding a cumulative logit function. Here, the ordinal models characterize the ordinal responses ($R$) in five categories ($M$) in terms of four cumulative category comparisons, specifically, four cumulative logits (i.e., log odds) of the ordinal responses. At Level 1, this is represented by four equations (capturing within-person variation):

$$n_{ti(1)} = \log\left[\frac{\varphi_{ti(1)}}{1 - \varphi_{ti(1)}}\right] = \pi_{0i} + \pi_{1i}\text{Age}_{ti} + \pi_{2i}\text{Age}^2_{ti} + \pi_{3i}\boldsymbol{X}_{ti} \quad (1.1)$$

. . .

$$n_{ti(4)} = \log\left[\frac{\varphi_{ti(4)}}{1 - \varphi_{ti(4)}}\right] = \pi_{0i} + \pi_{1i}\text{Age}_{ti} + \pi_{2i}\text{Age}^2_{ti} + \pi_{3i}\boldsymbol{X}_{ti} + \delta_{4i} \quad (1.4)$$

where $n_{ti(m)}$ is the expected probability for each category of survival expectations at age $t$ for person $i$ as a function of an initial level of survival expectations ($\pi_{0i}$), change in that level with age, and a vector of TV covariates ($\boldsymbol{X}_{ti}$). Consistent with the approach suggested by Horney, Osgood, and Marshall (1995; see also Raudenbush and Bryk 2002), the values for time-varying covariates ($\boldsymbol{X}_{ti}$) in the Level 1 equation were transformed into deviations from each individual's mean calculated across all periods of observation (that is, group-mean centered for each individual, reflecting the extent of change, relative to one's mean over time). These individual means ($\bar{X}_i$) were included as explanatory variables in the Level 2 equation, along with time-invariant characteristics ($\boldsymbol{X}_i$), all of which capture between-person variation in survival expectations:

$$\pi_{0i} = \beta_{00} + \beta_{01}\bar{X}_i + \beta_{02}\boldsymbol{X}_i + r_0 \quad (2)$$

$$\pi_{1i} = \beta_{10} + \beta_{11}\boldsymbol{X}_i \quad (3)$$

$$\pi_{2i} = \beta_{20} + \beta_{21}\boldsymbol{X}_i \quad (4)$$

$$\pi_{3i} = \beta_{30} \quad (5)$$

. . .

$$\pi_{10i} = \beta_{100} \quad (12)$$

Here, the effects of between-person differences in average physical health and well-being, health risks, neighborhood characteristics, language use, time in the United States, and demographics on the intercept (initial value) and slope (change with age) of survival expectations were captured by $\beta_{01}$, $\beta_{02}$, $\beta_{11}$, and $\beta_{21}$ (Equations 2–4). All of the between-person indicators were initially modeled as predictors of both the intercept and slope of survival expectations; however, only gender and age at first interview were significant on the slope, and therefore the final models include all other measures modeled only on the intercept. Using person-centered indicators in the Level 1 equation restricts $\beta_{30}$ through $\beta_{100}$ (Equations 5–12) to between-person change—not computing these deviation scores would result in an indicator capturing combined effects of between-person differences and within-person change (Horney et al. 1995). An initial unconditional growth model indicated that the shape of growth was best represented with a quadratic age term. Thus all models included age (centered at age 12) and age$^2$ (based on the centered age measure).

All analyses were unweighted since Winship and Radbill (1994) note that when the weights are a function of the independent variables—as is largely the case for the grand sampling weights in Add Health, which are adjusted for age, gender, race-ethnicity, and sibling status—unweighted regression is preferred and is less likely to produce biased estimates. A sample in which racial-ethnic minorities are oversampled (as was the case in Add Health) is more efficient for drawing conclusions about racial-ethnic differences when it is unweighted. Because individual race-ethnicity and nativity were key focal independent variables in our analyses, our analyses were unweighted to enable us to utilize fully the racial-ethnic oversamples in Add Health. Further, 8.7% of the analytic sample was missing sample weights, and this missingness was significantly correlated with our dependent variable and many independent variables—excluding respondents lacking valid sample weights would risk biasing our results.

## RESULTS

### Sample Descriptives

Table 1 presents sample descriptive statistics across all three waves of data. At Wave 1, slightly more than half (55.7%) of respondents were "almost certain" about their chances of surviving to age 35. This percentage decreased at Wave 2 (53.2%) but was much higher at Wave 3, where 73.5% of respondents were "almost certain" about their

**Table 1.** Descriptive Statistics of Analytic Sample across Waves, Means/Proportions and Standard Deviations, National Longitudinal Survey of Adolescent to Adult Health (1995, 1996, 2001; *N* = 17,100).

| Variable | Wave 1[a] M | Wave 1[a] SD | Wave 2 M | Wave 2 SD | Wave 3 M | Wave 3 SD |
|---|---|---|---|---|---|---|
| **Dependent variable** | | | | | | |
| *Expect to survive to age 35* | | | | | | |
|   Almost no chance | 1.27 | | 1.22 | | .21 | |
|   Some chance but probably not | 2.20 | | 2.10 | | .39 | |
|   50-50 chance | 10.23 | | 11.49 | | 6.37 | |
|   A good chance | 30.57 | | 31.99 | | 19.56 | |
|   Almost certain | 55.73 | | 53.20 | | 73.47 | |
| **Independent variables** | | | | | | |
| *Race, ethnicity, and nativity* | | | | | | |
|   White | .571 | | | | | |
|   Black | .225 | | | | | |
|   Puerto Rican | .026 | | | | | |
|   Foreign-born Mexican | .014 | | | | | |
|   Second-generation Mexican | .030 | | | | | |
|   Third-generation Mexican | .038 | | | | | |
|   Foreign-born Cuban | .011 | | | | | |
|   Native-born Cuban | .014 | | | | | |
|   Foreign-born Asian | .032 | | | | | |
|   Second-generation Asian | .026 | | | | | |
|   Third-generation Asian | .014 | | | | | |
| *Physical health and well-being* | | | | | | |
|   Self-rated physical health | 2.895 | .900 | 2.931 | .891 | 3.025 | .857 |
|   Routine physical care | .652 | | .642 | | .347 | |
|   Unmet medical needs | .199 | | .206 | | .229 | |
| *Health risks* | | | | | | |
|   Exposure to violence | .256 | | .183 | | .088 | |
|   Violent perpetration | .723 | 1.274 | .485 | 1.101 | .239 | .731 |
|   Gun access | .228 | | | | | |
| *Neighborhood characteristics* | | | | | | |
|   Neighborhood poverty | .162 | .099 | .162 | .099 | .140 | .081 |
|   Immigrant presence[b] | .067 | .116 | .065 | .113 | .086 | .120 |
| English language use | .908 | | .919 | | | .907 |
| Years in the United States (immigrant only) | 11.055 | 5.383 | | | | |
| *Additional demographics* | | | | | | |
|   Age | 15.660 | 1.712 | 16.184 | 1.613 | 21.967 | 1.740 |
|   Male | .491 | | | | | |
|   Female | .509 | | | | | |
|   Two biological married parents | .523 | | | | | |
|   Two parents unmarried | .160 | | | | | |
|   Single parent | .274 | | | | | |
|   Other family structure | .042 | | | | | |
|   Family socioeconomic status | 4.607 | 2.679 | | | | |
| *N* (respondents) | 17,100 | | 12,217 | | 12,569 | |

[a]Items measured at Waves 1, 2, and 3 modeled as time varying; items measured at Wave 1 only modeled as time invariant.
[b]Item collapsed into quartiles for analyses.

survival—this is not surprising, as youth may feel more confident about surviving to age 35 the closer they are in age.

With respect to the focal independent variables, the sample was largely composed of white (57.1%) and black (22.5%) youth; among Hispanics, the largest group was third-generation Mexican youth (3.8%), followed by second-generation Mexicans (3.0%) and Puerto Ricans (2.6%). Foreign-born Asians composed 3.2% of the sample; second- and third-generation Asians composed 2.6% and 1.4%, respectively. At Wave 1, immigrants had spent, on average, 11 years in the United States. Respondents were fairly positive about their health across waves, and over 60% of youth received routine physical care at Waves 1 and 2—this dropped to 34.7% at Wave 3 (possibly because respondents had "aged out" of coverage by parents' insurance). About a quarter of respondents had been exposed to violence at Wave 1, and over one fifth of youth (22.8%) reported having a gun in their home. Overall, neighborhood poverty was fairly low in this sample, and the average immigrant presence in the neighborhood was about 7% at Waves 1 and 2, increasing to almost 9% at Wave 3.

## Racial, Ethnic, and Immigrant Differences in Adolescent Survival Expectations

Table 2 presents a series of hierarchical generalized linear growth models of racial, ethnic, and immigrant differences in adolescents' expectations of surviving to age 35 (with non-Hispanic white as the reference category). Table 2 displays indicators for the focal variables of race and ethnicity and nativity, along with TV (within-person) and between-person covariates.

Model 1 in Table 2 presents coefficients from an ordinal logistic regression of trajectories of adolescent and young adult survival expectations (ages 12–25), adjusted for gender, family structure and family SES, interview language, and age at baseline. Age was centered at 12, such that the coefficients correspond with the expected value for respondents at age 12. The linear and quadratic growth terms capture the change with age in expected survival for all racial, ethnic, and immigrant groups relative to whites. The overall pattern suggests a slight $U$ shape. The patterns for all groups are displayed in Figure 1, which shows variation in initial expectations (at age 12), followed by a slight decrease between ages 12 and 17, then an increase, becoming particularly differentiated by

about age 21 (expected odds of survival are plotted only through age 23 due to data sparseness across some groups at ages 24 and 25; estimates are plotted for males since females had a significantly different slope [although the patterns are visually similar]). As this figure shows, white and native-born Cubans had the highest odds of being certain about their survival; foreign-born and second-generation Mexicans had the lowest.

Relative to white youth (at age 12), youth from almost all other racial, ethnic, and immigrant groups were less optimistic about their chances of surviving to age 35; the exception was native-born Cubans, whose expected survival was not significantly different from whites (the effect for foreign-born Cubans was marginally significant). Compared to whites, black youth had 53.9% {$100*[\exp(-.775)- 1]$} lower odds of being in a higher category of survival expectations versus all lower categories. However, black youth were not the most disadvantaged—foreign-born Mexican youth had the lowest odds of survival certainty ($b= -1.169$; odds ratio [OR]$= .311$), having 68.9% lower odds of being in a higher category of expected survival. Thus, there does not appear to be an immigrant advantage, especially among Mexican youth. Asian youth were also significantly less optimistic about future survival relative to whites and regardless of generational status. Consistent with a "social-determinants" framework, this finding parallels Nguyen and colleagues (2012), who attributed immigrants' lower survival expectations to their lower SES, worse access to health care, and the stressors of the migration process. These racial, ethnic, and immigrant differences are net of key demographic factors, such as family SES.

TV (within-person) covariates were added in Models 2 through 5 (Table 2), which assess whether group differences in survival expectations could be attributed to other known correlates of survival expectations. Changes in physical health and well-being with age were added in Model 2, producing expected associations. Increases in individuals' self-rated physical health were associated with increased optimism regarding future survival, whereas unmet medical needs undermined survival expectations. Between persons, self-rated health and routine physical care were positively associated with expected survival, whereas unmet medical needs undermined expectations.

In Model 3, we explored the contribution of health risks to survival expectations. The results showed that increasing within-person exposure to violence and violent perpetration with age undermined adolescents' survival expectations; similar

**Table 2.** Hierarchical Generalized Linear Growth Models of Adolescent Survival Expectations, Ages 12 to 25 (Ordinal Logistic Regression), National Longitudinal Survey of Adolescent to Adult Health (1995, 1996, 2001; N= 41,860 Observations; 17,100 Respondents).

| Variable | Model 1 | Model 2 | Model 3 | Model 4 | Model 5 |
|---|---|---|---|---|---|
| | b (SE) | b (SE) | b (SE) | b (SE) | b (SE) |
| Intercept[a] | 1.039 (.166)*** | 1.022 (.166)*** | 1.218 (.166)*** | 1.173 (.166)*** | 1.205 (.166)*** |
| Linear growth | −.310 (.043)*** | −.320 (.043)*** | −.353 (.043)*** | −.345 (.043)*** | −.342 (.043)*** |
| Quadratic growth | .032 (.003)*** | .033 (.003)*** | .035 (.003)*** | .034 (.003)*** | .034 (.003)*** |
| **Focal Level 2 between-person covariates** | | | | | |
| *Race, ethnicity, and nativity[b]* | | | | | |
| Black | −.775 (.034)*** | −.816 (.033)*** | −.752 (.034)*** | −.613 (.038)*** | −.621 (.038)*** |
| Puerto Rican | −.525 (.083)*** | −.509 (.083)*** | −.419 (.083)*** | −.402 (.086)*** | −.369 (.087)*** |
| Foreign-born Mexican | −1.169 (.118)*** | −1.177 (.116)*** | −1.223 (.115)*** | −1.255 (.118)*** | −1.236 (.148)*** |
| Second-generation Mexican | −.764 (.078)*** | −.697 (.078)*** | −.660 (.078)*** | −.710 (.082)*** | −.551 (.095)*** |
| Third-generation Mexican | −.369 (.072)*** | −.291 (.070)*** | .223 (.070)** | −.249 (.072)** | −.229 (.072)** |
| Foreign-born Cuban | −.234 (.129)† | −.318 (.124)* | −.364 (.123)** | −.288 (.127)* | −.282 (.165)† |
| Native-born Cuban | .073 (.110) | .015 (.110) | .053 (.109) | .094 (.114) | .227 (.121)† |
| Foreign-born Asian | −.493 (.081)*** | −.451 (.077)*** | −.483 (.076)*** | −.538 (.079)*** | −.587 (.113)*** |
| Second-generation Asian | −.403 (.081)*** | −.330 (.080)*** | −.321 (.080)*** | −.384 (.083)*** | −.317 (.085)*** |
| Third-generation Asian | −.374 (.113)** | −.317 (.111)*** | −.329 (.110)** | −.401 (.111)*** | −.411 (.111)*** |
| **Level 1 within-person (time-varying) covariates[c]** | | | | | |
| *Physical health and well-being* | | | | | |
| Self-rated physical health | | .185 (.019)*** | .185 (.019)*** | .185 (.019)*** | .186 (.019)*** |
| Routine physical care | | .051 (.029)† | .043 (.029) | .042 (.029) | .041 (.029) |
| Unmet medical needs | | −.086 (.035)* | −.077 (.035)* | −.078 (.035)* | −.078 (.035)* |
| *Health risks* | | | | | |
| Exposure to violence | | | .121 (.042)** | −.120 (.042)** | −.121 (.042)** |
| Violent perpetration | | | −.081 (.016)*** | −.081 (.016)*** | −.081 (.016)*** |
| *Neighborhood characteristics* | | | | | |
| Neighborhood poverty | | | | −.376 (.283) | −.382 (.283) |
| Immigrant presence | | | | .004 (.025) | .005 (.025) |
| English language use | | | | | −.110 (.096) |

*(continued)*

**Table 2.** (continued)

| Variable | Model 1 b (SE) | Model 2 b (SE) | Model 3 b (SE) | Model 4 b (SE) | Model 5 b (SE) |
|---|---|---|---|---|---|
| **Level 2 between-person covariates** | | | | | |
| *Demographics[b]* | | | | | |
| Female, intercept | −.190 (.082)* | −.139 (.082)† | −.246 (.082)** | −.245 (.082)** | −.245 (.082)** |
| Female, age | .104 (.028)*** | .115 (.028)*** | .091 (.028)** | .092 (.028)** | .092 (.028)** |
| Female, age$^2$ | −.004 (.002)* | −.005 (.002)* | −.003 (.002) | −.003 (.002) | −.003 (.002) |
| Two unmarried parents | −.175 (.038)*** | −.137 (.038)*** | .102 (.038)** | −.101 (.038)** | −.109 (.038)** |
| Single parent | −.154 (.033)*** | .100 (.033)** | −.075 (.033)* | −.058 (.033)† | −.064 (.033)† |
| Other family structure | −.341 (.068)*** | −.300 (.068)*** | −.246 (.067)*** | −.227 (.068)** | −.231 (.068)** |
| Family SES[c] | .079 (.005)*** | .065 (.005)*** | .057 (.005)*** | .044 (.005)*** | .042 (.005)*** |
| *Physical health and well-being[c]* | | | | | |
| Average self-rated physical health | | .429 (.019)*** | .399 (.019)*** | .395 (.019)*** | .396 (.019)*** |
| Average routine physical care | | .157 (.039)*** | .191 (.039)*** | .193 (.038)*** | .192 (.038)*** |
| Average unmet medical needs | | −.288 (.045)*** | −.173 (.045)*** | −.187 (.045)*** | −.187 (.045)*** |
| *Health risks[d]* | | | | | |
| Average exposure to violence | | | −.333 (.053)*** | −.321 (.053)*** | −.324 (.053)*** |
| Average violent perpetration | | | −.207 (.017)*** | −.209 (.017)*** | −.209 (.017)*** |
| Gun access in home (Wave 1) | | | −.102 (.033)** | −.071 (.033)* | −.075 (.033)* |
| *Neighborhood characteristics[d]* | | | | | |
| Average neighborhood poverty | | | | −1.448 (.183)*** | −1.408 (.184)*** |
| Average immigrant presence | | | | .056 (.015)*** | .059 (.015)*** |
| Average English language use[e] | | | | | .260 (.080)** |
| Years in the United States[e] | | | | | .017 (.007)* |
| Variance component | 1.102 | 1.035 | 1.000 | .987 | .986 |
| $\chi^2$ | 27353.871*** | 26515.180*** | 26104.275*** | 25955.329*** | 25935.844*** |

*Note:* SES = socioeconomic status.

[a]All models include age at first interview (on intercept and slope) and interview language (1 = English).

[b]Reference categories are white, male, and lives with two biological married parents.

[c]Variables are group-mean centered.

[d]Variables are grand-mean centered.

[e]Variable is coded 0 for U.S.-born respondents.

†*p* < .10, *p* < .05, **p* < .01, ***p* < .001 (two-tailed tests).
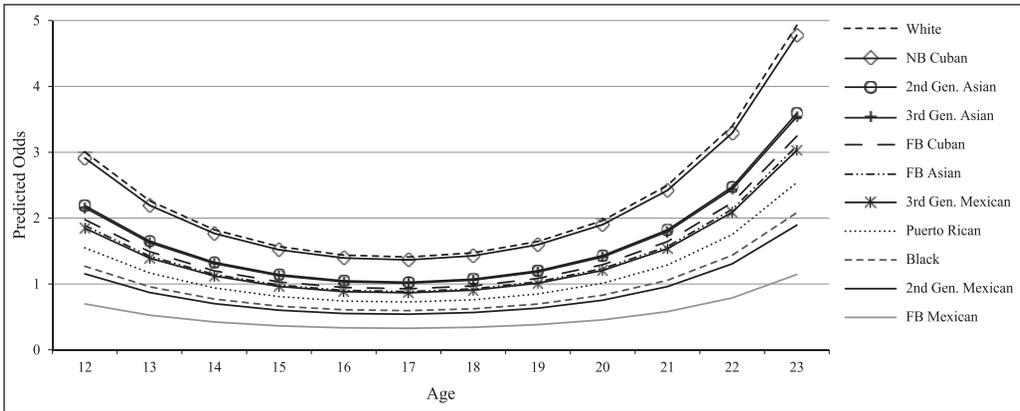
**Figure 1.** Unadjusted Predicted Odds of Expecting to Survive to Age 35 by Race, Ethnicity, and Nativity.
*Note:* Model includes age at baseline interview. Estimates for males only—curve for females similar but shallower increase at older ages. Gen. = generation; FB = foreign-born; NB = native-born.

associations existed between persons. Additionally, adolescents who reported access to a gun in their home had 9.7% lower odds of being almost certain about their survival than peers without gun access. Note that inclusion of these within-and between-person health risks had no discernable influence on differences in survival expectations across racial, ethnic, and immigrant subgroups.

Model 4 included within-person change in neighborhood poverty and immigrant presence. Although neither measure was associated with within-person change in survival expectations, both were associated with significant between-person differences. Adolescents who experienced higher average poverty in their neighborhoods reported lower odds of expected survival than their less-impoverished peers. In contrast, those who had higher concentrations of immigrants in their neighborhoods had higher survival expectations (OR = 1.058, $p < .001$). The final model (Model 5) adds language use and time in the United States in order to understand better the expectations among foreign-born youth. Although English language use in the home was not associated with within-person changes in survival expectations, adolescents reporting English language use had 29.6% greater odds of being certain about their future survival. Further, among immigrant youth, a one-unit increase in years lived in the United States was associated with a 1.7% increase in the odds of expected certainty about survival. These findings suggest that increasing time in the United States and English language use are actually associated

with more optimistic expectations about future survival (contrary to our expectations, which we discuss below). Finally, once English language use was included, the effect of being native-born Cuban approached significance, such that compared to whites, U.S.-born Cubans had 25.5% *higher* odds of being certain about their chances of survival.

## DISCUSSION

To further our understanding of disparities in adolescent health and well-being, the current study explored racial, ethnic, and immigrant differences in adolescents' perceived survival expectations. Such survival expectations are important given their association with not only future planning but numerous problem behaviors (Borowsky et al. 2009; Brezina et al. 2009; Duke, Skay, et al. 2011; Harris et al. 2002; Jamieson and Romer 2008; McDade et al. 2011) that contribute to continued racial, ethnic, and immigrant disparities in health and well-being across the life course.

Non-Hispanic black and Puerto Rican youth, along with all generations of Mexican and Asian youth, were pessimistic about their future survival (relative to white peers), with foreign-born Mexican youth being the most pessimistic. Inequalities in survival expectations between black and white respondents were marginally attenuated when accounting for differences in exposure to violence and neighborhood poverty, findings consistent with past research (e.g., Swisher and Warner 2013; Warner and Swisher 2014). Yet despite these controls, black

youth remained significantly more pessimistic about their future survival. Though we did control for self-rated health and unmet-medical needs, the lower survival expectations of black youth may reflect their anticipation of lower overall life expectancy, a concern given the growing gap in life expectancy between racial and ethnic groups in the United States (Olshansky et al. 2012). This may also reflect unmeasured stressors associated with discrimination (Williams and Mohammed 2009) and concerns about increasing police surveillance, harassment, and violence (Goffman 2014; Rios 2011) as well as the health detriments of incarceration disproportionately affecting low-SES blacks (Massoglia 2008).

That foreign-born Mexican youth were the most pessimistic about their survival is surprising, given extensive literature documenting "immigrant advantages" among Hispanics. Supplemental analyses (not shown) rotating the reference category to non-Hispanic black found that foreign-born Mexican youth were even more pessimistic about their survival than their black peers. We speculate this may be attributable to several factors. First, this may capture the influence of foreign-born Hispanics' significant socioeconomic and other structural disadvantages (although our analyses attempted to control for such measures). Second, such pessimism may be a consequence of experienced and/or perceived racial-ethnic discrimination. (Unfortunately, Add Health did not collect data on discrimination.) Third, and particularly relevant to Mexican immigrant youth, is the persistent fear and anxiety surrounding the threat of deportation—one's own and/or that of a family member (Dreby 2012). A recent review by Golash-Boza and Hondagneu-Sotelo (2013) highlights the significant increase in deportations over the last 15 years, particularly targeted at working-class Latino men, which they characterize as a "new form of legal violence" plaguing entire Latino families and communities. The immigration enforcement regime has consequences that spill over beyond undocumented populations, also affecting legal permanent and U.S.-born residents. Such spillover effects include economic, social, emotional, psychological, and physical harm (Aranda, Menjívar, and Donato 2014), all of which undermine optimistic outlooks among youth in immigrant families.

Asians from all generational statuses were also more pessimistic about future survival than whites, another surprising finding, given that Asians often experience fewer disadvantages than other racial-ethnic minorities (e.g., less residential segregation, higher family SES). However, Asians do report

discrimination, which has been linked to negative health outcomes (Gee et al. 2007). Thus discrimination may affect survival expectations—indirectly—via its role as a source of chronic stress undermining well-being, even among youth (Fisher et al. 2000). Yet, we cannot discount the possibility that racial and ethnic groups may assess their expected survival through various cultural lenses, which we are unable to explore here but which mark avenues for future research—for example, the "white male effect" wherein perceived risks are often judged significantly lower by white males (Finucane et al. 2000).[2] Cubans, particularly, native-born Cubans, were no less optimistic about future survival than white peers. This is not entirely surprising, given that Cubans and Cuban Americans are more likely than other Hispanics to be middle class and cluster in affluent communities, and Cubans have higher aspirations and expectations (even compared to whites) for other future events, such as attending college (Bohon, Johnson, and Gorman 2006).

These racial, ethnic, and immigrant patterns persisted even with the inclusion of within-person measures of physical health and well-being, risk behaviors, family structure and SES, and neighborhood context. Further, while factors related to health selection (e.g., that the healthiest or most resilient persons are most likely to migrate) may be associated with our outcome (Acevedo-Garcia et al. 2012), we are focused on adolescents, whose personal health characteristics are less likely to influence decisions to migrate, compared to parents' characteristics.

The current study is the first to document patterns of survival expectations across racial, ethnic, and immigrant groups. Given the link between survival expectations and various risk behaviors—coupled with racial, ethnic, and immigrant differences in both survival expectations and risk behaviors—it appears that research on the expectations-behavior link should be attuned to such racial, ethnic, and immigrant differences. That is, it is possible that this link between perceived survival and health risk behaviors may operate differently across these groups, particularly given the various racialized risk factors confronting these groups (e.g., segregation, discrimination, police violence, deportation). To our knowledge, research has not yet investigated such nuanced patterns, but the current study highlights this as a necessary avenue for future scholarship.

In light of our findings, there are limitations that should be noted. First, Add Health is a school-based study; therefore adolescents most at risk of having diminished survival expectations may have dropped

out. Second, in dealing with ethnic and immigrant populations, English language comprehension is an issue. As such, our findings may need to be tempered by possible subgroup differences in comprehension of a potentially abstract concept: chances of future survival. Unfortunately, Add Health does not contain any indicators of respondents' English language comprehension, and so we must assume similar comprehension across respondents (we controlled for interview language in order to address this). Third, because immigrant assimilation/acculturation was not a substantive focus of the Add Health project, we are limited to measures of English language use and length of time in the United States rather than acculturation or assimilation per se. Finally, as noted previously, the data do not contain measures of perceived or experienced racism and/or discrimination, which themselves likely compromise youths' physical and/or mental well-being and subsequent survival expectations.

Notwithstanding these limitations, the present study makes several contributions to research on disparities in adolescent health and well-being. We showed that adolescent and young adult survival expectations differ significantly across racial, ethnic, and immigrant groups and that there appears to be evidence of the Hispanic paradox in these expectations but only among Cubans and third-generation Mexicans. There was no evidence of the paradox among foreign-born Mexicans, who were the most pessimistic about their future survival. Asian youth, regardless of generational status, were also more pessimistic about future survival than their white peers. Further, despite much research illustrating increases in risk behavior with increasing time in the United States, our findings suggested—at least between persons—increasing time in the United States corresponded with more optimistic survival expectations, possibly as immigrant families settled into supportive communities, parents secured stable employment, and youth became invested in/attached to school (see Perreira, Harris, and Lee 2006). Finally, our results highlight the importance of distinguishing between ethnic and immigrant groups, rather than collapsing all Hispanics (or Asians) together, as experiences and outcomes differed in direction and magnitude across the ethnic and immigrant groups we were able to examine.

Although there has been increasing recent attention to the concept of survival expectations among adolescents and young adults, we are aware of no studies that have yet explored racial, ethnic, and immigrant differences in these expectations. Thus, the present study represents an important first examination of these issues. Given the disparate patterns observed here—particularly across Hispanic subgroups—future research delving more deeply into the unique experiences and expectations of first- and second-generation youth is clearly warranted and would likely further our understanding of the development and persistence of disparities in health and well-being early in the life course.

## ACKNOWLEDGMENTS

## NOTES

1.  Although risky behaviors and survival expectations are likely reciprocally influential, we conducted sensitivity analyses using risk behaviors at Wave 1 only to predict trajectories of survival expectations—all Wave 1 risk behaviors were negatively associated with trajectories of expected survival, suggesting that risk behaviors have an independent effect on subsequent survival expectations.
2.  While the lowest perceived risks tend to be observed among white males, Finucane and colleagues (2000) found that U.S.-born Asian males had similarly low perceived risks.

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